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ERRATA

p. 66 para 1, 9th line: "*Probing understanding*" *for* "*Probing for understanding*"

ADDENDUM

p. 14 para 2, 8th line: reference details for "Sir John Adams"

Adams, J. (1924). *Modern developments in educational practice.* London: University of London Press.

p. 15 para 2, 4th line: reference details for "Herbartian procedures"

Herbart, J. F. (1898). *The application of psychology to the science of education.* New York: C. Scribner's Sons. (Microform)

p. 325 para 2, 1st line: It is legitimate for teacher educators involved in the design and teaching of the initial teacher education programs to hold such a concern.

p. 327 para 3, 1st line: reference details for "Van Hiele"

Van Hiele, P.M. (1986). *Structure and insight: a theory of Mathematics education.* Orlando, Fla: Academic Press.

PRESERVICE TEACHER PLANNING:
A STUDY OF THE JOURNEY FROM LEARNERS TO TEACHERS

TSE Kwok Keung Ernest

B.A. (Ed.), The University of Hull
B.Ed., Western Australian College of Advanced Education
M.Ed., The University of Hong Kong
Member of the Institute of Linguists

A thesis submitted in fulfillment of the requirements for the degree of
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Faculty of Education,
Monash University,
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ABSTRACT

This longitudinal study traces pre-service teachers' development in teacher planning in the process of learning to teach. Twelve students and six teacher educators from two universities participated in the research project running through the initial teacher education year. The research attempts to examine student teachers' pre-existing conceptions on learning, teaching and teacher planning and how these conceptions impact on the process of learning to teach. The study also examines how student teachers were prepared in lesson planning and how they made meaning of the preparation and applied them in student teaching. The research questions revolve around when, where, who, what, why and how of teacher planning in pre-service teachers. Reflections on learning, teaching and teacher planning were prompted through cycles of transformation in succession of time frames corresponding to student teaching. Evidence of growth and development in pedagogical knowledge and dispositions in teacher planning; and factors contributing to their growth and development were identified. Findings from analysis of data suggest quantitative and qualitative changes in students' belief, knowledge and dispositions in teacher planning, and how these changes impact on classroom teaching.

DECLARATION

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university and that, to the best of the candidate's knowledge and belief, this thesis contains no materials previously published or written by another person, except when due reference is made in the text of the thesis.

TSE Kwok Keung Ernest

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CHAPTER 1

INTRODUCTRION

1.1 Overview of the study

Planning to teach has always been an integral part of most teacher education programs and a number of researchers have emphasized its pivotal position in the process of learning to teach. It has been suggested (for example, Kennedy, 1982; Griffin, 1983; Clark & Peterson, 1986; Sardo-Brown, 1990; John, 1991a; Yinger & Hendricks-Lee, 1995) that an understanding of the contextual and theoretical forces that affect the development of teacher planning might generate knowledge and insights into the ways student teachers learn to teach in their initial teacher preparation. Further to this, planning to teach is also considered fundamental to competent beginning teaching. Reynolds (1992), in her meta-analysis of the literature on what comprises competent teaching, concluded that beginning teachers should be equipped with the competence to plan lessons that enable students to relate new learning to prior understanding and experiences, as well as the ability to reflect on their own actions and students' responses in order to improve their teaching. In a similar vein, planning and managing the teaching and learning process was also among one of the five areas of competency identified in the "National Competency Framework for Beginning Teaching" published by the Commonwealth of Australia in 1996 (See Appendix 1 for the key domains).

In fact, the ability to plan for teaching and learning based on knowledge of subject matter, students, the community, and curriculum goals has been proposed by

the Interstate New Teacher Assessment and Support Consortium (INTASC) (1997) as part of the common core of teaching knowledge and skills that should be required of all teachers seeking teacher licensure (Yinger & Hendricks-Lee, 1998). And, just as the literature illustrates a concern for beginning teachers' understanding and development of planning to teach, I too have become increasingly interested in what it means to learn to teach. Hence, this study explicitly examines the role of teacher planning in the process of learning to teach by student teachers.

Preservice teachers' planning for teaching as the focus of this study was chosen for two particular reasons:

1. Planning is an activity all preservice teaches engage in the initial teacher education program and is central to teaching.
2. Planning is an activity that is affected by endogenous and exogenous forces. An understanding of these forces may well offer new insights into the ways preservice teachers learn to teach.

Though there is a reasonable cadre of research on teacher planning and most of these studies were conducted in the last two decades. Surprisingly though, how student teachers' planning develops through teacher preparation, particularly in terms of changes in conceptions in teaching, learning and teacher planning itself are not all that common. Other areas of concern associated with issues of planning for teaching include how student teachers make meaning of the planning components in their teacher education program; their growth in knowledge, experiences, and dispositions in this pre-active phase of teaching. Thus, the lack of research in these areas, when combined with the two reasons that were the main impetus for this study, frames the nature of this doctoral thesis.

1.2 Structure of the thesis

In addressing the issues associated with teacher planning in teacher preparation, the research that comprises this thesis is organized in the following manner:

Chapter 2 is a review of the literature on major components of the study: review of knowledge base; teacher planning in general; and, relationships between teacher education and learning to teach. This chapter is designed to provide a basis for the meaning of teaching planning, and its relationship to learning to teach. The chapter therefore constitutes a theoretical basis for student teachers' learning about teaching in the context of a study of their growth and development in teacher planning over their initial teacher preparation year.

Chapter 3 outlines the conceptual framework designed for the study. It briefly explores the impact of prior learning on learning to teach and the relationship between the initial teacher education program and teaching practice. The model of *Cycles of Transformation* is introduced with reference to teacher planning and the research questions of the study are articulated.

Chapter 4 describes the methodology designed for the study. It provides background information about the participants, outlines the data collection methods and the model used for recognizing the cycles of transformation as well as fully explaining the coding schedule in concert with examples that illustrate how themes were identified and developed.

Chapter 5 gives a general description of the features of the teacher education programs in which participants in this study were enrolled. How teacher planning is perceived by teacher educators and student teachers is outlined and examined and orientations toward teaching planning is discussed along with various components of the teacher education programs associated with this study.

Chapter 6 outlines student teachers' initial conceptions of learning, teaching and lesson planning elicited in the first round of interviews. It also reports on the first simulated planning task along with the findings from participants' planning practices, their concerns and their views on the role of lesson planning in this initial stage of learning to teach.

Chapter 7 captures and describes the impact on student teachers of the first school teaching experience (teaching round/practicum) and their views pertaining to the usefulness of university preparation for lesson planning. It also gives an account of comments from supervising teachers about participants' actual teaching practice.

Chapter 8 portrays student teachers' changes in their views of teaching and learning and how these changes impact on their lesson planning practices. Conceptual changes in lesson planning are traced and the flow of changes is analyzed.

Chapter 9 detects and investigates the procedural, structural and conceptual changes in student teachers' views of teaching over the three school teaching experiences. It also highlights conceptual changes in their conceptions of learning

over the Post Graduate Diploma in Education course.

Chapter 10 presents and analyses the second simulated planning task designed to explore student teachers' conceptual changes in lesson planning and the common themes, dimensions and magnitude of change are identified.

Chapter 11 correlates the dimensions of change to 'Teacher Planning Conceptions' and also focuses on the cycles of transformation in lesson planning of individual student teachers and unpacks their conceptual orientations of lesson planning.

Chapter 12 offers a brief overview of another way of considering development in conceptions of teaching and learning through the use of concept mapping and presents pre and post concept map analysis as one way of analyzing the situation from a different perspective. In one sense, this chapter offers a form of triangulation that further tests the nature of the findings.

Chapter 13 discusses the impact of teacher education on learning to teach. It considers issues associated with growth and development in student teachers over their initial teacher education and examines the role of teacher planning in the process of learning to teach. Implications of the study in relation to teacher education courses, student teachers as learners, and on student teachers' lesson planning are also considered.

Chapter 14 concludes the study through a summary of the responses to the

research questions and a further consideration of the impact of the outcomes on preservice teacher education. It also explores the limitations of the study, some important learning from the research and possible directions for future research.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

Learning to teach is a complicated process. In view of the need to better understand and define how student teachers develop in planning to teach, it is essential to explore the knowledge bases associated with teacher learning, cognition, teacher thinking and planning. This chapter reviews knowledge bases fundamental to student teachers in the learning about teaching process; associated discussion on competency for beginning teachers; as well as literature related to planning, teacher thinking, teacher cognition and conceptual models in planning to teach.

2.2 Reviewing knowledge bases for beginning teachers

Articulating what teachers need to know and be able to do is a complicated task. Research highlights (Calderhead, 1988; Darling-Hammond, Wise & Klein, 1995; Eraut, 1994) the need for a knowledge-based approach to defining teaching and teacher competence, one that draws together the wide range of teacher knowledge. Wilson, Shulman, and Richert (1987) argue that within the realm of cognitive psychology, 'knowledge base' is a term usually associated with cognitive science. It refers to the set of rules, definitions, and strategies needed by a computer to perform as an expert would in a given task environment. In teaching, the knowledge base is the body of understanding, knowledge, skills and dispositions that a teacher needs in order to perform effectively in a given teaching situation.

Smith (1983) edited a comprehensive volume on the essential knowledge base for beginning educators in the early eighties. The selection focused on what teacher candidates had to learn in order to become effective teachers. Based on the belief that the professionalism of teaching depended on the growth of a substantial, viable base of knowledge about learning processes and effective schooling, the volume incorporated views of prominent educators on the content of teacher education. Topics covered effective teaching, the language of the classroom,

planning and decision-making research, the effects of context on teaching, effective school research, and research on reading, writing and mathematics learning.

In an attempt to lay down foundations for reforming teacher education, Shulman (1987a) classified the elements of teaching knowledge as:

1. Content knowledge.
2. General pedagogical knowledge, including principles and strategies for classroom organization and management.
3. Curriculum knowledge, including materials and programs.
4. Pedagogical content knowledge, an amalgam of content and pedagogy that is teachers' special form of professional understanding.
5. Knowledge of learners and their characteristics.
6. Knowledge of educational contexts, including the characteristics of classrooms, schools, communities, and cultures.
7. Knowledge of educational ends, purposes, and values, and their philosophical and historical grounds.

Carter (1990), when examining the relationship between teachers' knowledge and the process of learning to teach, defined the phrase 'learning to teach' as the acquisition of knowledge directly related to classroom performance. Three broad categories of teachers' knowledge were examined: (a) teachers' information processing, including decision making and expert-novice studies; (b) teachers' practical knowledge, including personal knowledge and classroom knowledge; and (c) pedagogical content knowledge, i.e., the ways teachers understand and represent subject matter to their students. The information processing approaches focus their operations inside the minds of teachers, i.e., the mental processes teachers use to identify problems, attend to cues in the classroom environment, formulate plans, make decisions, and evaluate alternative courses of action.

As for practical knowledge, Carter refers to Elbaz's (1983) five broad domains of practical knowledge: (a) self; (b) the milieu of teaching; (c) subject matter; (d) curriculum development; and, (e) instruction. From a learning to teach

perspective, pedagogical content knowledge is a domain distinct from, but also related to, practical knowledge. Carter suggests that differences in teachers' disciplinary knowledge, background, experiences, and orientations have a significant impact on how teachers organize instruction and represent the substance of the curriculum to students.

In her review on early studies of teachers' experience, Carter found that the effects of training on classroom performance were mediated by cognitive processes and ecological contexts. While other groups of studies were based on personality or development perspectives and focused on attitudes, motives, and concerns (Fuller, 1969; Zeichner, 1986), research on the occupational and institutional aspects of teaching concentrated on how teachers are socialized into the norms and perspectives of the profession (Zeichner & Gore, 1990). Other than studies on teachers' early experiences, attempts have also been made to examine the biographies of teacher candidates, their developing attitudes and concerns, and their professional orientations and perspectives (Knowles, 1992; Wilson et al., 1987).

In the early 1990s, Tom and Valli (1990) noted that the term knowledge base was an extremely popular concept in teacher education, even to the point of having a cluster of knowledge-base standards included in the accreditation standards (National Council for Accreditation of Teacher Education - NCATE). The assumption being that knowledge bases exist and that they should underlie teacher education programs. The NCATE standards recognize two types of knowledge base: the scholarly inquiry derived from the traditions of positivism, interpretivism, and critically oriented scholarship; as well as theory development related to professional practice. These three traditions (positivism, etc.) differ radically in the form and purpose of professional knowledge: generalizations, designed to improve teaching effectiveness (positivism); cases, designed to reveal meaning in context (interpretivism); and varied forms of knowledge, designed to expose ways in which favoured values are prevented from being realized (critically oriented). The three orientations to knowledge also contrast in their approaches to values: value neutral (positivism); value relative (interpretivism); and, value centred (critically oriented). To have a knowledge base (or bases) for professional education can be interpreted as

meaning not only knowledge but also insights into how such knowledge properly relates to practice.

Other efforts to codify and create a taxonomy for a teaching knowledge base include Reynolds' (1989) *Knowledge base for the beginning teachers*. In addition to subject-matter knowledge and liberal arts knowledge and skills, each of the knowledge bases fits into and across three broad areas:

1. *Knowledge about learners and learning*, including knowledge about human growth and development, motivation and behaviour, learning theory, learning differences, and cognitive psychology.
2. *Knowledge about curriculum and teaching*, including general and content-specific pedagogical knowledge, curriculum theory, assessment and evaluation, and counseling, as well as knowledge of scientific inquiry, epistemology, communication, and language as they relate to pedagogy.
3. *Knowledge about contexts and foundations of education*, including knowledge about schools and society, cultures, educational history and philosophy, principles from sociology and anthropology, legal responsibilities of teachers, and ethics.

These domains permeate *knowledge about learners, knowledge about teaching, and knowledge about contexts*.

Fenstermacher (1994) attempted to answer four questions when reviewing the literature on teacher knowledge: (1) What is known about effective teaching? (2) What do teachers know? (3) What knowledge is essential for teaching? (4) Who produces knowledge about teaching? He referred to the concept of knowledge as it appears in standard or conventional behavioural sciences research as formal knowledge (TK/F). He argued that the process-product studies of teaching were perhaps the most well known of this form of knowledge. Other forms of knowledge from research that seek to understand what teachers know as a result of their experience as teachers encompass practical, personal, situated, local, relational and tacit knowledge, which Fenstermacher labelled as teacher's knowledge/practical

(TK/P). Two strands of research highlight this category of knowledge. Elbaz's (1983) notion of practical knowledge is represented in practice as rules of practice, practical principles and images. Taking a similar stance, Clandinin and Connelly (1987) coined this TK/P as personal practical knowledge represented in story, image, narrative, narrative unity, and embodied knowledge. To Schön (1987), practical knowledge is developed from participating in and reflecting on action and experience.

Other than the labels assigned to formal and practical knowledge, Fenstermacher surveyed the teacher knowledge literature and identified a host of knowledge names including: strategic knowledge; propositional knowledge; relational knowledge; craft knowledge; local knowledge; case knowledge; situated knowledge; tacit knowledge; personal knowledge; and so forth. When discussing what knowledge he considered essential for teaching, Fenstermacher identified pedagogical content knowledge (Shulman, 1987a) and considered that Shulman placed more emphasis on TK/F than TK/P. Shulman himself distinguished three forms of knowledge: propositional; case; and, strategic. The notion of strategic knowledge has the closest affinity to the notion of practical knowledge as exemplified in the practical category.

Darling-Hammond et al. (1995) depicted a conception of teaching when attempting to establish standards for teacher licensing procedures in the United States. Their conception of teaching was:

- based on the integration of many areas of knowledge. These areas comprise three major domains - knowledge about learners and learning; knowledge about curriculum and teaching, and knowledge about society and the social context of education;
- characterized by the use of multiple skills, appropriately applied to particular situations, rather than by the unvarying exhibition of uniform teaching behaviours in all teaching circumstances;
- context-dependent. The uses of knowledge and the applications of skills depend on the needs of particular students and classes as defined by instructional goals,

on pedagogical demands associated with the subject-matter, instructional objectives, stages of student development, and previous learning; and on characteristics of the students individually and as a class group (cognitive styles, social and cultural attributes, social organization of the school and classroom, and similar traits).

Their approach to building assessments of teachers' skills was based on evaluating how well prospective teachers could apply knowledge of learning, teaching, and the social context of education to the tasks of teaching - planning instruction, diagnosis of student needs and assessment of learning, and classroom management - within the context of subject matter and students.

Reflecting on Shulman's views on a knowledge base for teachers, Grossman (1995) described her view of teachers' knowledge. She identified six domains of knowledge. Her typology of teacher knowledge included: (a) knowledge of content (including pedagogical content knowledge); (b) knowledge of learners; (c) knowledge of general pedagogy; (d) knowledge of curriculum; (e) knowledge of context; and, (f) knowledge of self. She contended that while subject matter knowledge seemed intuitively important for good teaching, early research did not find a relationship between teachers' knowledge and student achievement. Turning their attention to the relationships between teachers' subject knowledge and the processes of planning and instruction, researchers suggested that teachers' knowledge of content affected not only what teachers teach but also how they teach it.

Teachers' content knowledge also influences their interactive teaching. Research on pedagogical content knowledge suggests that pedagogical content knowledge is related to teachers' planning and classroom instruction. For knowledge of general pedagogy, Grossman (1995) included knowledge about classroom organization and management, general knowledge of lesson structure, and general methods of teaching. Related to work on teachers' routines is teachers' general knowledge of lesson structure, which includes the knowledge necessary to plan and teach lessons, to make smooth transitions between different components of a lesson,

and to present clear explanations of content. While this kind of knowledge has been designated as general, it is possible that knowledge of lesson structure is implicitly tied to the content to be taught. Studies of teacher planning suggest that teachers organize their planning around the development of classroom activities (Clark & Peterson, 1986), but little research has investigated how teachers think specifically about issues of method in teaching. There is an indication that general pedagogical knowledge has some overlap with pedagogical content knowledge. The line of research on knowledge of self (Knowles, 1992; Wilson et al., 1987) suggests the importance of individual biography in the process of teaching and learning to teach.

Grossman (1995) concluded that integration of knowledge domains would lead to the creation of new knowledge. Thus, curricular knowledge, pedagogical content knowledge, and general pedagogical knowledge all play a role in creating curricular scripts for particular topics. Clearly then, teacher knowledge is dynamic in nature, it is not static.

In the process of teaching and reflecting upon teaching, teachers develop new understandings of the content of learners, and of themselves. While teachers can acquire knowledge from a wide variety of sources, they also create new knowledge within the crucible of the classroom. Grossman (1995) also used Bruner's (1986) distinction between two general forms of teacher knowledge: paradigmatic and narrative. Paradigmatic ways of knowing emphasizes generalizable laws and principles applicable across a wide variety of contexts. In contrast, narrative ways of knowing are more contextualized and situation specific.

All these discussions on teacher knowledge point to the fact that for teaching to be effective, teachers need to possess knowledge bases pertinent to managing teaching and learning in contexts. Though different in terms of understanding, knowledge, skills and dispositions, generally, many researchers consider pedagogical content knowledge to be a prerequisite to effective teaching. It is also argued that pedagogical content knowledge is related to teacher planning and classroom instruction. The following section examines the literature and research findings on teachers' planning about teaching.

2.3 Teacher planning: a historical perspective

Green (1948) was among the writers who systematically presented a full-bodied description of how to plan a lesson in his classic little book: "*Planning the lesson*". He vividly described how a lesson was taught in the classroom in the late 1940s. "However, it was certainly true that, a few years back, the lesson was thought of, by the general public and by many teachers, as a means of imparting information to children who were ignorant of it.....The children were passive, sitting in attentive attitudes, and looking and listening. Now and then a question was asked, and the children raised their hands..." (Green, 1948, p.7). Yet, in response to changes in philosophy in educating children, he considered that the lesson should be transformed from a mere giving out of instruction, a mere doling of facts, into an occasion for learning, for thinking, for understanding. Teacher and pupil should co-operate in an adventure in which the teacher was the guide, but no more; and his guidance was given only when it was essential.

In his opinion, such lessons should be planned in advance. The teacher should have many things to bear in mind - not merely the information, teaching and learning materials, and time allocation, but also a knowledge of the children, of their needs and their capacities, and of the several aims of the lesson. He felt that teachers should plan their work so that their explanations and narrative were expressed in words that pupils would understand. He noted how they should know something about the interests of children and how they should prepare themselves to interest them, so that pupils would be eager to understand. He quoted what the late John Adams often emphasized: that it was not sufficient for the teacher to know his subject; he should know his pupils as well.

Green believed in the importance of lesson planning. He made a point of the fact that teachers would find it well worthwhile to plan lessons as fully as possible and to spend time on the planning rather than just the execution. He also drew attention to the need to think about and to discuss the planning of lessons, before and after giving them. He considered that teachers could train themselves through their

own self-activity, and develop an insight into the educational process that would stand them in good stead in all their studies of educational theory. He thought that the training of teachers was best done in the classroom, where they could gather the experience that reflection, discussion, reading and lectures would weld together into systematic knowledge, which in turn would prepare them to comprehend more fully the experience gained in the classroom. Thus, theory and practice acted and reacted on one another, developing teachers through their own activities in the classroom, the study and the library, and this process found both its initiation and its culmination in the act of planning the lesson.

Concerning the factors that affect lesson planning, he identified three main areas: the class; apparatus and materials available; and, the aims of the lessons. He placed a very strong emphasis on children as the focus of consideration when planning lessons. He advocated the Herbartian procedures - the five formal steps in lesson planning, which include:

1. Preparation: the first step in the lesson, an introduction to the lesson and its function was to prepare the pupil for the steps that were to follow.
2. Presentation: how a lesson should be presented.
3. Association: linking up the old and the new knowledge through active processing by pupils.
4. Application: to use the new knowledge acquired.
5. Recapitulation.

Although this little treatise is not seminal in status, it contains some principles in lesson planning that are still the focal points of discussion in the literature on lesson planning. The premise of knowing the children and using a language that can be understood by them is still valid and the notion that teachers should develop and use a knowledge that is comprehensible to children bears a striking resemblance to what Shulman labeled as pedagogical content knowledge.

2.4 Teacher planning and pedagogical knowledge: the contemporary wisdom

Clark and Peterson (1986) defined planning as a subject of research in two ways. First, planning was a basic psychological process in which a person visualized the future, invented means and ends, and constructed a framework to guide his or her future action - thinking in the future sense. This definition led to research on the process of planning that drew heavily from the theories and methods of cognitive psychology. At another level of abstraction, planning could be defined as the things that teachers did when they said they were planning. This definition suggested a phenomenological or ethnographic approach to research on teacher planning, in which the teacher took on an important role as informant or even as research collaborator. Planning is therefore challenging to study because it is both a psychological process and a practical activity.

Planning about teaching is one of the central topics of research on teacher thinking, largely because of the pivotal role it plays in linking curriculum to instruction. The thinking, planning, and decision-making of teachers constitute a large part of the psychological context within which curriculum is interpreted and acted upon and within which teachers teach and students learn. Teacher behaviour is substantially influenced and even determined by teachers' thought processes. The following section describes the relationship between teacher planning and thought process.

2.4.1 Teacher planning and thought process

Jackson (1968), in his book "*Life in Classroom*", described the mental constructs and processes that underpin teacher behaviour. He portrayed the full complexity of the teacher's task and made conceptual distinctions that fit the teacher's frames of reference in teaching; namely the preactive, interactive and post-interactive stages.

Yinger (1980) described succinctly earlier studies of teacher's planning. He

began by identifying Jackson's (1968) study on teachers' behaviour in preactive teaching. Zahorik (1970) did the first empirical study of classroom behaviour and concluded that the typical planning model (the rational model) complete with goals, activities, and their organization and evaluation, made teachers less sensitive to pupils. Zahorik (1975) also discovered in his subsequent study that most teachers considered pupils' activities and content before they considered objectives. He concluded that teachers' decisions on planning did not always follow logically from objective first. He also argued that the integrated ends-means model was by itself not a functioning reality. Taylor (1970) found that teachers tended to consider, in sequence, materials and resources, pupils' interests, aims and purposes, and finally evaluation. Peterson, Marx, and Clark (1978) found that teachers spent most of their planning time on content, then they concentrated their planning on instructional processes; but they spent less time on objectives.

In his study, Yinger concentrated on teachers' mental processes when planning for instructional activities: location, structure and sequence, duration, participants, acceptable student behaviour, the teacher's instructional moves, and content and materials. He introduced the conception of routines: mechanisms that teachers used to establish and regulate activities and to simplify planning. He identified four types of routines: activity routines; instructional routines; management routines; and, executive planning routines. Routines helped increase teachers' flexibility and effectiveness by reducing time spent on making instructional decisions; routines increased predictability but reduced complexity of the classroom environment for the students. (Interestingly, in the study comprising this thesis, it student teachers developed and established knowledge of lesson routines in their teaching rounds, thus releasing them to attend more to students' needs).

Yinger (1980) devised a process model of planning divided into three stages: problem finding; problem formulating/solution; implementation, evaluation and routinization. The cyclic model represented a formalization of the mental processes in teacher planning. The starting point was on teacher thought processes, a clear reflection of the attempt to research teacher planning through cognitive psychology prevalent in the 1970s.

Shavelson and Stern (1981) maintained that most research on teacher planning was based on a conception of teaching as a decision-making process. This assumption, in turn, rested on two fundamental assumptions. The first assumption was that teachers were professionals who made reasonable judgments and decisions in a complex, uncertain environment (the school and classroom). Given the limited information processing capabilities of the human mind, teachers, like all persons attempting to solve complex problems, constructed simplified models of the actual situation and then behaved rationally with respect to these simplified models. This view of teachers as operating rationally within the limits of their information processing capabilities led to the assumption that teachers made reasonable (rather than rational) judgments and decision.

The second assumption was that in teaching there was a relationship between thought and action. More specifically, teachers' behaviour was guided by their thoughts, judgments, and decisions. Thus, an understanding of the teaching process depended on both a description of teachers' thoughts, judgments, and decisions and an understanding of how these cognitions were translated into action. Thus to understand what is uniquely human in the process of teaching, we must study teacher thinking.

Shulman (1986) noted that research on teacher planning and decision-making, by focusing on a few characteristics of teachers' thinking, closely resembled process-product research in its search for predictors of teacher effectiveness. Given this framework, investigators typically examined a narrow range of topics that teachers might be required to think about. The focus, in other words, was on cognitive processes rather than on the knowledge teachers used to interpret given situations or formulate plans and decisions.

Borko and Niles (1987) contended that to teach successfully, one had to plan successfully. Planning typically was formally structured into teachers' roles. In their inquiry on teacher planning, they asked a number of questions: what do teachers do when they plan? What resources and information do they consider? Are there notable differences between the planning of more experienced and less

experienced teachers? What can teachers do to plan more effectively?

When answering these questions, they discovered that a large part of planning was mental. Much of the result of this mental planning never appeared on paper. In fact, the aspect of planning represented by written plans, such as daily or weekly plans in a teacher's plan book, represented only a very small portion of what researchers and educators meant by teacher planning. Indeed, they thought that what researchers could learn about teacher planning had the potential to improve instruction.

2.4.2 Questions central to studying teacher planning

Researchers have examined a number of issues related to planning, issues involving both the thought processes of teachers and the outcomes of these processes. These issues are organized according to four major questions:

1. Why do teachers plan?
2. How do teachers plan?
3. What factors affect teacher planning?
4. How does planning affect classroom interactions?

To examine this diverse set of questions, researchers have used a variety of methods. The methods most commonly used are process tracing, stimulated recall, and case study. These methods are often used in combination and are usually supplemented by additional data gathered through questionnaires, interviews, field observations, and examination of written records (e.g., lesson plan books).

In studies using process-tracing procedures, teachers are asked to 'think aloud' (verbalizing all their thoughts) as they engage in tasks such as organizing the class for instruction, planning a lesson, or making decisions about curricular materials. Teachers' verbalizations are recorded (usually using audio tapes) and later transcribed. These written protocols become the data to be analyzed to produce descriptions of the content sequence of teachers' thought processes.

Stimulated-recall techniques are typically used to study teacher thought processes when process tracing in order not to interfere with the teacher's performance of the task (e.g., while presenting a lesson or otherwise interacting with students). A teaching episode is audio-taped or video-taped and later played back. The viewer (usually the teacher in the episode) is asked to recall the thoughts or decisions that occurred during the taped session.

Case study approaches are used in educational research to provide detailed descriptions of individual students, teachers, classrooms, school systems, and so on. To construct these detailed accounts, researchers collect data in the actual school setting, using techniques such as participant observation, focused interviewing, and analysis of documents (e.g., lesson plan book, school policies and regulations). In analyzing the data and reporting findings, they are careful to use the language and meaning of the research participants (the teachers, students, and administrators).

2.4.2.1 Why do teachers plan

Clark and Yinger (1979) identified three clusters of internal sources of reasons for teacher planning. They planned to meet immediate personal needs in reducing uncertainty and anxiety, to find a sense of direction, confidence, security, etc. They considered planning as a means to an end to learn the materials, to collect and organize materials, and to organize time and activity flow. They also used the plans during instruction to organize students, to get an activity started, to aid memory, and to provide a framework for instruction and evaluation. McCutcheon (1980) reported similar internal reasons for planning. He thought that planning would make teachers feel more confident about teaching content, learn the subject matter better, help the lessons run smoothly, and envision and circumvent potential problems. He further identified external sources of reasons for teacher planning. These included meeting administrative requirements, transforming, and providing guidance to substitute teachers. But Clark and Elmore (1981) considered that the most important function of teacher planning was to modify the curriculum to fit the unique circumstances of each teaching situation. However, lesson planning is the one type that is addressed directly in all teacher preparation programs. Yet, it is rarely claimed

as an important part of the repertoire of experienced teachers.

2.4.2.2 Types of plans

Yinger (1979) identified five types of plans: yearly; term; unit; weekly; and, daily. Unit plans were most often identified as the most important type of plan, followed by weekly and daily plans. Only a small percentage of teachers listed lesson plan among the types of plans most important to them. All types of plans help teachers to meet psychological needs and prepare themselves cognitively for teaching. Daily plans, as opposed to more long-range plans, focus on instrumental preparation for teaching (e.g., organizing materials) and the interactive processes of instruction.

2.4.2.3 How do teachers plan

In their study of student teachers' planning, Borko and Niles (1987) discovered that lesson plans generally followed some version of the objective-based, means-end model first proposed by Tyler (1950). This model describes planning as a four-step process: specifying behavioural objectives, choosing appropriate learning activities, organizing and sequencing the chosen activities, and selecting evaluation procedures.

Shavelson and Stern (1981), when reviewing research on teachers' thinking, claimed that the instructional tasks in which teachers engage pupils constituted most of their planning activities. Such instructional tasks as content choice, materials, and activities, made up the scripts (Schank & Abelson, 1977), or images (Johnston, 1992; Morine-Dershimer, 1978), which guided teachers through the interactive phase. Other investigations pointed to the fact that teachers had different priorities when planning lessons, for instance, activities (Zahorik, 1970; 1975), context (Taylor, 1970), and subject content (Peterson, Marx, & Clark, 1978).

Other research findings (Borko & Shalvelson, 1990; Clark & Peterson, 1986) also suggested that Tyler's model did not fit well with research-based accounts of the

planning process. These research-based descriptions differed from Tyler's model in both the relative prominence of the four planning steps and the sequence in which they occurred. Rather than objectives or evaluation, planning seemed to focus primarily on content and activities. The first planning decision made by teachers usually involved activities. The most commonly reported practice for preparing written plans was to begin by identifying the subject matter to be covered and an activity to be used and then to consider other elements such as materials, goals, objectives, and evaluation procedures. Sardo-Brown (1990), in a survey of 33 experienced teachers, found that teaching objectives were mostly hidden inside teachers' planning or were drawn from the curriculum syllabuses and guides.

As to how teachers planned their lessons, McCutcheon (1980) reported that many teachers engaged in mental planning almost continuously throughout the day. Mental planning covered a wide range of concerns, including the teaching of particular skills or concepts to individuals or groups, handling of behavioural problems, and the tying together of different subject-matter areas. Two studies by Morine-Dershimer (1978), and Morine-Dershimer and Vallance (1976) suggested that teachers' plans were seldom fully reflected in their written plans. Rather, the details recorded on written plans were nested within more comprehensive planning structures, called 'lesson images'. These lesson images, in turn, were nested within a still larger construct called the 'activity flow' as labelled by Joyce (1979). Further support for the idea that teacher planing was a nested process came from a study by Clark and Elmore (1979). Leinhardt (1983) also assumed that teachers' planning was governed by an implicit set of mental scripts or thought patterns for instruction. (Interestingly, in the present study, mental planning was evident in the course of the development of student teachers. This helped reduce information loading of student teachers in planning and allowed them more time to attend to other areas of concern).

2.4.2.4 What factors affect teacher planning

Shavelson and Stern (1981) reported that information about students would affect teacher planning. These characteristics were found to be important in the

majority of studies and they included general ability or achievement, gender, class participation, self-concept, social competence, independence, classroom behaviour, and work habits. The nature of the instructional task was also considered as one cluster of factors influencing teacher planing. Described as the basic unit of planning and action in the classroom for teachers, the task consisted primarily of subject matter (content and structure), activities, and materials. While conceptually distinct, these components were closely linked in actual classroom instruction and planning for instruction. Other groups of factors were concerned with the context of instruction. Consideration of context focused both on the classroom itself and on the extra-classroom environment, including school, school system, and community. Shavelson and Stern (1981) also hypothesized that certain characteristics of teachers, such as their conception of teaching, beliefs about particular subject areas, and professional experience, would affect their planning. (Indeed, these factors are reflected in the planning practices of the student teachers in the present study and is examined in Chapter 8).

2.5 Conceptual models in teacher planning

Most educators adhere to the belief that to teach successfully one must plan successfully. On the strength of this conviction, planning is built into the job description for most teachers. Many teachers can look back on their undergraduate education and recall the effort put into carefully constructing lesson plans for classroom instruction. These plans typically followed the steps by Tyler's (1950) objectives-first or rational model. The model described planning as a four-step process: (a) specifying behavioural objectives; (2) choosing appropriate learning activities; (3) organizing and sequencing the chosen activities; and, (4) selecting evaluation procedures. Indeed, the model was advocated for use by teachers of all levels and all subject-matter areas (Borko & Shavelson, 1990).

Research-based descriptions of teacher planning differed from Tyler's model in both the relative prominence of the four planning steps and the sequence in which they occurred. Objectives were not found to be a particularly important component of the planning process, and they were seldom the starting point for the

process (Borko & Shavelson, 1990). In fact, some teachers reported that they did not actually write down objectives unless they were required to do so. Objectives were implied in the teachers' textbooks; so to write them down was seen as a waste of time (Borko & Niles, 1987; Sardo-Brown, 1990). Rather than objectives or evaluation, planning seems to focus on content and activities. The first planning decision made by teachers usually involves the subject matter. Teachers typically identify the subject matter to be covered and an activity to be used and then consider other components such as materials, goals, objectives and evaluation (Borko & Niles, 1987; Clark & Peterson, 1986).

Investigators have also considered alternate models of teacher planning to provide explanations of the process. Yinger (1980) proposed a three-stage cyclical model to describe the planning process undertaken when teachers prepare a unit for instruction. The teacher began with a general idea and continued through phases of elaboration and modification. This began with the problem-finding stage - the teacher derived an initial conception of the planning problem, based on a consideration of content, goals, and the teacher's own knowledge and experience. The next stage entailed the problem formulation and solution stage - the teacher designed instructional activities by repeatedly cycling through a process of elaboration, investigation (mental testing), and adaptation. The third stage consisted of implementation and evaluation of the activities in the actual classroom setting. As a result of these processes, activities were either rejected or modified and (if effective) eventually incorporated into the teacher's repertoire of knowledge and experience to be used in future planning.

In a study of the evolution of functional lesson plans among elementary and secondary teachers, Kagan and Tippins (1992) discovered that the majority of the secondary teachers in their study used plans as memory aids while teaching. As the semester progressed, their plans grew and became more detailed, eventually incorporating factual information from textbooks that student teachers wanted to be sure to tell the pupils. In this sense, detailed written plans facilitated an information-giving model of instruction among secondary novices. In contrast, elementary teachers used written plans to organize thoughts and materials but never

consulted plans while teaching, preferring to respond spontaneously to pupils. As the quarter progressed, their plans grew less detailed and generally served as adjuncts to prepared teachers' guides. They suggested that it might be helpful to define a lesson plan as a brief outline of instructional procedures, perhaps to be used in conjunction with prepared curriculum guides. (Much of these findings and observations are commensurate with findings from the present study and are discussed in Chapters 7 and 8).

According to Clark and Yinger (1979), there appeared to be no single most appropriate format for a lesson plan. The nature of instructional planning appeared to vary with the subject and grade level to be taught, the instructional materials available, and the school context. However, many teacher educators advocated simplified linear formats: for example, objectives, content, procedures, materials, evaluation (Arends, 1991; Kim & Kellough, 1983; Ornstein, 1990) or the much taught Hunter's model of lesson planning that included an anticipatory set, objectives, input, modeling, checking for understanding, guided practice, independent practice (Hunter, 1984). But none of these models was inferred from novices' own experiences in classrooms.

Kagan and Tippins' (1992) findings also indicated that there was no evidence of lesson planning as a recursive cycle, for each of the participants worked without a repertoire of instructional routines from which to choose. Format varied with the context of instruction: with the nature of the content to be taught among the secondary teachers, with grade levels among the primary teachers, and with teachers' beliefs. Thus, Clark and Yinger's (1979) observation about the idiosyncratic nature of lesson plans was partially supported.

Kagan and Tippins (1992) concluded that the traditional lesson plan format was counterproductive for novice teachers. They hoped that the findings, together with considerable empirical literature on teacher planning, would help teacher educators learn to regard the Tylerian lesson plan as a point of departure rather than a Procrustean bed. They recommended that it seemed only logical to encourage novices to personalize their plans. (Development of personal heuristics in lesson

planning emerged in some of the student teachers in the present study and is discussed in Chapter 9).

2.6 Student teacher planning

2.6.1 Relation between student teacher planning and learning to teach

Broeckmans (1986), in a study of the short-term development in student teachers' lesson planning, considered learning to teach as a process of qualitative changes in the psychological structure of teaching behaviour. It was assumed that these changes resulted from developments in the student teacher's potential for teaching actions. These changes might result from all kinds of actions taken by the student teacher, for example, studying pedagogical theory or subject matter, observing model lessons, interpreting pupils' behaviours, reflecting on one's own teaching behaviour, or conferring with supervisors. It was plausible that cognitive processes during planning and interactive teaching mediated the effects of practice on later teaching behaviours.

Broeckmans (1986) identified different approaches in research on learning to teach. These included developmental approaches/developmental concerns, ecological, social anthropological, cognitive developmental approach, and teacher thinking research, which relied on an information processing view of teaching. In the study of student teacher short-term development in planning, the action-oriented interpretation of teaching was used as a heuristic for an integrated approach in teaching. Both observations and self-reports were used to gather data on two to four successive lessons of 18 student teachers. These different kinds of data were analyzed simultaneously and in their mutual relations by means of a complex system of categories. He used an action-oriented interpretation of student teachers' planning and arrived at an integrative viewpoint. Some important features were drawn in his conclusion.

According to Broeckmans (1986), central to the action-oriented model was the concept of "action", which was defined as every intentional activity performed

upon objectives. As for comprehensive action wholes, they included planning, interactive teaching and post-interactive behaviour. Teaching was thought of as an "activity" made up of a great number of actions and sub-actions that differed in complexity. It consisted of some comprehensive action-wholes - namely planning, interactive teaching and post-interactive behaviour. These action wholes were made up of a number of complex actions, which could be analyzed further into less complex sub-actions and so on.

Experienced teachers' lesson planning generally comprised four complex actions: (a) analysis of the lesson assignment; (b) the teacher's acquaintance with the subject matter; (c) selection of the lesson content; and, (d) organization of the lesson. The teacher's acquaintance with the subject matter consisted of the following sub-actions: deciding which information was needed; identifying sources; looking up information; and, evaluating it.

For the goal of the super-ordinate action, sub-actions had functions of orientation, execution, or control. Planning, interactive teaching and post-interactive behaviour was seen to have functions of orientation, execution and controller orientation. The components of teaching were intentional, which meant that the teacher had in mind a representation of the goals to be reached. In principle, overt behaviour and internal processes were equally considered sub-actions of teaching. The intentionality of teaching did not imply that all its components were consciously steered by a rational interaction with their context.

Based on how experienced teachers dealt with actions in their planning, Broeckmans conceptualized stages in development in student teachers' planning. They began by reducing the planning process by focusing on selection of content, searching for activities, searching for teaching repertoire, and memorizing or practising resolutions or further specifications. They then inserted orienting sub-actions, followed by inserting of controlling sub-actions. Finally, student teachers might change their executive components while implementing their plans. He concluded that patterns of development were influenced by the degree of success in implementation, the supervising teacher, and by their own philosophy and

repertoire in planning when making criteria for actual selection.

2.6.2 Student teachers' planning practices

Ben-Peretz (1982) found that beginning teachers' planning was generally more superficial than their more expert colleagues' planning. This supports an earlier view by Joyce and Harootunian (1964) who, on conducting a series of interviews with a group of student science teachers, found their plans to be brief and crude. They went on to hypothesize that student teachers' planning was a poor attempt at replicating their more experienced counterparts.

Further to this, Broeckmans (1986) examined short-term developments in students' lesson planning and created a map of the psychological processes involved in their planning actions. This process involved clearly defined stages. The typical course of planning was described in steps as follows:

1. Lesson assignment: inspection, interpretation, and appraisal of the lesson assignment.
2. Exploration.
3. Planning in a narrower sense.
4. Filling up the planing form.
5. Check up of the result of the planning in a narrower sense.
6. Revision.
7. Direct preparation of interactive teaching.

The first stage involved student teachers "inspecting and interpreting" the lesson assignment. This was followed by the "Exploration stage" whereby information was gathered and the general content of the lesson determined. This phase had an orienting function and paved the way for the more detailed planning that was to follow. The next stage represented planning in a more concrete sense with the activities being determined and elaborated on in succession. The final efforts were associated with organising the plan for classroom use. (It appeared in this study that preactive teaching was mainly concentrated on the activities of which the lesson

was made up. An activity was considered as a connected whole of teaching and learning activities of a certain kind, performed upon a part of the lesson content. Such an action-oriented planning practice was reflected in student teachers' second attempt in a simulated task undertaken at the end of the Post-Graduate Diploma course. This will be discussed in Chapter 10).

Borko, Livingston, McCalcb, and Mauro (1988) on the other hand, looked at student teacher planning in relation to the development of pedagogical expertise. They found that the pupils appeared to be the main topic of reflection after teaching, with behaviour, participation and understanding being the main categories of concern. The researchers also found that patterns in planning were linked to the subject specialisms of the student teachers. In mathematics, for example, they discovered that planning seemed to consist mainly of selecting problems and examples to illustrate and complete in lessons.

Beyereback (1988) used concept mapping to explore the growth of student teachers' knowledge in relation to planning. She found that often students' maps shifted in content as classroom teaching came closer. For instance, early on in the course, time, pupils, and individuals were prominent, while later the practical elaboration of materials and organizational items began to appear. The project also indicated that very few students organized their maps around the Tylerian model.

2.6.3 Stages in preservice teacher planning

Bullough (1987) observed a first year secondary teacher on a weekly basis in order to gain insight into her planning processes and how and why they changed over the year. These changes were discussed in terms of Ryans' four stages of teacher development, namely the fantasy stage, the survival stage, the mastery stage and finally the impact stage.

In the fantasy stage, this teacher did not consider goals as a central part of her teaching. Rather she considered selecting activities and organizing materials as paramount. In the survival stage, teaching had two major task structures organized

around the problems of learning and order. While learning was served by the instructional function, order was served by the managerial function. Both required careful planning. At this stage, the teacher began to see the need to establish order, and to identify activities and establish routines. When the teacher began to feel that she had control of the class, was able to identify a cluster of appropriate activities and instructional strategies, developed acceptable instructional routines, and felt confident enough to reject and alter other teachers' planning suggestions, she quietly moved into the mastery stage of teaching.

In the mastery stage, five changes appeared to be most significant. The student teacher began to plan in greater detail in anticipation of management related problems. She evolved as a more efficient planner. Once lesson routines were established, displacement of control took place and she began to attend more to student learning. As time proceeded, she made refinements to acceptable routines. She therefore displayed signs of mastery when she planned as it came with more certainty and confidence.

2.6.4 Some research findings on student teachers' planning

In a study on teacher planning, John (1991b) reported on three cases taken form a one-year longitudinal study into the growth and development on the structural influences that affected the learning of preservice teachers. These structural influences included the course of professional training, the ecology of the classroom, and the nature of the school curriculum. The cases showed that the predominant model used to introduce beginning teachers to the rudiments of lesson planning was faulty and inadequately conceptualized and they had very little relation to their actual experiences and concerns.

This supported Sardo-Brown's (1990) earlier findings on a survey study of 33 experienced teachers. She claimed that teacher education rarely, if ever, influenced teachers' instructional planning and decision-making. (However, findings in the present study indicate that the teacher education programs under study could make a difference and impact on student teachers' planning. This will be addressed

in Chapter 11).

Nevertheless, in contrast to her claim on a perceived minimal impact of teacher education on student teachers' instructional planning, Sardo-Brown still considered that planning was an activity that all teachers engaged in and thus constituted a large part of the psychological context of teaching. Within this context a great deal of the school curriculum was understood, developed, and acted upon. Planning was therefore central to the teaching process and as such provided a useful focus for evaluating the learning of student teachers during their training year.

As a considerable research database has emerged in the field of teacher planning, it provided a good conceptual base for exploring and understanding planning in student teachers. Indeed, planning was an activity influenced by a number of forces emanating from both inside and outside the individual. Thus, an understanding of the contextual and theoretical forces that affect the development of lesson planning perspectives may offer insights into the ways in which student teachers learn to teach.

2.7 Some Australian studies on teacher planning

2.7.1 Training teachers to plan

Deschamp and Tripp (1980) conducted a study on how primary teachers were taught to plan by training institutions in Western Australia. Their findings indicated that many trainee teachers did not develop a clear concept of the planning process. The logical connection between the various steps in planning had not become apparent to some students who were not clear about the teacher's role in the planning process. Deschamp and Tripp (1980) concluded that there was room in the teacher education course to show how to plan lessons and programmes. They called for improvements on such aspects as more initial instruction, less student exploration, breaking programmes into lessons and access to samples of approaches to planning. Indeed, almost all of the graduates approached regarded the matter of training teachers to plan as a very important part of their preparation for teaching. They saw planning programmes as preparing working documents to guide their teaching.

Dorman (1985) used a case study approach to study the planning practice of secondary school teachers at a secondary school in Queensland and examined the influence of a policy paper - Review of School Based Assessment on planning practice (Board of Secondary School Studies, 1978). He concluded that a school-based assessment policy did influence the planning practice of teachers.

2.7.2 Facilitating pre-active decision-making for preservice teachers

Kennedy's (1982) study on a curriculum program for preservice teachers indicated three main results. First, the rationale model (such as Tyler, 1950) prescribed a method not used in practice. Second, the behavioral objective model of planning had little influence on teachers once they started teaching. Third, teacher planning was an intuitive and creative process done (mainly) mentally. Accordingly, plans could change rapidly during interactive teaching situations by experienced teachers.

He made distinctions between preactive, interactive and post-interactive activities. For preactive activities, decisions were made outside the classroom before teaching started. Interactive activities were seen as attempts to translate plans into practice. These created classroom ecology determined in part by teachers' predefined intentions, by students' reactions, and by teachers' responses to situations. Post-interactive activities were concerned mainly with evaluation of the lessons. Since teachers were active information processors and problem solvers, teacher planning was a decision making process best done in groups to facilitate reflection. He advocated a group planning activity for student teachers and asserted that reflection on implementation of the lesson plans be incorporated as an integral part of training on lesson planning for student teachers.

He recommended that teacher planning was an important area of concern for teacher educators. He argued that preactive skills in lesson planning should be given more consideration in teacher education programmes. He also noted that the results of studies of teacher planning and curriculum implementation should be used to assist teacher educators in addressing the needs of preservice teachers. He considered that before student teachers were taught how to plan, the initial task for

teacher educators was to develop an adequate conceptualization of teacher planning themselves.

2.7.3 A study of long and short term teacher planning procedures and implications for teacher education

In a study of Macquarie University preservice teachers, Thomson, Braithwaite, Kensell, and Mottram (1988) discussed the nature of teacher thinking, or decision making, in regard to lesson planning in the preactive phase. They argued that training in lesson planning was an important component of most teacher education programs. In general, such training tended to follow what has been called the "rational" or objectives-based model, propounded by such writers as Tyler (1950), Mager, (1962), and Popham and Baker (1970). They found that the main concern of teachers in lesson planning was with children's activities. They also argued that even if the teacher's behaviour in the activity was essentially a reaction to the pupils' actions, the teacher had already established general boundaries and guidelines for behaviour through preactive planning. Although activities were the central core of planning, additional support was necessary to secure effective implementation in an interactive setting. This was provided by routines, the mechanisms used to establish and regulate activities. Such routines did not need to be written down in plans since they were the result of experience. Establishing routines could help simplify the teacher's decision-making process, which, in turn, facilitated planning during the interactive teaching phase.

Most participants in the Macquarie study responded that they did use specific objectives and about half the sample expressed the objectives in behavioural terms. When asked whether they wrote objectives because they were told to, the majority said that they did so because they found them useful. In a survey of Macquarie graduate teachers, the sequence of thinking in lesson planning was: pupil background, lesson objectives, pupil activities, content and resources. But the main findings indicated that some of the teacher preparation practices in Australia bowed more to the task demands of the university calendar, method courses and supervision models than those of the public school environment.

2.7.4 A case study on student planning

Thursby (1989) conducted a conceptual study of the planning behaviour of three final year students. Data collected in three phases were corresponding to three phases of teaching practice. Data analysis suggested that students did not choose to plan from objectives and they complied with the prescribed planning model only to satisfy college requirements. The basic unit of planning was the activity that involved pupils with content and materials in particular ways. Students referred to exemplary lessons, demonstration lessons with master teachers and lesson advice from their cooperating teachers to develop their own planning strategies to suit the development of content and outcomes.

2.8 Teacher education programs and learning to teach

The foregoing sections reviewed literature in the knowledge base for beginning teachers, historical development, contemporary studies and some Australian examples on teacher planning. The following sections briefly review teacher education programs that have been found to be helpful in setting a conceptual framework for this study; which is be explained in Chapter 3.

Korthagen and Russell (1995), in their brief review of some historical issues related to the development of teacher education, noted that teaching was able to be mastered by gaining experiences without any formal theoretical professional training. Often a new teacher learned the trade within an apprenticeship type model with an experienced teacher after studying a subject discipline in an academic institution. As more and more psychological and pedagogical knowledge developed in the twentieth century, the general trend was to teach teachers courses in relevant knowledge domains, such as psychology, philosophy, and history of education. The idea at the heart of this was that acquiring a relevant knowledge base as such was sufficient for good teaching and others can be learned "on the job". The poor application of this knowledge base led to the introduction of competency-based teacher education (CBTE) with the underlying premise that concrete and observable criteria for 'good teaching' could serve as basis for the training of teachers. For quite

a long time, process-product research was considered the most appropriate vehicle to generate these criteria for teacher education, which was conceived as the translation of the theory on good teaching into practice.

In the 1980s that a "new approach" to teacher education was proposed to address the failing paradigm of CBTE. The approach emphasized the importance of reflective teaching and a new pedagogy in teacher education, such as action research and reflective journal writing. This approach implied a break from the traditional way of thinking about professional knowledge. The implementation of formal knowledge in a practical setting was supplemented by making teachers aware of their practical knowledge, identified as the conceptions, beliefs and personal theories embedded in their everyday teaching. This demonstrated a shift away from a general theory about good teaching towards more appreciation for the individuality of each teacher. Such recognition of personal, social and professional development as purposes of a teacher education program supported by Bell and Gilbert (1996) was echoed by Northfield and Gunstone (1997) in their proposed sets of principles guiding teacher education that was perceived as a process of developing teacher knowledge.

Carter and Anders (1996) identified five orientations in the conceptual frameworks for teacher education: practical/craft; technological; personal; academic; and, critical/social. Reflective inquiry also began to impact on approaches in teacher education with a growing number of pre-service teacher education programs aligning learning with teaching (for example, Loughran, 2001; Russell, 2001). This shift was catalysed by the work of many but certainly identified with what Richert (1995) pointed out as, teachers learning by inquiring into their practice. This implies that teachers think about their classroom experiences in order to make sense of such experiences. In teacher preparation, this process begins when teachers experience cognitive dissonance in the face of the uncertainties of their work. Their thinking about teaching, or reflecting about the complexities of their work, is the doing and thinking cycle perpetuated by Dewey (1933) generations ago. Drawing on Dewey (1933) and later Schön's (1983) epistemologies of reflections, Loughran (1997) argued that:

as teaching is inextricably linked to learning... Teaching about teaching should extend teachers' and students' views of teaching and learning, and this extension is dependent upon reflection on both the teaching and the learning that occurs; it follows that reconsidering one's actions, reframing problematic situations, mulling over the flow of suggestions, and reasoning through the implications of alternative views and testing hypotheses are the cornerstones of reflection. (p.63)

Learning about teaching is clearly demanding. Student teachers bring with them into their teacher education programs a multitude of conceptions about teaching, learning and lesson planning. How they make meaning of their initial teacher education programs is no doubt influenced by their prior learning (Lortie's (1975) *apprenticeship of observation*) and the pedagogy inherent in their teacher preparation program. Hence, their learning experiences play a pivotal role in shaping their understanding of learning to teach and is therefore a central theme of this thesis.

2.9 Summary

This chapter examined the literature related to a knowledge base for beginning teachers. Subject knowledge, pedagogy, pedagogical content knowledge, knowledge of learners and the context of teaching are considered central to such a knowledge base. The brief review of teacher education serves to lay groundwork on which discussion on teacher education programs offered by the Universities in this study might be based. In terms of lesson planning, discussion revolves around the "who", "what", "when", "why" and "how" of lesson planning.

Reference has been made to student teachers' planning practice and models of lesson planning. Some examples of Australian studies on lesson planning have been quoted. This will serve as the cornerstone for the present study on student teachers' development in pedagogical knowledge, beliefs and dispositions in lesson planning through their initial teacher education year. In the next chapter, the conceptual framework for the present study will be formulated and the research questions specified.

CHAPTER 3
CONCEPTUAL FRAMEWORK

Introduction

Learning to teach is not limited to teacher education per se. Rather, it is an ongoing process that ideally extends throughout a teacher's career. The body of research on learning to teach is very diverse. Studies have been conducted from a variety of theoretical perspectives including teacher socialization (Zeichner & Gore, 1990), teacher development (Burden, 1990), and knowledge and skills acquisition (Reynolds, 1992). Investigations also differ with respect to the varying phases of learning to teach. Preservice teacher education has long received attention from researchers such that the phrase *learning to teach* is so commonly mentioned that it is almost taken for granted that it is a readily comprehensible process. In fact, it appears more so that we do not necessarily have well-developed theories of learning to teach and the phrase itself covers many conceptual complexities (Feiman-Nemser & Remillard, 1996).

Learning to teach raises both descriptive and normative issues that must be addressed if a serious effort to build a model of learning to teach is to be realized. Somewhat mitigating against the theorizing of learning to teach are commonsense responses such as: "Anyone can teach"; "If you know the subject, you can teach"; "Teachers are born, not made"; "Everything you need to know about teaching can be learned on the job". These views and beliefs are widely held in society despite the fact that they find little support in the teacher education research literature in which a number of reports clearly illustrate the fact that teacher education does make a difference for neophyte teachers when learning to teach (see for example, Darling-Hammond et al., 1995; Grossman, 1987; Richardson & Placier, 2001).

There has been much debate and research on how student teachers are influenced by their prior learning, particularly on their views of teaching and learning, which, in turn, may also shape the way they plan for their lessons. However, there are not many studies that investigate the relationship between such prior

conceptions and the actual process of teacher planning. One purpose of this study then is to find out how student teachers might grow beyond the influence of an apprenticeship of observation (Lortie, 1975) and develop their own competence in planning to teach. It could well be argued that if student teachers develop new beliefs and knowledge bases in the learning process, they may reconstruct their pre-existing experiences and transform their practice. Section 3.1 briefly discusses the impact of prior learning on the process of learning to teach and its implications for the present study.

3.1 The impact of prior learning on learning to teach

Recent research on student teachers' development in student teaching during initial teacher education suggests that preservice teachers have definite ideas about learning and teaching when they embark on teacher preparation (Calderhead & Robson, 1991; Clark & Peterson, 1986; Davies & Rogers, 2000; Doyle, 1997; Hollingsworth, 1989; Knowles, 1992; Leinhardt, 1988). These belief structures and pre-existing conceptions stem from their own educational experiences and shape their perceptions of teaching and learning, thereby impacting how they develop over their initial teacher education. Knowles (1992) noted from his research that:

> *Past experience impacted on their [preservice teachers'] early classroom behaviors to a high level. Subsequent changes, induced by teacher education programmes, regarding the ways in which preservice teachers thought about teaching and education, seemed to occur to a minimal degree over the duration of the preservice year. (p. 56)*

This echoes Calderhead and Robson's (1991) findings on how student teachers' views of teaching are shaped by their reactions and subsequent interpretations of their teacher education course. Further to this, Zeichner, Tabachnick and Densmore (1987) argued that students showed few signs of change or modification through professional education and experience in the classroom. They suggested that students' perspectives were elaborated rather than radically changed by professional training, with students selecting from their experiences whatever suited their own perspectives.

According to Darling-Hammond, Wise and Klein (1995), teaching is an intense activity. Teachers must simultaneously juggle: subject matter; the lesson's underlying cognitive, social, and affective goals; the management of time, materials, and equipment; and, the needs and responses of individual students. When examining the development of knowledge structures in learning to teach, Calderhead (1988) discovered that student teachers began their teacher preparation with some general conceptions of a teacher's tasks. The long 'apprenticeship of observation' (Lortie, 1975) undertaken as a pupil at school, equipped them with a knowledge of what a teacher's work was like. Several researchers suggested that these formative impressions of teaching were powerful influences in shaping beginning teachers' classroom practice (Bramald, Hardman & Leat, 1995; Tabachnick & Zeichner, 1984).

It is not difficult to see then that student teachers start their pre-service training with some specific images of teaching in mind. Sometimes these are ideal images of the kind of teacher they would like to be, based on recollections of teachers who had taught them at school, sometimes on one particular teacher who may have been influential in their lives and who acted as a model for teaching. Occasionally, student teachers have negative models derived from teachers they have encountered that they definitely do not want to be like, such as a distant authoritarian figure. Student teachers have other knowledge bases that also impact their understanding of teaching that they bring to teacher education, and which sometimes, are specially developed in teacher education with the intention that they will inform their classroom practice (for example, subject matter knowledge, psychological theories of learning, theoretical knowledge about curriculum development and planning for teaching). However, when student teachers are placed in a position whereby they need to cope with immediate time constraints, they may well rely on readily available images rather than a distant and abstract knowledge base derived from their initial teacher education courses. These images can be taken and implemented uncritically. The evaluation of practice might remain at a superficial level and knowledge bases that could potentially inform practice may not be particularly well utilized. Amarel and Feiman-Nemser (1988) also found that many students took practical experience as their primary concern in teaching and that, in

general, they appeared to devalue their teacher education program coursework.

3.2 Conceptualizing the professional learning process

It may be argued that there are particular knowledge bases that must be developed in student teachers - knowledge on subject matter, curriculum and lesson planning, materials, teaching methods, and children, among others (these have been fully elaborated in Chapter 2). However, the processes by which these knowledge bases inform classroom practice need to be examined. The linking of knowledge to action is sometimes regarded as being the student's responsibility, it is expected to occur as the student acquires experience in the classroom, but the means by which it happens, or the help that may be needed to facilitate its development is not clear. In relation to this point then, an important issue for this study is to address how knowledge and skills in teacher planning acquired by student teachers in teacher education courses are translated into practice.

If belief structures are shaping forces in the classroom practices of student teachers in the process of learning to teach, and, if they are resistant to change as some research suggests, it is important that student teachers should be made aware of this relationship and examine their beliefs and practices through critical reflection. Without this opportunity, Kagan (1992) and McIntyre (1992) suggest that student teachers are likely to adopt practices that they remember from their own school days, hence merely reinforce the status quo. Barnes (1989) argued that teacher educators should develop more powerful teacher education programs in order to influence students' thinking, particularly in replacing simplistic notions about teaching and learning with more sophisticated understandings.

3.3 Changes in orientations and perspectives

Despite that which I have outlined above, it is possible that student teachers may experience changes in orientations and perspectives during initial teacher education. Hollingsworth (1988) contended that patterns of knowledge growth suggest a number of themes about the learning-to-teach process. Pre-program beliefs

serve as filters for processing program content and making sense of classroom contexts. General managerial routines need to be in place before subject specific content and pedagogy can become a focus of attention. Skills in interrelated managerial and academic routines are needed before teachers can actively focus on students. Finally, learning from academic tasks in classrooms, pre-program interests in students as individuals, and a program-developed interest in subject pedagogy are needed to provide the motivation to shift their focus to learners. In turn, all the new knowledge acquired in the learning process may effect changes in their pre-program beliefs.

In a study on prior beliefs and cognitive changes in learning to teach, Hollingsworth (1989) reported on: (a) the patterns of intellectual change from novice preservice teacher to beginning classroom teacher; (b) the personal, program, and contextual influences or constraints on that change; (c) the role of the cooperating teacher and university supervisor in supporting intellectual change; and, (d) the nature of prior beliefs on identity maintenance while learning. Her findings included the importance of understanding preservice teachers' prior beliefs in informing supervision and university course design, the value of cognitive dissonance in practice teaching contexts, the need to rationalize classroom management knowledge before attending to subject-specific pedagogy, and the importance of planning tasks as part of a teacher's knowledge base. Since practice teaching offers opportunities for student teachers to experience teaching in real contexts, they are likely to run into situations in which they may experience cognitive dissonance challenging their pre-existing conceptions in teaching, learning and planning. It is anticipated that changes may occur in their belief and knowledge structures when they reflect on their practice. Since practice teaching offers testing grounds for student teachers to try out their skills in learning to teach, student teachers may experience transformations in their conceptions in teaching, learning and planning.

Considering the above, it is also the purpose of this study to investigate these cycles of transformation embedded in the school teaching experiences (teaching rounds) in student teachers' teacher education year. The conceptual framework for this study is then complex as it considers the development of teacher

planning through a number of lenses. These conceptions are outlined in the following figures in a manner that is intended to highlight for the reader how the development of understanding of teacher planning in this thesis recognizes and responds to a range of research influences. The conceptual framework for the present study begins with the outline of influencing features in Figure 3.1 and develops and becomes more complex through Figure 3.2 and is finally fully realized in the conceptualization applied in this study in Figure 3.3. This approach to describing the development of the conceptual framework is intended to illustrate how these changing features and research understandings have impacted approaches to data collection and analysis in this study as this major reconsideration of teacher planning takes this (almost) taken-for-granted aspect of learning to teach and reconsiders it in this new century. The importance of this process being to continually question and interrogate our understandings of learning to teach as the context and knowledge bases of teacher learning develop and change over time.

The initial conceptual framework is modeled on the presage-process-product research paradigm (Gage, 1975). The input-output model is drawn on to explain the growth in student teachers' pedagogical knowledge in lesson planning in the learning to teach process. Student teachers bring into the initial teacher education program their prior learning and work experiences, pre-exiting conceptions and knowledge structures of teaching, learning and teaching planning. Likewise, the educational philosophy, views of teaching, learning and teacher planning and the epistemological and pedagogical stance of the lecturers in university may influence how the initial teacher education course is designed. Ecological contexts of the practicing schools in terms of school management and organization, school ethos, and most importantly, the people in the contexts will either facilitate or constrain growth and development of student teachers in their knowledge, disposition and attitude in lesson planning. It is also envisaged that the school teaching experiences (practicum) will be a testing ground wherein student teachers attempt to put theory into practice, to observe others teach, and to reflect on their own practice. Transformation of their knowledge, skills and attitude towards lesson planning might then result from these teaching rounds.

Figure 3.1 **Pre-service teacher planning: the journey from learners to teachers: A process-product paradigm in the initial conceptual framework**

Internal factors	⇒	*Impinging external factors*	⇒	*Cycles of transformation*			⇒	*Growth in pedagogical knowledge*
				Time 1 1st teaching round	Time 2 2nd teaching round	Time 3 3rd teaching round		
▸ Demographics ▸ Educational background ▸ Learning / work experiences ▸ View on learning ▸ View on teaching ▸ View on teacher planning ▸ Knowledge structure in teacher planning ▸ Degree of reflective activities in teacher planning and teaching		▸ Course design: philosophy/ views/ subject methods ▸ Lecturers: approaches/ philosophy/ views on teaching and learning/ teacher planning/ choice of content and pedagogy ▸ Ecological factors in practising schools: constraints/ support ▸ Apprenticeship of observations: effects of observation on planning and teaching practices		▸ Course input ▸ Planning experiences ▸ Observation experiences ▸ Teaching experiences ▸ Reflection	▸ Course input ▸ Planning experiences ▸ Observation experiences ▸ Teaching experiences ▸ Reflection	▸ Course input ▸ Planning experiences ▸ Observation experiences ▸ Teaching experiences ▸ Reflection		• Evidence of competency (or proficiency) in planning for teaching and learning process • Pedagogical knowledge in teacher planning • Perception of the role of teacher planning in the process of learning to teach

3.4 Defining teacher planning

There is considerable research in teacher planning that provides a good base for exploring and understanding student teachers' planning for teaching. The term 'teacher planning' used in this study refers to the psychological process and practical activity in the preactive phase of teaching (Clark & Peterson, 1986) and it is used interchangeably with 'planning to teach' and 'lesson planning'. According to Yinger and Hendricks-Lee (1995), planning seeks to anticipate activities, conversations, questions, responses, and relationships in the classroom. The best that planning can accomplish is to prepare teachers to participate thoughtfully and effectively in classroom interaction. Planning produces frames for actions, preparation produces a frame of mind.

Since the 1950s, there has been a major and continual shift in philosophy, disciplinary theory, and research methods in education. Likewise, research on teaching has shifted from being dominated by psychological conceptions to incorporating theories from sociology, linguistics and philosophy. Within psychology, orientations have changed from entirely behavioural (for example, Gagne, 1985; Skinner, 1953; Thorndike, 1932) to cognitive (for example, Ausubel, 1963; Biggs, 1991; Bruner, 1960; Piaget, 1970) and socio-cultural (for example, Bandura, 1971; Good & Brophy, 1987; Vygotsky, 1978). Research methods have expanded from experimental studies (for example, Emmer, 1981; Good & Grouws, 1979; Griffins et. al., 1984) to include naturalistic (for example, Huberman, 1989; Ward, 1985) and field-based (for example, Rodgers, 2002; Stanulis et al., 2002; Wideen et al., 1998) approaches. Based on these evolving changes in focus and orientation, it is envisaged that the findings on teacher planning in this study are best understood in the context of a shifting focus and orientation and can be characterized as a shift from technical to psychological to ecological conceptions of planning. Each of these conceptions is briefly described below.

The technological conception refers to the research agenda prevalent prior to the 1970s - confining teacher planning mainly to theoretical prescriptions focusing on the form that good lesson plans should take. These models, similar to rational

decision making models, recommend four basic steps: (a) specify objectives usually in behavioural terms; (b) select teaching content; (c) organize learning activities; and, (d) specify evaluation (Popham & Baker, 1970; Tyler, 1950)

Psychological conceptions emerged when researchers began to study the actual planning processes of classroom teachers in the 1970s. They discovered that experienced teachers rarely used the linear planning model that dominated teacher education (Peterson et al., 1978; Taylor, 1970; Zahorik, 1975). The growing influence of cognitive psychology on research on teaching in the 1970s led to research focusing on describing the mental processes involved in teacher planning.

Research since 1980 has moved from examining planning as an individual psychological process and began to investigate the connections between planning and classroom interactions. Yinger (1980) discovered the complex ways in which planning deliberations were embedded in a particular teaching context. Other studies (for example, Borko & Livingston, 1989; Broeckmans, 1986; Yinger, 1995) took on a more holistic view and studied teacher planning in the ecological context of a school. Planning was described and analyzed as connected to classroom practices and teacher knowledge. It soon became apparent that both planning and classroom interaction were responsive and contextualized.

Based on the foregoing brief descriptions of the technological, psychological and ecological conceptions of teacher planning, this study sets out to examine student teachers' conceptual orientations in their planning practices.

3.5 Structure of the research

3.5.1 Pre-existing conceptions of teaching, learning and teacher planning

Considering the impact of pre-existing conceptions on the process of learning to teach, this study will explore the internal factors pertinent to student teachers' demographics and education background, their learning and work experiences, their conceptions of teaching, learning and teacher planning, as well as

the degree of reflective activities in teaching and teacher planning. These conceptions will be examined throughout the research period at successive time frames corresponding to their three school teaching experiences through semi-structured interviews and planning tasks. In particular, their conceptions in teacher planning will be elaborated through concept maps constructed at the initial stage of their teacher preparation program and compared with subsequent attempts at the end of the academic year. These are intended to offer insights into changes, if any, in these areas of research over the teacher education year.

3.5.2 The initial teacher education programs

The sites of investigation for this study include two universities with cohorts of student teachers undertaking a one-year Post Graduate Diploma in Education program. The programs of the two universities generally incorporate the education foundation subjects, subject methods and three distinct blocks of teaching practice. Such external factors as the philosophical orientations of the course design, lecturers' conceptions of teaching, learning and teacher planning and approaches they adopted in the choice of teacher planning models will be examined for its implications and impact on student teachers' pedagogical development.

3.5.3 Teaching practice and the cycles of transformation

In this study of preservice teacher planning, practice teaching can be viewed as offering points of intervention in mediating the growth and development of student teachers in pedagogical knowledge, beliefs and dispositions in teacher planning. Despite the influence of their pre-existing beliefs and conceptions about teaching, learning and teacher planning, all kinds of actions taken by student teachers in school contexts, when acted upon through interacting with their teacher education course input with various agents such as supervising teachers, lecturers, students, and peers, might bring about changes in student teachers' conceptions of teacher planning. When student teachers are confronted with problem situations such as planning for lessons and interactive teaching during their teaching rounds, cognitive dissonance may occur, challenging their beliefs and pedagogical knowledge of

teacher planning. Subsequent discussion and reflection through post-lesson conferences with supervising teachers at schools and with lecturers and peers at university could trigger student teachers to reconstruct their perceptions about the role of teacher planning in the learning to teach process.

This study will document and analyze such changes in student teachers in successive cycles of transformation. When these cycles are considered in relation to the initial conceptual framework outlined in Figure 3.1, it leads to a conceptualization that becomes more complex and interrelated as outlined in Figure 3.2.

In comparison to the initial conceptual framework outlined in Figure 3.1, the revised conceptual framework revolves around cycles of transformation. Their pre-conceptions, when interacted with agents such as university lecturers, peers, supervising teachers and students in university and school contexts, unavoidably challenge their prior learning. It is envisaged that problem situations related to the what, how and why of lesson planning would arise when student teachers are requested to plan for their practice teaching in successive teaching rounds. Their initial conceptions in teaching, learning and planning would therefore be challenged and cognitive dissonance might occur when their existing cognitive schema can no longer accommodate the differences. Such dis-equilibrium could be compensated for when they embark on such learning experiences as observing supervising teachers planning and teaching, doing lesson planning themselves and, undertaking their practice teaching. However, as is detailed later in the thesis, pre- and post- lesson reflections serve as most important attributes contributing to cycles of transformation in student teachers' repertoire in teaching and planning after each teaching round, thus effecting growth and development in their knowledge, skills and dispositions of teacher planning.

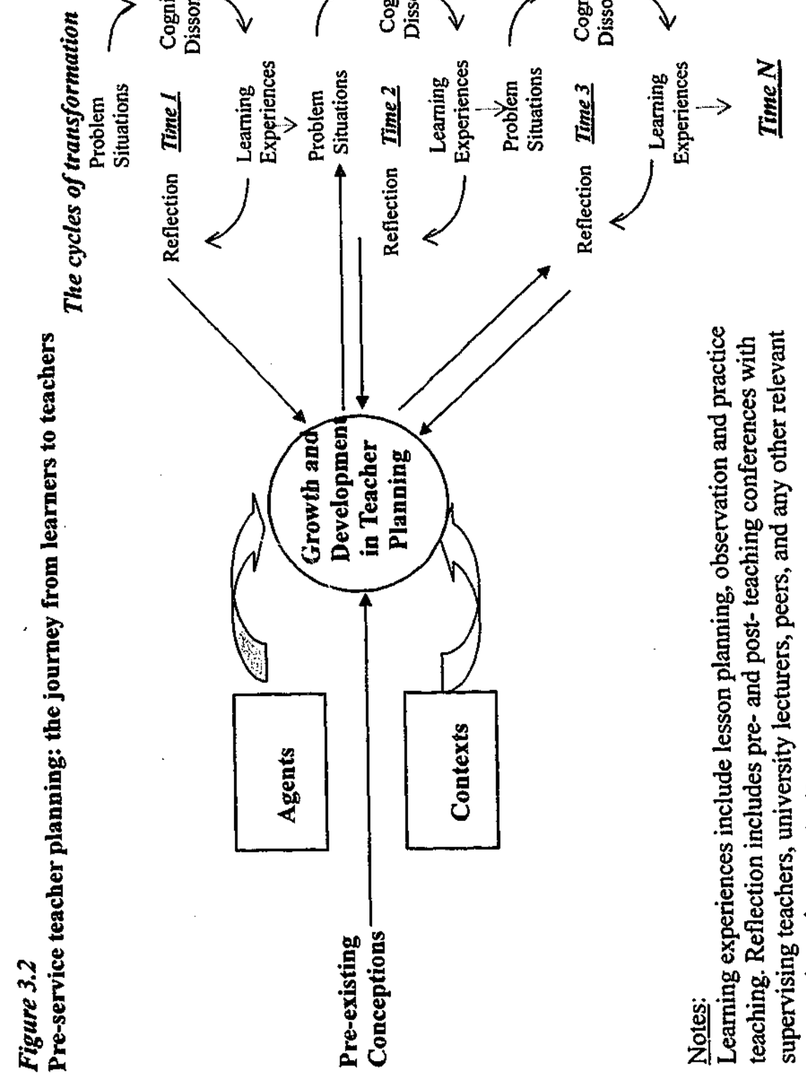


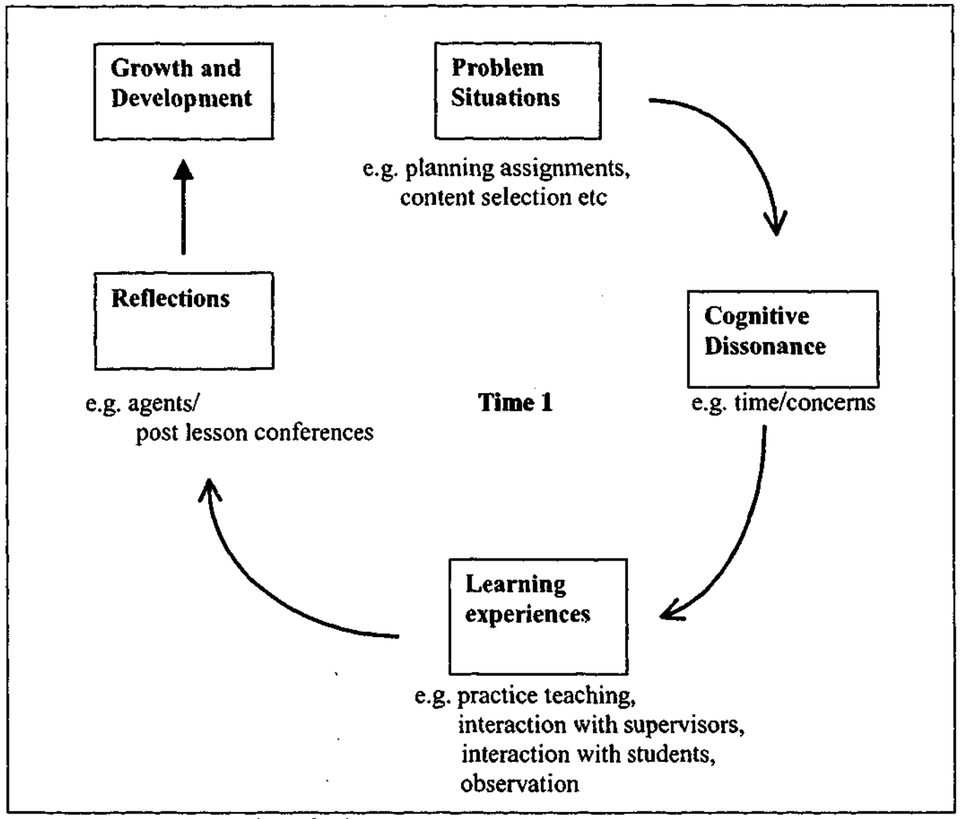
Figure 3.2
Pre-service teacher planning: the journey from learners to teachers

Notes:
Learning experiences include lesson planning, observation and practice teaching. Reflection includes pre- and post- teaching conferences with supervising teachers, university lecturers, peers, and any other relevant persons in various contexts.

3.5.4 The transformation cycles

Taking into consideration that practice teaching can be identified as mediating points in the cycles of transformation in this study, each of the transformation cycles is examined in terms of the problem situations, cognitive dissonance, learning experiences, reflections, and possible growth and development in pedagogical expertise as outlined in Figure 3.3.

Figure 3.3 **A transformation cycle in planning to teach**



Note: Time 1 corresponds to the first teaching round

3.6 The conceptual framework and research questions

In summary then, this longitudinal study traces the development in teacher planning of two groups of student teachers from two large universities over their Post Graduate Diploma in Education courses. The research attempts to examine student teachers' pre-existing conceptions on learning, teaching and teacher planning; what the teacher education program is like and what sense student teachers make of it; cycles of transformation in succession of time frames corresponding to three blocks of practice teaching; growth and development in beliefs, pedagogical knowledge and dispositions in teacher planning; factors contributing to their growth and development; and the role of teaching planning in the process of learning to teach. The research questions revolve around the when, where, who, what, why and how of teacher planning in preservice teachers and form the basis of inquiry for this study as illustrated below:

1. What conceptions of teaching and learning do preservice teachers bring to the course? What is their view on learning and on teaching? How do these views change over time?
2. What conceptions of teacher planning do preservice teachers bring to the course? How do these view change over time?
3. How are preservice teachers prepared for teacher planning? How do preservice teachers plan their teaching?
4. How do preservice teachers develop their pedagogical knowledge, beliefs, and dispositions in teacher planning?
5. What is the role of teacher planning in the process of learning to teach?

3.7 The role of the researcher

An important role of the researcher in addressing these questions was to be an agent in helping student teachers reflect on their practices at various points throughout the Post Graduate Diploma of Education course. As the researcher also attended the student teachers' lectures and tutorials, it was anticipated that a trusting and supportive relationship with student teachers would be developed that might

enhance this reflective role.

Through documentary evidence such as student teachers' unit and lesson plans, teaching notes, comments from supervising teachers and lecturers, lesson observation during teaching rounds, and post-teaching interviews, this study aims to better understand student-teachers' conceptualization of their professional knowledge and pedagogical actions in teacher planning.

CHAPTER 4
RESEARCH DESIGN AND METHODOLOGY

Introduction

This chapter describes the research design and method adopted for use in this study. It includes the rationale for the various data collection instruments and tools as well as full descriptions of the methods and strategies used in data analysis. As the basis of analysis in this study is derived mainly from documentary studies and student interviews, a good understanding of data coding is crucial. This chapter therefore aims to give a detailed explanation of the data collection and coding processes. It also discusses how student teachers' growth and development in their beliefs, knowledge, skills and dispositions are documented and coded.

4.1 Research method

This research draws largely on qualitative analysis of the data collected from documentary evidence, interviews, and field notes generated by the researcher. According to Shimahara (1988), human behaviour is shaped in context and therefore events cannot really be adequately understood if isolated from their context. The context of inquiry should not be contrived or constructed or modified; context is natural and must be taken as found. The aim of qualitative analysis is not verification of a predetermined idea, but discovery that leads to new insights. Thus qualitative researchers focus on natural settings. In this connection, Lincoln and Guba (1985) coin qualitative research as "naturalistic inquiry". This mode of inquiry has directed much of the work described in this study.

Viewed from the perspective that nothing is predefined or taken for granted, Sherman and Webb (1988) consider that ethnography is the study of events as they evolve in natural settings or contexts in process. Experience is to be taken as a whole, or holistically, in ethnography. The researcher must attend to all features of experience. Holism implies contexts. The aim of qualitative research is to understand experience as unified. Therefore, methods of inquiry for carrying out these aims

must be appropriate to the aims. The point is that qualitative researchers employ methods and strategies that are consistent with the aims of the research. They will not superimpose a general method on experience, but will be sensitive to the effects of methods on inquiry. For this reason, ethnographers are careful to employ non-interventionist strategies when conducting inquiry; yet what defines an intervention can be ambiguous as any study that involves interaction with participants can in fact be regarded as an intervention. The point is often made by contrast with science and the method of science, in which intervening in the experience is often the point at which the research begins.

Sherman and Webb (1988) assert that "qualitative" implies a direct concern with experience as it is "lived" or "felt" or "undergone". Qualitative research, then, has the aim of understanding experience as nearly as possible as its participants feel it or live with it. The idea of judging or appraising is common among qualitative research. Judging is considered an appraisal of the qualitative situation, the relation of the parts and the whole, and an indication of the potentialities that can be sought from actual situations. Judging is therefore in one sense, a means for keeping inquiry going and for keeping it pertinent to the problem and its solution.

In the study described in this thesis, the contexts were embedded in natural settings as the researcher adopted and adhered to a non-interventionist strategy as a participant observer in lectures and discussion groups, in observation lessons during practicum, and in semi-structured interviews. Data collected from these settings were considered naturalistic and, as the research progressed through a number of phases spanning the entire initial teacher education course (one year), the on-going analysis served as judging processes prompting continual impetus to keep the inquiry going. That is, much of the findings at each phase informed the inquiry at the next phase whereby initial hypotheses, views, issues and concerns were checked and cross checked in order to develop a reasonable sense of progression and building on the learning from the previous phase. In reality, this was an essential methodological aspect of this study as it would not have been possible to genuinely predict in advance all aspects of the study design as the participants' learning impacted on the nature of the study as it progressed.

Dewey (1938) noted that central to ethnographical study is the inquiry and that all inquiry arises out of actual, or qualitative, life. This is the environment in which humans are directly involved. For Dewey, each perspective, approach, or method, or what he called 'phase' of inquiry, has potential for clarifying experience and setting it on a course. The qualitative data is found in direct, but not disengaged or abstracted, experience. Experience itself is 'bounded' in a context. Dewey called this a 'situation'. When the meaning or significance of experience is 'challenged' in some way, or is unclear or in threat, people turn to inquiry as a systematic and formal means for restoring its continuity or sense of wholeness. The idea of a problem is central to Dewey's theory of inquiry. It is the focus for inquiry, the things to be settled and the test for any settlement - 'The problem' unifies theory and practice. When inquiry is motivated by a problem, there is no question about the relevancy of its product - knowledge or theory - to practice.

In essence, this qualitative research is ethnographic and clearly naturalistic. It is ethnographic as it reflects the following features put forward by Atkinson and Hammersley (1994), it has:

- a strong emphasis on exploring the nature of particular social phenomena, rather than setting out to test hypotheses about them;
- a tendency to work primarily with 'unstructured' data, that is, data that have not been coded at the point of data collection in terms of a closed set of analytic categories;
- investigation of a small number of cases, perhaps just one case, in detail;
- analysis of data that involves explicit interpretation of the meanings and functions of human actions, the product of which mainly takes the form of verbal descriptions and explanations, with quantification and statistical analysis playing a subordinate role at most.

Atkinson and Hammersley (1994), argue that all social research is a form of participant observation since researchers cannot study the social world without being a part of it. From this viewpoint, participant observation has been claimed to represent a uniquely humanistic, interpretive approach, as opposed to supposedly

"scientific" and "positivist" positions. The study adopted a naturalistic inquiry approach as the researcher was present in the learning and practice contexts of the subjects under study. Through participant observations and semi-structured interviews, themes could be generated to reveal growth and development in the knowledge, beliefs, skills and disposition of student teachers in lesson planning. The following section describes the biographic information of the subjects in the study.

4.2 Subjects of the study

Participants in this study were drawn from two large Universities in Melbourne: City University and Metro University (pseudonyms). Both universities offered teacher education courses from undergraduate through to doctoral levels. The philosophy and programs of study of these two universities will be examined and discussed in detail in Chapter 5. As a prelude to the main study, a pilot study was conducted in October 1996 in Metro University. Through their group tutor, the researcher invited two groups of three student teachers each from the Metro University to join the pilot study. Eight lecturers from the two Universities were interviewed for how they prepared their students in planning and managing the teaching and learning process, one of the core competencies as portrayed in the National Competency Framework for Beginning Teaching (Australian Teaching Council, 1996). The lecturers were also interviewed for their views of teaching, learning and lesson planing. All these interviews provided information on which the main study could be designed and conducted in the 1997-1998 academic year.

On commencement of the 1997 academic year (in February), the researcher was introduced to one of the seven 'Teaching and Learning' tutorial groups in Metro University. Invitation was extended and a cohort of six students, two males and four females, volunteered to join the study. They came from various subject methods, including Science, Mathematics, Humanities, Languages and Music. However, one male student opted out of the study for personal reasons before the main study started. Other groups of participants from City University were invited through their course coordinator on commencement of the Post Graduate Diploma in Education course (PGDE in short) in February 1997. They included two groups of student

teachers, one group of three male students from the Mathematics subject method, one group of three female students from the Science subject method, and one female student from the Science and Mathematics subject methods. In the next section, general background information of the student teachers (all names are pseudonyms) will be given to serve as fundamental biographic data for reference in subsequent chapters.

4.2.1 Participants from City University

Ada

Ada received her secondary education in a government school and was the Dux of the Year of her school in Year 12. She majored in Physics and Mathematics in her undergraduate program. Her work as a teaching assistant and as a demonstrator in the Physics Department of the University in which she studied gave her an edge in gaining some initial understanding in planning for experiments and demonstrations. She held a strong belief that learning should be through hands-on experimentation. She took Physics and Mathematics as her subject methods in the PGDE course.

Eliza

Eliza was from an independent secondary school. She majored in Chemistry and Environmental Science. Once an exchange student in an American University, she was exposed to a different teaching and learning environment. She did not have any teaching experience until she was placed in the practice school. She believed in developing students' potential as the prime focus of teaching. She took up Chemistry and Science subject methods in her PGDE course.

Frank

Frank spent his childhood in Chile and received his primary education there. He completed his secondary education in a government school. He worked between completing school and attending university and finally completed a degree in Chemistry and Mathematics. He worked as an industrial chemist and as a bench chemist. He found the work boring, as he could not interact with people. He chose to study education because he wanted to "teach kids". His subject methods were

Chemistry and Mathematics.

Saran

Saran finished part of her secondary education in Sri Lanka and part of her Year ten to Year 11 in Malaysia. She started her education in Australia in Year 12 and completed her Victorian Certificate of Education studies (final year of secondary school) in eight months' time (instead of the normal 12 months). She majored in Pathology in her undergraduate study. She was not familiar with the Education system in Australia and she assumed that students had the ability to learn whatever subject they came across. She once worked as a tutor in a community school teaching Mathematics. Other teaching experience included teaching applied chemistry to adults. Her subject methods were Chemistry and Biology.

Tommy

Tommy grew up in a country school with "dedicated teachers". He did his Environmental Engineering degree but ran into difficulties in his second year. He took a year off and then finished the degree. He was not particularly keen on taking up teaching as a career because he did not want to follow in the footsteps of his uncles and aunts. However, he wanted to do a Diploma in Education because he wanted to do Mathematics and Science in University. He chose Mathematics and Physics as his subject methods. He had a range of interests and skills and interestingly had a driving license for buses and coaches, and once worked as an outdoor education instructor running camps for scouts and youth groups. He was fond of hands-on experiences and considered himself a kinesthetic learner, a view he would like to pass onto his students through his teaching.

Tony

Tony was brought up in a Catholic boy's boarding school. He did an engineering science degree but did not manage to complete successfully in the first attempt. He left and worked in manual jobs related mainly to security for four years. He was very dissatisfied with this type of work as he considered he was not using his brain anymore and decided to enroll in undergraduate studies again. He did quite well and was admitted to an honours program. He was awarded three scholarships after that

and he continued his Masters and Doctoral studies in Mathematics. He loved learning and he viewed teaching as a challenge. He chose education to fulfil his own aspirations. Except for being a tutor to Advanced level mathematics students, he did not have formal teaching experience. He chose Core Mathematics and Applied Mathematics as his subject methods in the PGDE course.

Valerie

Valerie studied in an independent co-educational school and completed a Chemistry and Environmental Science degree. She came straight to the PGDE course after her honours degree. She considered that work as a chemist would be boring and did not consider that it offered sufficient prospects for her future. She applied for Doctoral studies but was not accepted so she decided to take up teaching. She worked as a demonstrator in first year Chemistry and she had some experience in planning for instruction. She took up Chemistry and Science as her subject methods in the PGDE course.

4.2.2 Participants from Metro University

Clara

Clara received her education from preparatory class through to University in South Australia. She had a brilliant academic record and claimed that she declined an offer to do medicine at University. She chose to study music in education in her undergraduate studies but she was discouraged from this choice by her teachers and university lecturers. However, her perseverance sustained her faith and love of being a teacher and she applied for PGDE course in Victoria. She did not have any formal teaching experience and she chose music as her methods.

Jenny

Jenny spent her secondary education in an independent school. She worked for three years in Real Estate and took up a course in audio engineering before she started her university education majoring in Medieval History and Classical Studies. Her course was interrupted twice by pregnancy. She had very positive experiences in her own education and considered that teaching could help instill a love of learning in

students. She did not have any formal teaching experience and she took up History and English subject methods in her PGDE course.

Michael

Michael received his secondary education in an independent private school and did his first degree in Geology and Geophysics with Mathematics as his minor subject. He started but did not finish his Masters degree in Seismic Geophysics. He was very confident in himself and believed in creating space and allowing freedom for students to explore and develop their own potential. Except for some experience in tutoring Year eight to Year twelve students, he did not have any formal teaching experience. He chose Mathematics and Science as his subject methods in the PGDE course.

Rachael

Rachael spent her secondary education in an independent school. She majored in Music performance and took up Statistics in Mathematics as her minor subject in her undergraduate studies. She claimed that teaching was something she was very interested in, perhaps influenced by the fact that her mother worked as a school manager. She had been working as a teacher coaching students in instrumental music for two years before she enrolled in the PGDE course. She chose Music and Mathematics as her subject methods in the PGDE program.

Susan

Susan finished her secondary education in an independent secondary school. She studied a double major Honours degree in Geography and wrote a thesis on the cognitive styles and teaching methods of Geography. She worked for a year as a training officer responsible for training adults. She undertook a formal intensive training course in planning for instruction in the United States and found the training very useful in helping her work as a teacher. She was very confident in her subject knowledge and claimed to be a very organized person. She chose Geography and Studies of Society and Environment (SOSE) as her subject methods in the PGDE course.

4.3 Data collection procedures

The research project began in February 1997 at the beginning of the Post-graduate Diploma in Education courses of the two Universities. As a prelude to the research project, documents such as education faculty handbooks, course outlines, schedules, and readings were examined for content related to the research focus. Eight teacher educators responsible for coordinating the course or teaching the subject areas were interviewed in the pilot study for detailed information on the course content and approaches as well as their perceptions of the role of teacher planning in the process of learning to teach.

On commencement of the Post-graduate Diploma in Education course in February 1997, student teachers were invited to participate in the main study. The researcher sought permission from teacher educators to sit in their lectures and tutorials throughout the course such that an in-depth study of the growth of pedagogical knowledge in the area of competency under study by their group of preservice teachers could be explored. With consent from the student teachers, semi-structured interviews were arranged at regular intervals corresponding to the three teaching rounds in March, June and September 1997.

Fontana and Frey (1994) describe an interview as 'both the tool and the object'. They regard interviews as one of the most common and powerful research methods in qualitative research. An interview represents a thinking aloud process. Cohen and Manion (1989) point out that the literature on interviews as a research tool seems to indicate three perspectives. The first view is a means of "pure information transfer"(p. 274). The second view points out that an interview is "a transaction which inevitably has bias, which is to be recognized and controlled" (p. 274). The third view expresses that an interview is "an encounter necessarily sharing many of the features of everyday life" (p.275).

Interviews have many forms and can be used in a variety of ways (Fontana & Frey 1994; Oppenheim, 1992). Taking into consideration the ethnographic nature of the present study, the interviews used in this study were primarily semi-structured,

in-depth and mostly individual and face-to-face (see Appendix 1 for the interview protocol). The time span for each was between 45 minutes to one and a half hours and each was recorded and transcribed verbatim. Transcripts were then imported into NUD.IST (1997) for processing, coding and analysis. [NUD.IST (Non-numerical Unstructured Data Indexing Searching and Theorizing) is a qualitative data analysis programme that enables the user to sort and retrieve coded data. It facilitates the researcher to summarize and review student teachers' responses to particular issues or questions and compare the responses to determine trends within specified themes. As the number of codes is not limited and sub-codes are generated on need basis, the coding system contributes to conceptualizing themes for discussion and analysis].

The semi-structured interviews are the principal source of data in this study. They were designed to elicit data on student teachers' conceptions of teaching, learning and lesson planning. Interview questions probing participants' developing pedagogical knowledge revolving around what, when, how and why of lesson planning were reiterated in each interview to detect changes and growth, if any, of student teachers over the initial teacher education course. The interviews attempted to prompt participants directly for their beliefs and knowledge about teaching and learning. In addition, student teachers were asked to complete simulated planning tasks at the beginning and at the end of the teacher education program. The tasks required student teachers to draw upon their pedagogical knowledge in planning for teaching. It was envisaged that through these simulated planning tasks, both the preservice teachers' decisions and their rationale for the decisions might surface and these decisions might serve as indicators of their knowledge, skills and dispositions toward lesson planning. Interviews were then designed to provide the opportunity to identify both explicit and implicit pedagogical knowledge embedded in the student teachers' cognitive schema. To supplement findings from the interviews with these student teachers, they also constructed concept maps on two separate occasions, one at the beginning and the other at the end of the course. Three rounds of interviews at various points of time corresponding to teaching rounds were arranged with the participants at times that were suitable to them.

4.3.1 First round of interviews (February to March 1997)

Two interviews were conducted before the first teaching round. The first interview was designed to probe student teachers' general demographic background, and to collect data on individual student teacher's conceptions of teaching and learning, including their beliefs and knowledge about the teaching and learning process, and their knowledge and initial conception of lesson planning. In the second interview, student teachers were asked to complete a simulated planning task modeled on Shulman's (1987b) project (See Appendix 2 for samples of simulated planning task and Appendix 3 for the 1st round interview protocol). The task served as a stimulus for discussion about the students' pedagogical knowledge, particularly on how they approached a planning task. Student teachers explained to the researcher the planning process in the post-task interview. They also explained how they planned their lesson and how they viewed teaching, learning and lesson planning. As a sequel to the post task interview, student teachers also constructed a concept map on lesson planning (as noted earlier). It was anticipated that the pre-map could later be compared and contrasted with the post-map constructed at the end of the Post-Graduate Diploma in Education course to offer further insight into the participants' development of thinking about lesson planning (see Chapter 12 for examination and discussion of the concept map analysis).

4.3.2 Second round of interviews (April 1997)

Students were interviewed after the first teaching round (See Appendix 4 for the 2nd round interview protocol). These retrospective interviews on their teaching experience served to collect data on how student teachers perceived and evaluated their first practice teaching experience, and how they went about planning their lessons. Participants were also prompted to reflect on the impact of the first teaching round on their conceptions of teaching, learning and lesson planning. They were also asked to reflect on the lesson planning preparation they received at University. The interview also aimed at identifying the match and mismatch between the lesson plan formats prescribed by subject method lecturers and the participants' actual lesson plan formats used in their teaching practice.

4.3.3 Third round of interviews (June 1997)

On completion of the second teaching round, students were interviewed for their perceived differences between the first and the second teaching rounds (see Appendix 5 for 3rd round interview protocol). They were asked to identify the contextual factors that they considered supporting or constraining their practice teaching. This interview was intended to probe for a more in-depth understanding of their views of lesson planning with regard to aspects of elements such as a good lesson plan and, factors affecting their planning practices. The prime focus was to find out if there were any conceptual changes in these student teachers' conceptions of lesson planning.

4.3.4 Fourth round of interviews (October to November 1997)

The last round of interviews (see Appendix 6 for 4th round interview protocol) was conducted after the third teaching round. Students were asked to complete a simulation-planning task modeled on the first one they attempted in their first interview. This task was designed to elicit further data on these students' conceptions of teaching and learning, factors effecting changes, and their pedagogical knowledge in lesson planing. They were also prompted to compare and contrast their beliefs and conceptual understanding of lesson planning as at the end of their initial teacher education course. The interview also probed for evidence of a conceptual framework that students might have developed to guide their practice. As a sequel to the interview, student teachers also completed the post-concept map for lesson planning.

4.3.5 Other sources of data

Documentary studies

Course information materials such as course outlines, program of study, practice teaching handbooks, and curriculum materials for the Post-Graduate Diploma in Education course were collected from course coordinators and lecturers. These

program materials provided information of the logistical arrangements, content materials and pedagogical knowledge for foundation studies and subject methods from the teacher educators' perspective. They provided fundamental background information on the course structure and, more importantly, brief descriptions of the course content. All of these helped to create an understanding of the perceived prerequisites of some aspects of learning to teach through the initial teacher education programs.

Field notes from participant observations in lectures, discussion groups and tutorials

The researcher 'sat in' the Teaching and Learning lectures and was attached to the tutorial group from which participants were enrolled throughout the PGDE course. Field notes (Miles & Huberman, 1994) were taken in the tutorial groups that immediately followed each lecture. These field notes helped the researcher identify and trace the development of student teachers' conceptions on teaching and learning. The lectures and particularly the tutorials were regarded by student teachers as one of the major shaping forces in effecting conceptual change in student teachers' views of teaching and learning. These field notes then offered supplementary information and data pertaining to student teachers' understanding of conceptions of teaching and learning.

Classroom observations

Classroom observations were conduced in the three teaching rounds. The focus was on how students planned and managed the teaching and learning process in their practice teaching. Performance indicators as depicted in the Teacher Performance Assessment Instrument (TPAI) were used as basis for the observation schedule. Reference was also made to the supervision forms from both Universities. Post-observation discussion was also held to discuss issues focussing on the relationship between planning and teaching. Student teachers' lesson plans designed for the teaching rounds were collected for analysis. (see Appendix 7 for samples of student teachers' lesson plans designed for the first and third teaching rounds).

Concept maps

Concept maps are an effective tool for eliciting people's cognitive scheme in a particular theme (Novak & Gowin, 1984). In the two concept mapping exercises, student teachers constructed concept maps of the topic 'lesson planning' in spatial formats of their choice. For student teachers from City University, concept mapping was included as an integral part of the students' handbook and it was taught in lectures at the early stage of the PGDE course. The sample of a concept map drew on Science topics and they were in hierarchical structure. However, concept mapping was not formally taught in lectures in Metro University. Approaches to concept mapping were also supported through reference to "*Probing for understanding*" (White & Gunstone, 1992). As the researcher did not intend to intervene in student teachers' concept mapping strategies or choice of key concepts for the task, no clues or assistance was rendered in the construction process. Participants were free to choose any key concepts and use any spatial forms deemed appropriate to them.

The concept-mapping task was administered to student teachers on two occasions. They mapped out their key concepts without reference to any materials related to the topic and they completed the task in approximately thirty minutes. All key concepts and derivatives were their original ideas and the rich array of key concepts in the various formats produced revealed one way of viewing their conceptual understanding of lesson planning. Indeed, ideas identified in the pre-maps incorporated mainly the key elements introduced in the prescribed lesson plan templates and could perhaps generally be described as reflecting a rational technical conception. The post-maps listed new elements related to students' characteristics and these maps illustrated a greater understanding of teaching, learning and lesson planning from a personal perspective. Concept maps developed for this study could then be regarded as offering one way of 'viewing' participants' perceptions of lesson planning in ways that might not have been accessible through interviews (see chapter 12 for details of analysis of the pre and post concept maps)

4.3.6 Summary of data collected in the study

In this study, attempts to document the growth and development in knowledge, skills and dispositions of teaching, learning and lesson planning include:

1. Documents including course materials, schedule and reading materials.
2. Lesson plan formats from subject methods.
3. Student teachers' lesson plans designed for teaching rounds.
4. Simulated planning tasks.
5. Concept maps.
6. Interview transcripts.
7. Field notes in participant observations in lectures and tutorials.
8. Field notes in observation lessons.

Summary for data collected in the pilot study and in the main study are tabled as follows:

Table 4.1 **Summary of data collected in the pilot study - 1996**

Nature of materials	*Quantity*
Course materials	2 sets
Interviews	14
Written responses	2
Lesson plan samples	2

Table 4.2 **Summary of data collected in the main study - 1997**

Nature of materials	*Quantity*
Course materials	2 sets
Participant observation field notes and related materials	2 sets
Concept maps	21
Lesson plan formats from subject methods	9
Planning task records	17
Student teachers' lesson plan from teaching rounds	27 sets
Observation records for 3 teaching rounds	14
Interviews	32

4.4 Search for themes – Data coding

In analyzing the data collected, a thematic approach was used through which a theme was envisaged as a main category of concern that prompted student teachers to reflect on their conceptions of teaching, learning and lesson planning. The base data for the analysis in this study were derived from sources supplied by the student-teacher participants as they progressed through their one-year pre-service education course from February through to November 1997. As interview data constitutes the main data source, coding of interview data was clearly a prerequisite to data processing and crucial to subsequent interpretation and analysis. In the first round of interviews conducted in February and March, coding was initially defined in accordance with the interview schedule devised to facilitate probing student teachers' demographic background, prior belief and conceptions in teaching, learning, and lesson planning. In the search for themes in the semi-structured data collected in the first round of interviews, all interviews were transcribed verbatim and read through meticulously to look for common or contrasting themes in their prior conceptions of teaching, learning and lesson planning. As student teachers progressed through the course, the three rounds of practice teaching served as powerful intervention to their thinking whereby student teachers' pre-existing conceptions were challenged and re-constructed. In the course of the initial teacher education program, cognitive dissonance on the views of teaching, learning and lesson planning occurred for student teachers and was referred to in their interviews in a variety of ways. Student teachers' learning experiences at university, as well as their teaching and learning in schools and through peer or self-reflection gave rise to growth and development in various conceptual themes. In order to accommodate these changes identified in the interviews, coding schemes were refined and new codes and sub-codes were created to accommodate changes identified in student teachers from the second interview onwards. Details of the coding and analysis procedures are illustrated as follows.

4.4.1 Initial coding schedule

Initial coding of the unstructured data was identified with the need to elicit

information on student teachers' education background, initial conceptions on teaching, learning and lesson planning. These codes were fundamental to categorising data elicited from the first round of interviews. As the study focuses on the students' development, the coding system tended to revolve around the what, why and how of changes in their conceptions in teaching, learning and lesson planning.

The first set of themes was derived mainly from student teachers' demographic data to develop a broad picture of the participants. The first set of themes derived from analysis of the first round of interview therefore included: base data (Theme one); education background (Theme two); views of expertise in learning (Theme three); view on teaching (Theme four); view on learning (Theme five); and lesson planning in general (Theme six). As with data of this nature, there were sub-categories within each main code. All the interview transcripts for the four rounds of interview were coded against the sub-themes of each category. The initial coding schedule is reported in details in Appendix 8.

4.4.2 The revised coding schedule

From the second interview onwards, Theme one and Theme two were not used again for coding as they were only relevant in setting up vignettes of the participants in the study. Through ongoing analysis, Theme three soon merged with Theme four and therefore was not used again for interview transcripts. Further to this, new codes emerged as new themes were identified in the second round of interviews. These new themes related mainly to changes identified in student teachers' responses to issues raised in the second round of interviews. As student teachers began to articulate changes to their conceptions of teaching, learning and lesson planning, themes such as 'Conceptual changes in lesson plan', 'Factors affecting lesson planning', 'Elements of good lesson planning', and 'Conceptual changes in lesson planning' were added to the coding list. Accordingly, the revised set of themes designed for the second round of interviews included: view on teaching (Theme four); view on learning (Theme five); lesson planning (Theme six); conceptual changes in lesson planning (Theme seven); factors affecting lesson planning (Theme

eight); and conceptual framework (Theme nine). Except for some new sub-themes created to accommodate the changes identified, the revised coding system was adopted for use in all of the following interview transcripts. The revised coding schedule is attached as Appendix 9.

In the following sections, illustrations of the final coding with definitions of each code are given. Explanation and brief examples of how analysis of data was conducted are included. One fully coded transcript will be included to illustrate how the coding process worked across all data sources.

4.5 A brief summary of themes for data coding

Theme one Base data

This set of codes and sub-codes categorizes such demographic data of participants as gender and age group. Since the demographic data was constant throughout the period of study, it was not referred to again.

Theme two Education background

The codes and sub-codes under this theme reports participants' general education background. Except one participant who possessed a doctoral degree in Mathematics, all other participants were Bachelor degree holders majoring in a wide range of disciplines, including Mathematics, Physics, Chemistry, Geography, History, Languages, and Music. Their subject methods taken up in the Post-graduate Diploma course corresponded to their subject specialty. Again, this set of constant data was not coded from second interview onwards.

Theme three Views on being experts in subject discipline

Initially, this set of codes and sub-codes attempted to elicit participants' views of the criteria for becoming experts in particular subject disciplines. Three criteria were identified as knowledge, skills and problem solving capability. However, as Theme three was infrequently used for data from the second interview onwards, it was dropped and was not used again for subsequent interview data coding.

Theme four Views on teaching

This theme focuses on student teachers' views on teaching. The codes and sub-codes evolved from data reflected their perceptions on teaching. The codes include knowledge transmission, transferring of a positive attitude towards learning, and concerns toward students. As the course progressed, conceptual changes developed and new codes were adopted to reflect the changes. Factors influencing the changes were also included for subsequent interview data.

Theme five Views on learning

Theme five codifies student teachers' views on learning. The codes include construction of meaning, acquisition and application of knowledge ad skills. Some student teachers saw learning as a process while others saw learning as ·itive. Conceptual changes in their view of learning were codified from the second interview onwards.

Theme six Lesson planning

Codes and sub-codes for this theme includes steps and procedures in lesson planning, elements of lesson plans encompassing a wide range of sub-codes such as objectives, content, learning activities, evaluation, time frame, contextual factors related to schools and students as well as reflection. Codes and sub-codes on concerns and knowledge base pertinent to lesson planning were also brought up in the interview and they related closely to the elements of lesson planning. In addition, codes on conceptual understanding and sources of knowledge for lesson planning were also used to record student teachers' responses in the interviews.

Theme seven Conceptual changes in lesson planning

This set of codes describes changes in student teachers' perceptions in lesson planning. Such changes generate sub-codes like orientations, personal framework, mental images, routines, flexibility, personal needs, knowledge growth, focus and procedure as well as thinking process. These changes were evident in students' responses in interviews from the second teaching practice onwards.

Theme eight Factors affecting lesson planning

This set of codes refers to the factors affecting lesson planning. These factors are related to people like supervisors, students, and peers; contextual elements like time frame, university requirements and school contexts. Personal work style and more importantly, changes in their view on teaching and learning, triggered their reflection and affected their lesson planning practice.

Theme nine Conceptual framework

This set of data refers to student teachers' reflection on their understanding of a conceptual framework for lesson planning. The codes include elements of a good lesson plan, use of the lesson planning conceptual framework, source of knowledge as well as the rationale behind the framework. This set of codes and sub-codes emerged in the last round of interviews and they echoed student teachers' growth in their conceptual understanding of lesson planning.

4.6 Recognizing the cycles of transformation

In the present study, the Cycle of Transformation model introduced in Section 3.5.4 is drawn on to examine Theme three through to Theme nine in order to recognize or identify changes, if any, in student teachers' knowledge, skills and dispositions associated with these Themes over the research period. In essence, the model of Cycle of Transformation is derived from the work of Dewey (1933) and Schön (1987) with an adaptation from MacKinnon's (1987) reflective cycle. There are three basic stages to the reflection model, namely, framing, reframing and resolving. In the model of Cycle of Transformation, these three basic stages correspond to problem situation (framing), cognitive dissonance and learning experience (reframing), and finally reflection and growth and development (resolving).

The problem situation is regarded as the first phase of the cycle of transformation. This is the stage where the student teacher runs into a problem situation, confusion, or puzzle triggered or activated by university requirements, people, or contextual situations at schools. The frames of reference constructed in

response to the problem allow the student teacher to focus on certain features of the situation. They may direct the student teacher to look for a new definition of the problem situation and plan his or her course of action to resolve it.

Cognitive dissonance may occur when the preconceptions of the individual student is challenged in contexts like teaching practice, in discussion and tutorials or in interviews. Nevertheless, through the reconstruction of the experience in the teaching rounds and at the university, student teachers may develop new insights or discoveries about the problem situation and form new ways of looking at it. How the problem is reframed depends on the degree of impact the new learning experiences have cast on the pre-existing repertoire of knowledge and theory, skills and attitude, and values of the student teacher.

Reflection may bring the problem situation to a resolution phase. However, he student teacher may not necessarily resolve the problem completely. But the way the problem is dealt with may have led the student to experience a new way of seeing the problem, a new attempt to problem solving, a better understanding and a new appreciation of the problem, or growth and development in his or her capabilities in handling similar problems in future.

To detect the nature of change, the researcher attempted to lead the student teachers through reflective cycles. Their existing belief, knowledge, skills and values were challenged and they were prompted to express their new understanding in the interviews. As the course progressed over the year, it was found that student teachers' reflection grew more mature and sophisticated. In the next section, various examples were outlined in an attempt to demonstrate how the data have been analyzed using this model.

4.7 Illustrated examples of data coding

In order to demonstrate how coding was conducted in relation to students' knowledge, skills and disposition in aspects of their views on teaching, learning, teacher planning, and conceptual changes identified in interviews at different time

frames corresponding to their practice teaching, it was necessary to consistently refer to the interview transcript data and analyze it accordingly. Except for the first three themes (Theme one, Theme two and Theme three), the following transcript excerpts are examples of data coded under the categories of the revised coding scheme. Each extract shows the respondent, the date of interview and the context of interview. These examples are designed to illustrate how the coding appears when applied to data and how such categorization then shines new light on the learning about these participants' changing views through the conceptual framework of Transformation (described above).

4.7.1 Illustrated examples for Theme four - Views on teaching

Clara, first interview February

Context: Clara was asked to explain her initial conception of teaching.

> *It is hard because I am trying to adjust my thought on teaching at the moment. How I was taught, I enjoyed and I liked to. I don't think that is entirely how I am going to teach because I think that a lot of that is just learn this now. It is kind of imparting knowledge to me and I have to learn it. And I know what. That is what is required of the syllabus and I learned it. And I like to incorporate more than just the syllabus into my teaching.*

At this initial stage of the Post Graduate Diploma Education course, Clara espoused a view of seeing teaching as knowledge transmission. She had a very strong sense of imparting what she knew to students.

Clara: second interview after the first teaching round, April

Context: Clara was asked to explain her conception of teaching after the first teaching round.

> *But overall, I thought I wasn't too experimental with what I did. I mostly followed what the supervising teachers did, and their styles and their way of teaching. So, it wasn't too much of myself. But I thought about it and felt good. Teaching is what I'm supposed to be observing. I watched my supervisor, did the lessons and I did it like that with other classes later on the same lesson that she did.*

Her reflection demonstrated a continuation on the part of the student as an apprenticeship of observation in the classroom. The way that she modeled her teaching on the supervising teacher's teaching was common among student teachers in the first teaching round.

Clara, third interview after the second teaching round, June

Context: Clara was asked to express her views on teaching after the second teaching round.

> *Exactly, that is it. I was a bit confused as to what to teach them because I didn't want to just teach. I wanted a reason for teaching what I wanted to teach. If you wanted me to teach guitar to year 7, what is my reason for doing that? Does he want them to learn guitar techniques, or does he want to use that as a method something else to do with music. What is the reason for doing that? I think as a teacher, you have to be very caring to your students' needs. Getting out of them what they want in life is more important than just them forcing them to do something because you want them to.*

In fact, student teachers' views of teaching were generally idiosyncratic in nature. Some expressed teaching as love of knowledge (theme 4.2). The following statement expresses the idea vividly: 'passing on my love of my subject area and that sort of thing, I will be able to draw that out maybe one kid out of every thirty. But it would be worth it' [Jenny, Feb 1997].

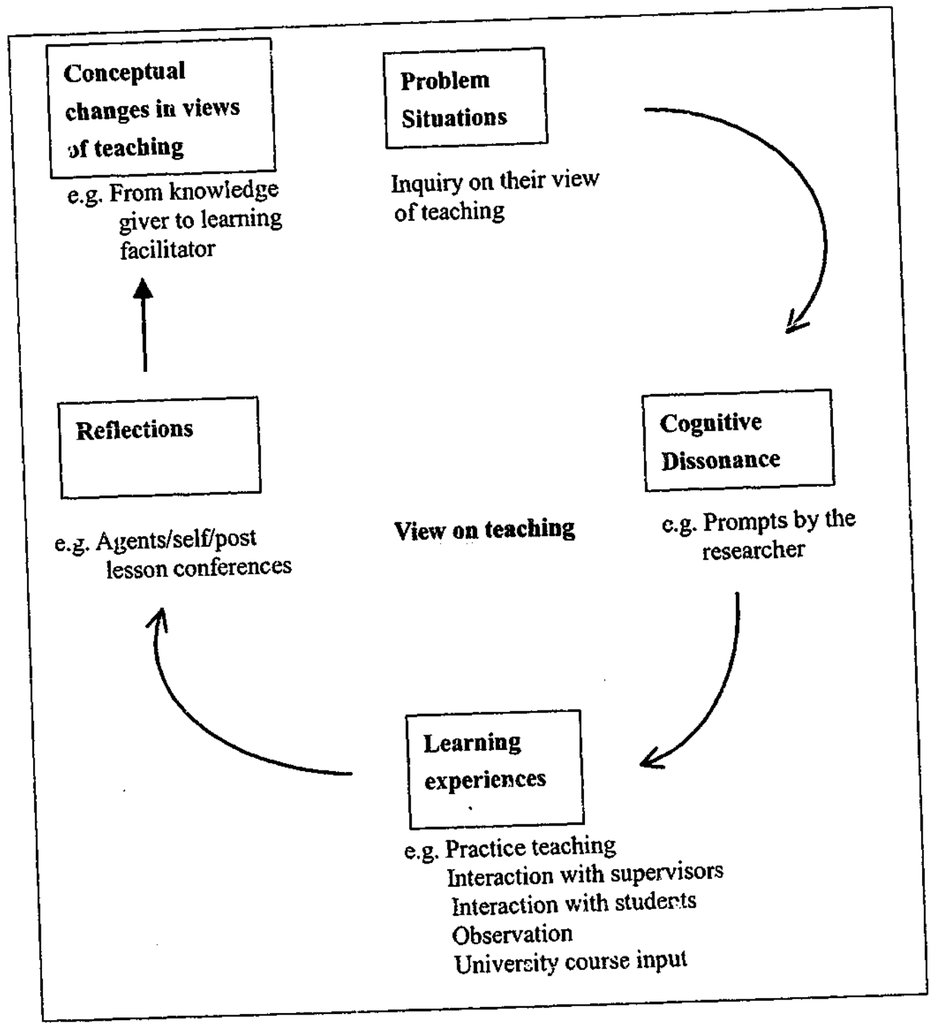
Clara, final interview after the last teaching round, October

Context: Reflection on views of teaching on completion of the simulated planning task.

> *Well, I don't know what I said at the start. But my view on teaching now is to facilitate learning. So the teacher is not there as the almighty knowledgeable imparter. A teacher is almost like a servant to the student. Because the student is the one who needs to get something and you will help them to get it. So I think the teacher's role as a kind of servant as well as leadership to the student. Help them to feel valued, help them in becoming active, and then help them to learn.*

From the above-illustrated coding examples, it is clear that Clara's view on teaching shifted form being a knowledge giver to that of a learning facilitator. Factors attributing to these changes are summarized in Figure 4.1, as follows:

Figure 4.1 **A transformation cycle in views on teaching**



4.7.2 Illustrated examples for Theme five - Views on learning

Jenny, first interview, February

Context: first interview on completion of the simulated planning task.

> *My concept of learning if you sit down and talk to someone, you come away from it feeling good and feeling like you have done something, then it is learning. But I quickly discovered from kids that learning is having a sheet of notes at the end of it, having something concrete. Most important thing for learning, I would say retention of useful knowledge. That is what I think learning is, being able to retain the information over a period of time and be able to utilize it in whatever fashion.*

Jenny's initial conception on learning relates very closely to her view on teaching. She focused very much on knowledge acquisition and application at the end of her teaching. In her response to the question on her view of teaching, she responded that the, 'Most important thing in teaching is to be able to direct knowledge in a way that it will be absorbed and understood by the learner. That is what teaching is'.

Jenny, third interview, June

Context: Jenny was prompted to reflect on her views of learning after the second teaching round.

> *The students were hurdle jumpers, clear and simple. Do the worksheet, hand it in and forget it. That is right. If they were given something meaningful to them, if they were allowed to have some choices, fine. But if they are working out of their books which are prepared for them, which have worksheets, which always follow the same format, always recall, fill in the blanks, answer this question, then I think they will only be doing it to get marks. Those who didn't care about their marks just wouldn't do it.*

Jenny's reflection on learning on the part of the students was triggered by the school's ecological constraints which she experienced in the second round. The traditional teacher-centred approach and teachers' inadequacy in subject knowledge and their difficulties in handling students' unruly behaviour impacted on Jenny's high expectations of the local "renowned private high school" in the neighbourhood in which she was brought up. She thus saw students' learning as instrumental in

getting them through the examinations.

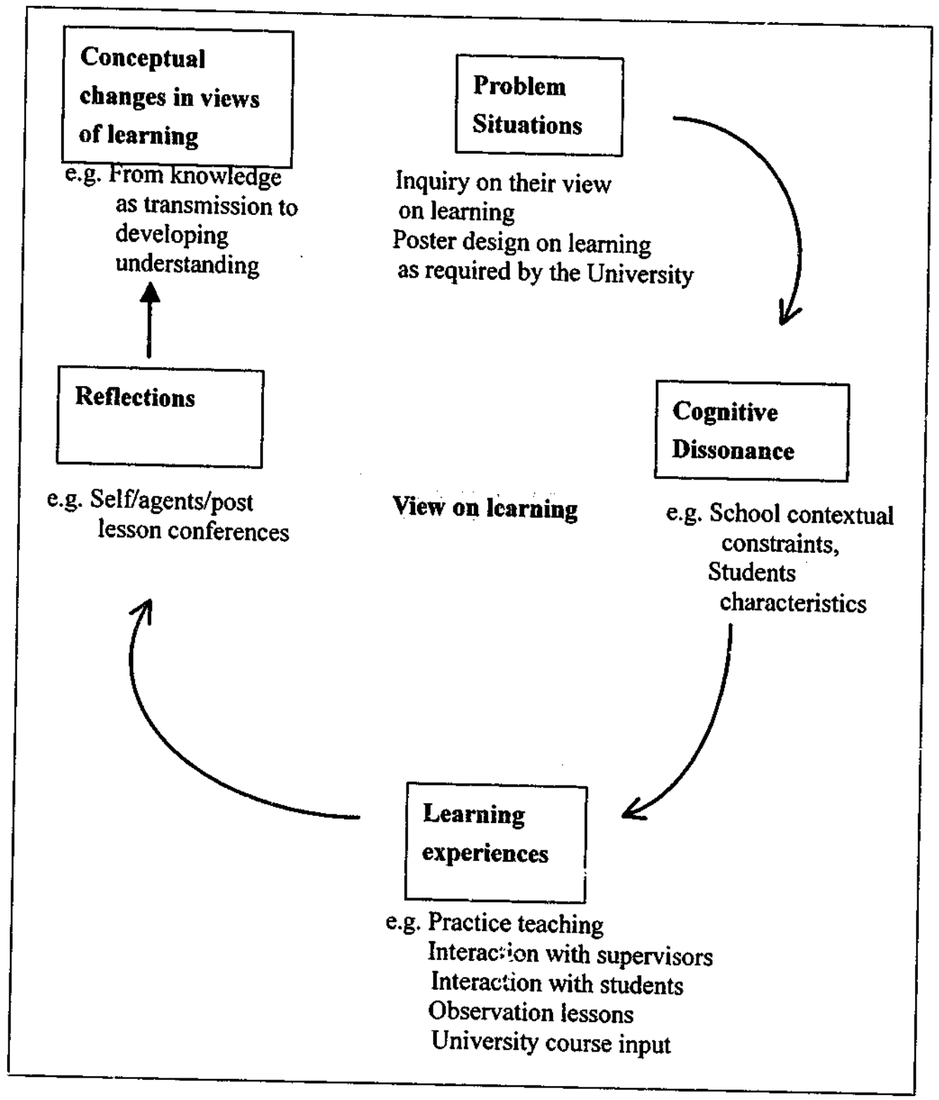
Jenny, fourth interview, October

Context: Jenny was asked whether her view of learning had changed over the initial teaching education course.

> *OK. I think it is changed. I don't know if I can define it now. It can be broken down into different aspects of learning. I don't think there is any overall definition that I really believe in. Learning is different for every person. It constitutes different things. You know, one of the exercises we had to do in TAL [Teaching and Learning] is the poster on our idea of learning. I found that extraordinarily difficult. I ended up breaking up into one little aspect of learning that I understood from my own experience mostly. I found it really hard to even sort of articulate what my idea of learning might entail. Learning is so complex. It's not sort of just simply knowing the content. Learning needs time in order to develop understanding. I can't define it. So, that is probably a change.*

Jenny has discovered the complexity of learning over the course. She experienced a shift in her views on learning from knowledge transmission to the development of understanding. Similarly, changes in her views on teaching occurred, thereby impacting on her lesson planning practice. The following figure summarizes the transformation in her views on learning.

Figure 4.2 **A transformation cycle in views on learning**



4.7.3 Illustrated examples for Theme six – Lesson planning

Susan: First interview, February

Context: Explaining the procedure she followed in her lesson planning.

> *I am a very sequential person. So, I go through my little template. And I think the big thing I do is I take these knowledge objectives and form them into questions as the content organizer and then for each question I work out different activities. You know, the how. And I think I look up the how bit to make sure that the skills, and values whatever have been covered as well.*

As Susan had some training in instructional design, she picked up the lesson plan formats suggested by her subject methods readily and used them in the teaching rounds. She spelt out very clearly her procedure in planning a lesson in the second interview.

Susan: Second interview, April

Context: Explaining the procedures she developed for herself in the first teaching round.

> *That is right. So I knew I had one lesson to go, how was I going to adequately wrap up that part of the topic? I guess that was the aim. They helped me work out the aim of the lesson. Although I pretty much always go back and have a look at the aim after I have written everything. All the activities, I just make sure that they match up. I don't think I have to change it but it is worth looking at it again. And then I pretty much go through as it is. I don't go and do the activities first. I work out what I want them to know first, the knowledge, the skills and the values and attitudes. And then I look through resources or brainstorm ideas that might go into the lesson. Activities that might go into the lesson and then I do type them in. Do some cut and paste and fiddle around and work out my plan. Fit in with the timing and the rest of it.*

In the above transcript, it is evident that Susan began to build up her repertoire in lesson planning. Nevertheless, her focus was clearly on multiple aims and objectives as required by her subject method lecturers. She also focused on activities and learning resources. The orientations were still on how to get through the content she identified for the lessons. Evaluation was still not on her agenda of

planning. However, her planning for the second teaching round reflected a more comprehensive planning focus, which included consideration of students' performance on completion of the lesson.

Susan, third interview, June

Context: Explaining her concerns in lesson planning after the second teaching practice.

> *Yes, I need to know. What I want to achieve? What should be appropriately given? Where they are up to and what they know all that sort of things? I need to know where I am going to get my information. I want to know the keys things that I want them to know at the end of it or able to do at the end of it. And then work out strategies on how and make sure I fit in the time and juggle that round a bit. And I want to know how I am going to know if they achieve what I wanted them to. And the good one at the end of day from thinking about what I am going to do if it doesn't go according to plan.*

In the above quotes, Susan exhibited her concerns towards students' prior knowledge and she began to take note of students' performance at the end of her teaching. She was also aware of the need to reflect on her own planning and prepare for any contingency if the plan did not work well for the lesson. In the last round of interviews, concern over students' responses became more prominent in her reflections.

Susan: fourth interview, November

Context: Reflecting on her lesson planning experiences after the last teaching round.

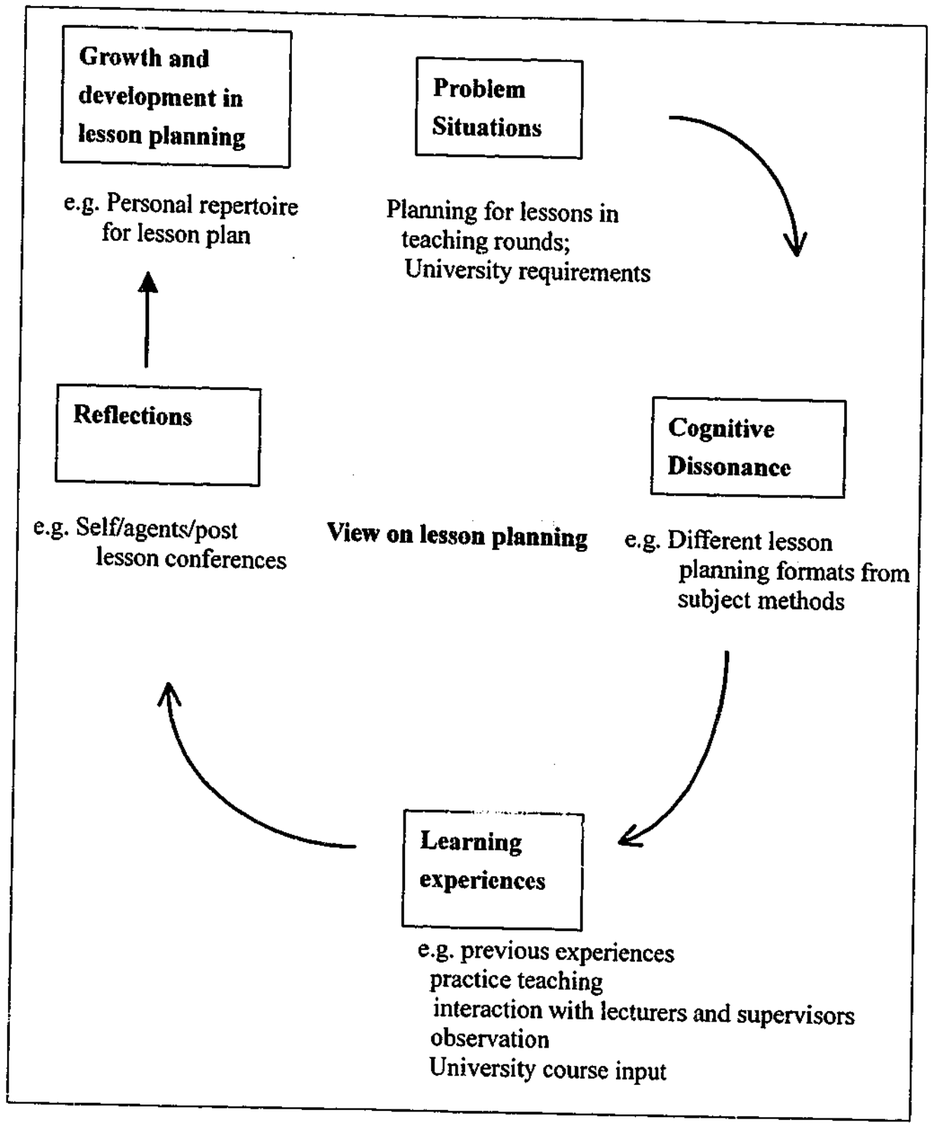
> *It came more naturally to me now. Just going through the process of knowing what you want to achieve, and how you are going to do it. So that you are clear. Because students will pick on you if you don't know what you are doing and what you want them to do, I don't think they ultimately appreciate that either.*

But Susan recalled that she found lesson planning input from the university to be somewhat overlapping.

It was quite messy at the start of the year because we need to know about lesson planning before the first round. That was the obvious thing to happen. But we were learning about it from all over the place. We had it in bo'n our methods. So it was done in subject methods all differently. I am n ot sure if it was done in TAL. I can't remember. But I remember [lesson planning] being done separately by methods. I was thinking this is something everyone needs to do. Why don't they do one big lesson planning thing in TAL instead of offering them in the methods. It seemed that there was a lot of overlap at the start.

Susan built up her lesson planning competence over the initial teacher education course. Based on her work experience, university course input, as well as own reflections, she built up her own repertoire in lesson planning. She began to demonstrate abilities in analyzing and challenging the way she was trained in lesson planning. The cycle of transformation in her views on lesson planning is summarised in Figure 4.3 as follows.

Figure 4.3 **A transformation cycle in views on lesson planning**



4.7.4 Illustrated examples for Theme seven – Conceptual changes in lesson planning

Tommy, first interview, May

Context: Reflecting on lesson planning his first teaching practice experiences.

> *Yes. In your first round, you are really teaching what your supervisor would teach. Teaching from their notes more than from your own. Because you try to concentrate on your class management rather than what you teach them. More important in the first round to understand how students interact and how you interact with students. That was the primary focus. So it loses focus on doing your lesson planning. That is as second issue.*

Tony, first interview, May

Context: Reflecting on lesson planning after his first teaching practice experiences.

> *Honestly, I think of boring. It is boring. I also feel that it is a little bit of waste of time because when you get to the classroom, everything is in my head working so fast, I can't look at a page and take off what I want to see. I have doubts: if I want to get something off the page [in the lesson plan], I have to have huge headings down the page... The way that lesson plans are being structured that we are told to do in mathematics. I didn't really get a lot out of them. When I walked into the classroom, I almost do not have them.*

Both Tommy and Tony did not ascribe to the needs in lesson planning at the beginning of the course. They saw lesson planning mainly as some kind of formality fulfilling the requirements of the teaching round. However, change in their view was evident in the last interview. Tony spoke of the thought processes he had undergone over the course.

Tony, Last interview, October

Context: Talking about his views on lesson planning after the last teaching practice.

> *Yes, I thought it was a burden and an annoyance to start with. I see it as a valuable preparation for teaching, I really do. I think it forces me to go through the lesson basically. It forces me to teach the lesson once before I go into the classroom. Maybe I am not teaching the lesson to the fullest extent of it. But I need to go through the process of this is what we are going to do and this is how we are going to do it.*

He further elaborated his views on his command of knowledge and skills in lesson planning. He affirmed that:

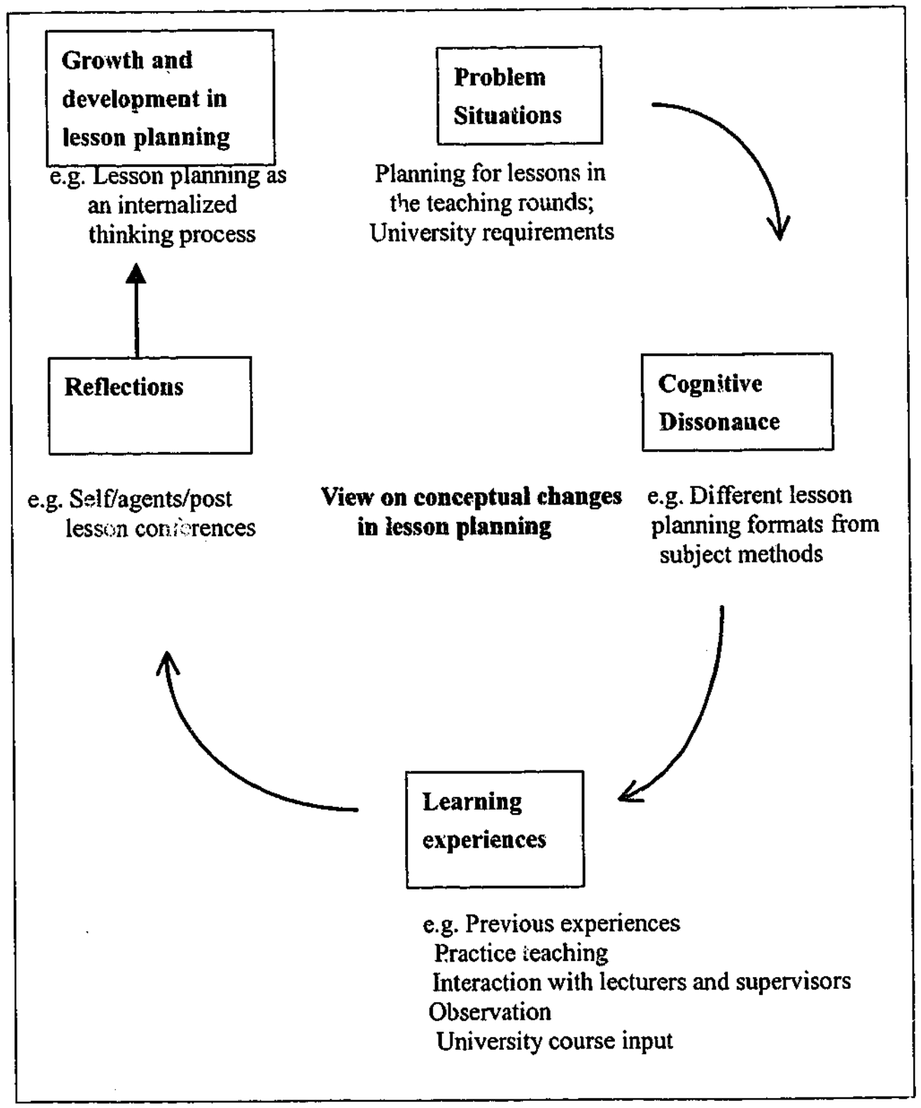
> *I think it has been internalized already. But yes, once it is internalized you don't have to explicitly use it all the time. It becomes part of your process of thinking. No, I don't need as much written down scaffolding. I don't need as much things on the page. Things become more instinctive and I don't have to write them down to know how to do them. I don't have to write down time for a joke. Certain things become more spontaneous and it is a waste of time writing down all the time. There is no need to say, ask student questions to elicit students' level of understanding or assess how much work that students have done. You just do it automatically. You just go around looking. You have more time for students.*

He spoke of the need for lesson planning in teaching,

> *Definitely necessary to start with. I don't think it is necessary down the track. Once you have taken on board for yourself, it becomes part of you. There is no need to keep reinforcing it all the time. But it needs to be a foundation activity for teaching. You couldn't possibly go into the classroom and teach unless you have spent time preparing what you are going to teach. Because only a brilliant person is spontaneous enough to make up a lesson on the spot.*

Like his classmates and his counterparts at Metro University, Tony had undergone changes in his views on lesson planning. The cycle of transformation is summed up in Figure 4.4.

Figure 4.4 **A transformation cycle in conceptual changes in lesson planning**



4.7.5 Illustrated examples for Theme eight – Factors affecting lesson planning

Rachael, Third interview, June

Context: Talked about people affecting her lesson planning after the second teaching round.

> *The diploma in Education course is, largely so. Because it introduces me to the whole concept [of lesson planning]. Some of my supervisors, to a degree. They didn't tell me much about how I would do it. But just watching their styles and talking with them after lessons also helped. OK, how far would you normally get [from them]? Like, what do you think the problems they [students] would encounter? I was really using her knowledge. Probably, a little bit from my TAL lecturer. Not that he had done with us lesson planning but just his method of taking us in tutorials. Not what he has actually done but how he has opened up my thinking processes.*

Like her classmates, Rachael's personal reflection also triggered changes in her way of planning her lessons. However, she chose to do the reflection on her own. She commented,

> *OK, that is more a choice because of the way, as a person, I tend to, like I said, I analyze. So, discussing with someone would not necessarily be a very good way for me. I need to stand back. Think about everything first and then discuss with people. If somebody tells me, what do you think, this is a topic, what would you think about doing it. Give me a day to think about it.*

Rachael, Fourth interview, October

Context: Rachael was prompted to reflect on the factors contributing to her development in lesson planning.

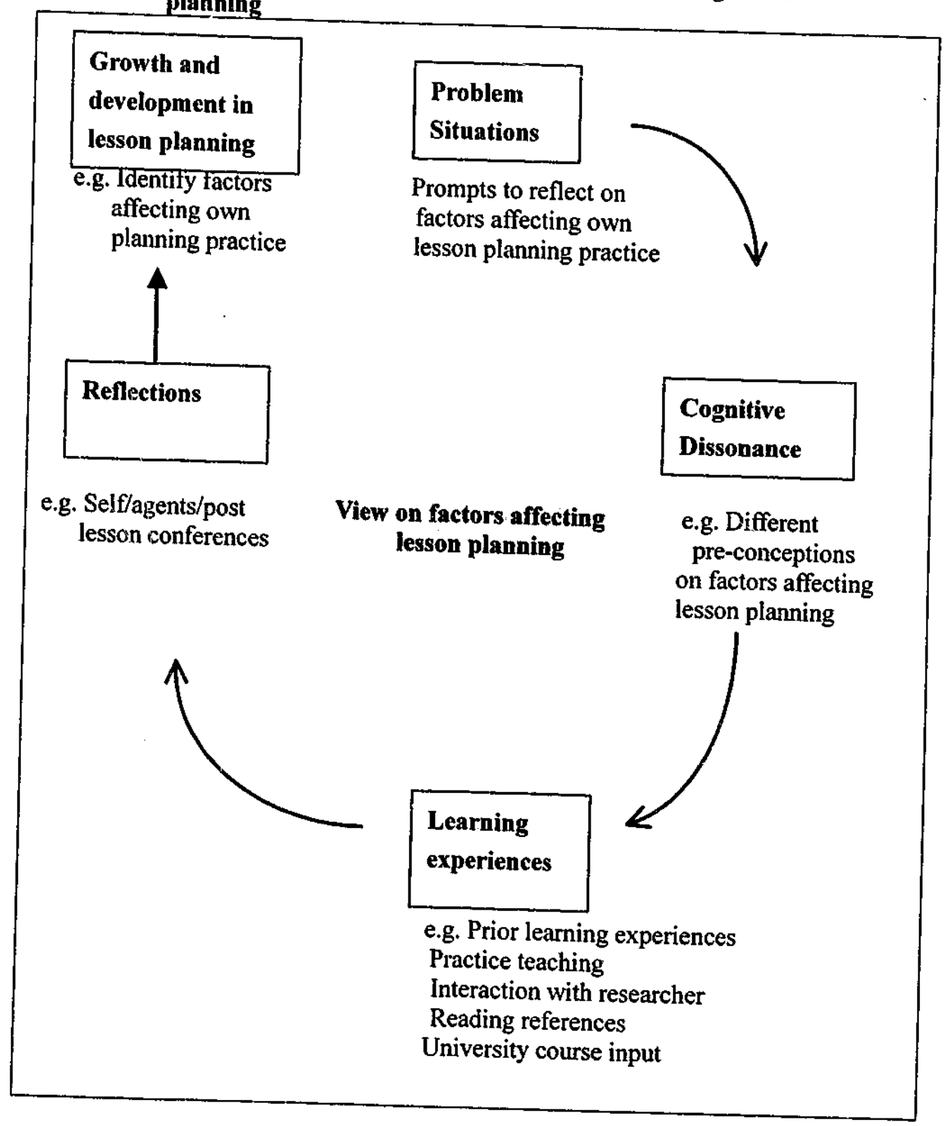
> *Experience as a teacher in the teaching round. Experience again, because it is hugely important. It makes a big difference. Having other people to talk to about it. People going to the same place I was. And then also lecturers and people in teaching rounds. Not just the experience of teaching. People in the rounds include supervisors and other teachers if they were willing to discuss with you things they learned.*

In the same interview, she also recalled that she drew teaching ideas from references and used them in her teaching practice.

> *Books. Presently I am studying the styles of learning. I have been reading by other teachers, books by philosophers. Actually the theory of child development and the practicality of putting that into classrooms. They gave me ideas. Things like PEEL [Project for the Enhancement of Effective Learning], which I have started researching into. I bought the book ages ago. I haven't read for a while but I was reading it before the last teaching round. Going through it, looking at what it is dealing with. It is helping me to develop teaching ideas most.*

The above quotes illustrate that factors affecting Rachael's lesson planning especially after the second round included mainly the university input, school experience, people, and teaching ideas from reading. The cycle of transformation is summed up in Figure 4.5 as follows.

Figure 4.5 **A transformation cycle in views on factors affecting lesson planning**



4.7.6 Illustrated examples for Theme nine - Conceptual framework

Michael, fourth interview, October

Context: Michael described his experiences developing a personal framework from the lesson plan formats suggested by the subject methods lecturers.

> *Now, apart from that. I think it is totally necessary to go in with a framework. And the framework can be flexible and it is going to change. But there is a framework to go in with. Hopefully, when something happens, you can then jump out of your framework and change it to the way you need it. That is experience. A new framework around a new jump. Frankly speaking, lesson planning really draws upon very many different areas of knowledge: knowledge of subject, the knowledge of how to teach, the knowledge of students, knowledge of context, and how students learn. Lesson planning is a testing ground. When you plan, you need to consider a number of factors if you are to plan effectively.*

When he was asked if the Post-Graduate Diploma in Education course had given him any conceptual framework in lesson planning, he went on analyzing the rationale behind the lesson plan formats suggested by the subject methods.

> *The science framework is very much on what you are doing, what the children are doing, why they are doing at the way you are doing. What learning outcomes happen in the next step down. It is very much linked to the child. For mathematics, what is the background of the child, what is the introduction, what are the general points you are going to cover, and how you are going to do it. And then some kind of feedback assessment at the end. Science is very much in the action of it. Every step you do, ask why?*

In contrast, Mike's classmate, Jenny, explained how she went about developing her own conceptual framework.

Jenny, Fourth interview, October

Context: Jenny talked about how she came to develop her personal framework for lesson planning.

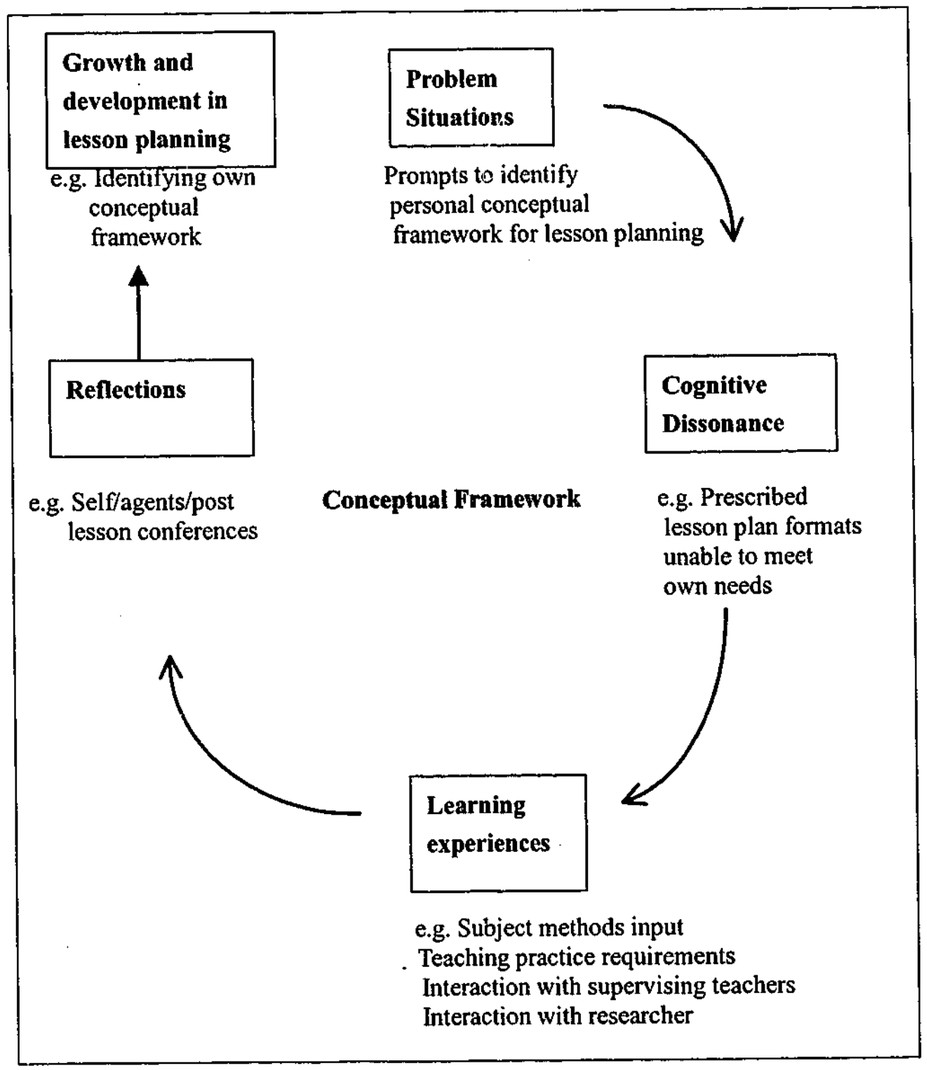
> *We were given the format as a model of how to do it. There isn't any great recognition although it happens quite often. If they gave us the conception why we might do it, we might very well be able to come up with the how ourselves. It is nice in the first couple of weeks to have it as a crutch. But planning a lesson is such a personal thing anyway. I think we were given valid reasons and concepts to work into a lesson plan. Everyone who comes into the Diploma in Education knowing that we are going to have to learn how to plan lessons. I am sure that they have strong ideas of why that might be. I don't think there is enough input for students from the Diploma in Education on why we would plan lessons and how we might go about planning our lessons.*

She also considered that a conceptual framework was necessary in lesson planning. But she thought that there should be reasons for doing the lesson planning.

> *Yes, I mean if you don't have any valid reasons for doing it, you are not going to do it. I am sure a lot of my colleagues who are going to go out there will never write a lesson plan and never think about a lesson plan. But I will because I can see some validity in doing it. But I didn't have that conceptual framework when I came in [to the Diploma in Education course]. It would be possible to go through this course without developing one.*

Mike and Jenny built up their conceptual framework in lesson planning over the teacher education course. Not surprisingly, the framework for lesson planning was derived from the lesson plan formats rendered by the subject methods. Mike's reflection on the procedures in lesson planning helped him scaffold his own framework, which in turn, guided his planning in the teaching practice. Jenny saw the reason behind doing lesson planning and she had confidence in herself developing the 'how' (planning procedures) from the theoretical models. At the end of the teacher education program, they both saw the need to plan lessons and considered the personal conceptual framework helpful and practical. The cycle of transformation in the development of conceptual framework is illustrated in Figure 4.6.

Figure 4.6 **A transformation cycle in conceptual framework**



4.8 Summary

This chapter has been written as the touchstone from which the elaboration and discussion of results may be viewed as valid evidence for the changes in the growth in knowledge, skills and disposition in lesson planning of the student teachers as outlined in the following chapters. It is envisaged that the extensive descriptions and explanations presented in this chapter about the nature of data coding will assist the reader to examine the findings without unnecessary referral to the methodology. The explanations and examples outlined in this chapter are so designed to give a clear picture of the approach to both the methodology and data analysis adopted in this study. Detailed descriptions, in particular concerning how data are analyzed in context are further referred to in subsequent chapters and limitations of the specific methods are discussed at a later stage.

Chapter 5 will focus on the training experiences received by student teachers in the universities. Chapter 6 explores student teachers' initial conceptions in teaching, learning and lesson planning. Chapter 7 examines the impact of teaching practice on their pre-conceptions while Chapter 8 attempts to analyze students' conceptual changes in teaching, learning and lesson planning. Chapters 9 through 11 move into analysis of the interview data and leads into an explication of the cycles of transformation in lesson planning. Chapter 12 examines students' cognitive schema on lesson planning through the concept mapping exercises. Chapter 13 draws on previous discussion and concludes the findings by analyzing the role of lesson planning in the process of learning to teach. Chapter 14 then draws this study to a conclusion.

CHAPTER 5
LEARNING FROM PRESERVICE TEACHER EDUCATION PROGRAMS

Introduction

How student teachers learn to teach in teacher education programs reflects, to a great extent, the vision and mission of the programs in which they are enrolled. Although students' prior beliefs and conceptions might shape how they make meaning out of the programs, the learning experiences they go through are important variables in shaping their conceptions on various aspects of the learning to teach process (Grossman, 1990).

The teacher education programs from which participants in this research project were recruited differ in the philosophy and rationale behind their curriculum organizations, thereby creating different learning experiences for the student teachers in the Post-Graduate Diploma courses. This chapter describes the basic premises underlying the programs and considers how student teachers are prepared for the task of teacher planning in their initial teacher education programs.

5.1 Features of the teacher education programs: reflective versus holistic curriculum

The two Post Graduate Diploma in Education courses from which participants in this research project were recruited enlist cohorts of graduates from first degree programs (for example, B.Sc., B.A., B.Econ.) The courses are of one year's duration fundamentally designed for developing secondary teachers specialised in teaching subjects related to the disciplines in their undergraduate studies. While the nature of the courses is similar, each of the Diploma in Education programs takes on a different philosophical and theoretical perspective, as reflected in the organization of the curriculum. This chapter first examines the features of the teacher education programs from which participants in the research project are enrolled, then probes the teacher educators' conceptions on teacher planning, and, finally, how student teachers are prepared for teacher planning in their initial professional education.

5.1.1 A holistic view on teacher education curriculum organization

City University has a very long history in training secondary subject teachers. The Diploma in Education curriculum consists of three components - Education Studies, two Teaching Methods and School Experience. The course is constructed around a series of groups. According to the course coordinator, such an orientation has taken into account of the fact that the synthesis of educational studies and practices is something personal. Through breaking up the whole Diploma in Education structure into a series of conversational groups, student teachers are led through, or introduced, to the curriculum by tutors who relate what students are learning in Education Foundation studies to what they are learning in Teaching Methods and teaching practices. Lecturers teaching education studies generally have a teaching method discipline background so that they would be able to address such issues as teaching and learning, teaching practices, and structure of schools. They also tend to have a good grasp of education theory and its application to teaching and are encouraged to continue contributing within their disciplines. The curriculum leadership in the Diploma in Education course lies with this group of convenors.

Lectures on Education Studies, followed by seminars, are organized each week. A minimum of three hours per week is reserved for group seminars conducted by group convenors who will talk about the students' own development in relation to understanding teaching. It is partly a biographical approach whereby group leaders assist students in personally structuring their learning experiences. As part of the education studies requirements, students have to complete three electives offered as options run for six two-hour sessions. Teachers from schools are brought in to teach the methods, each of two-hours duration a week. Three block teaching practice rounds, each of three weeks duration are arranged at different points in the course. The first commences in the fourth week of the course immediately after the three-week special orientation program. After the last teaching round, student teachers return to the University for one week before the course officially concludes.

While the groups are the main integration forces, the group convenors have control in many respects over the personal construction of the curriculum for each

student. The course is designed in such a way that much of the actual teaching of the education theory is transferred to schools. Students actually teach and talk about teaching on a theoretical basis out in seven schools during the year. The teacher education program takes on a clinical approach whereby students are exposed to a problematic context setup, which they will go into and explore as groups.

Early field experience is incorporated in the course. On the third hour of the first day of the program, students are paired up and are required to teach a group of year 10 students. The arrangement is to effect a discursive reconstruction of the student teachers themselves as teachers from the very outset of their initial program. The course coordinator, Ronnie, described:

> *They have to do it from the outset. This is day one, they write in here (the course handbook). I said to them, in an hour, you will be teaching. On the board, out in the front, you will find your partner. And I mailed to them the chapters of the text before the course. They actually read the text.... That is a terrific middle of the road school. The kids aren't in uniform. I take year ten because it is closest to their age and not yet specialised.... And the kids have hairdos, Mohawk. The boys are much larger than the female student teachers. It is all of that physical self-theme: how to stand up and talk to them. By putting them in pairs, that immediately diffuses that issue. It is not just them. There is someone to talk to. Someone else to blame if something goes wrong. And they are in a group. There are about ten of them (student teachers) in each classroom. They work in pairs. They would have about five pupils in each group. But they have them for nine lessons.... So, we met at the school. The program is three hours or half a day at school. We talk about what they are going to do. They then do it and we talk afterwards about what came out of that. Sometimes it is retrospective and sometimes it is prospective. I talk about what they are going to do to enlighten their experience next time. [Ronnie: May]*

Ronnie sees learning as a historical and social constructivist process in that student teachers' prior conceptions in teaching are challenged and re-constructed in the course of the teacher education program. The teacher education program is structured in such a way that reconstruction of student teachers' self image is through maximizing the amount of social discourse about what learning is and what teaching is and how they are different. Student teachers are introduced to the full uncertainty and complexity of teaching and learning early on since the course coordinator believes that it takes a very long time for some people to come out of themselves.

The conversational groups are seen as a way to bridge and therefore link teaching and learning. The integrated curriculum intends to develop student teachers' capacity to synthesize theory and practice, evaluate, and use constructive criticism of their own work and of the institutions in which they will teach. How the philosophy and rationale behind the holistic curriculum impinges on the preparation of student teachers for the tasks of planning to teach will be examined in Section 5.5.

5.1.2 Teacher education as reflection

The Metro University is, comparatively, much younger than City University. Its Faculty of Education offers a wide range of teacher education programs through undergraduate to doctoral levels. Similar to the teacher education program offered at City University, the major components of the Diploma in Education program of the Metro University also consists of foundation subjects, teaching methods and practicum. All the foundation subjects and teaching methods carry the same weighting of credit points while satisfactory completion of the practice teaching is mandatory for the award of the professional qualification. The curriculum is organized into themes of studies in the education foundations subjects, Teaching and Learning, and Social Foundations of Schooling. In the first term before the first teaching round, emphasis is placed on providing opportunities for student teachers to experience teaching in various contexts. Each student is required to do micro-teaching in his or her tutorial groups. They go out to schools and they have a session of one-to-one teaching. Through an orientation camp, student teachers work in groups and teach a small group of first year high school students. The rationale behind these arrangements is to help students become more comfortable with the idea of what it means to be a teacher. From there, the program moves on to engage the student teachers in thinking about how they might teach. When students come back from their first teaching round, the course concentrates heavily on learning theories and how that might inform their teaching. The next shift is to concentrate on the teaching itself. Then it shifts back to focus on learning again. By the end of the course, student teachers are introduced to assessment of teaching and learning drawn from the themes of studies discussed in the foundation subjects throughout the academic year.

Lectures on foundation subjects are organized every week, followed by tutorials where further explorations of the themes presented in the lectures are discussed. The tutors stay with the tutorial group for the duration of the course but they are not necessarily teaching method lecturers. Emphasis is placed on the foundation subject – "Teaching and Learning" in the first semester and "Social Foundations of Schooling" will only come in after the first teaching round. University lecturers conduct lectures, tutorials and workshops for teaching methods of various lengths of contact hours ranging from two to six hours. Three block teaching practice rounds, each of three weeks duration are arranged at different points of time in the course. The first begins six weeks after the course commences. The course concludes four weeks after the last teaching round.

Fundamentally, the course is a teacher preparation program developed from a set of principles. It is envisaged that:

- when planning and implementing the teacher education program, the needs and prior experiences of the teachers must be considered and yet the emphasis shifts as the course progresses;
- collegiality facilitates the transition from a learner of teaching to teacher;
- the teacher is a learner actively constructing ideas based on personal experience. He or she develops in such areas as the teaching and learning process, subject knowledge, understanding of self, and social foundations of schooling;
- it is important to model the teaching and learning approaches upheld in the program;
- teacher participants should see the teacher education program as a worthwhile experience;
- teacher education programs are inevitably inadequate in that it is the starting point of learning to teach, not an end unto itself. (Northfield & Gunstone, 1997)

According to the course coordinator, Jerry, student teachers should continually be placed in situations and contexts such that they learn through being in

a learning position and learn through experience by being in the experience. In the interview, he professed that:

> *...If you are preparing people for teaching, then what are some of the things that are important to do? Well, you have to build up their confidence so that they are able to handle the class and all the problems associated with it. You have to challenge their view of their content knowledge and how teaching is something more than just show and tell.... So a good student teacher is someone at the end of the PGDE (Post Graduate Diploma in Education) course who is thinking about his or her teaching in terms of learning, not in terms of delivery of information. [Jerry: October]*

To develop student teachers' self image as teachers, the experiences that students bring to the course are acknowledged. At the outset of the course, students are required to describe their images of teaching and education through a media presentation. Self-image is further developed through teaching whereby feedback and support are elicited from peers and teacher educators. A level of trust and confidence is established through tutorial groups led by the same tutor throughout the year. Peer teaching and micro-teaching provide opportunities for student teachers to try out teaching in such an environment that they can see themselves in action and also be seen by others as being in teaching situations where constructive feedback can be provided. To address the problem of teaching a large group of unknown pupils in the first teaching round, the one to one teaching opportunity is arranged to help establish confidence such that student teachers feel that the pupils value their efforts. The course recognizes the importance of reviewing experiences with other teachers over extended periods of time and reflection is seen as an essential feature of the program. Lecturers create opportunities and positively reinforce students in reviewing and reflecting on their own growing experiences. Students are required to keep journals and to contribute to discussion.

Indeed, reflection is a very important element in the course. Attempts have been made to run the program in an integrated fashion such that students will not see the course as being made up of separate units. Efforts are made to relate the foundation subjects to teaching methods. Students are encouraged to see the program as a conceptual whole rather than discrete parts. According to the course coordinator, students learn from experience but experience alone is not enough. Therefore,

reflection on experience is considered crucial to establishing links between theory and practice.

5.1.3 Analytical frameworks for the teacher education programs

Both programs emphasize the subject-specific nature of secondary school teaching. But due emphasis has been placed on education foundation studies such as educational psychology, continuous assessment, sociology, and philosophy. As reflected in the curriculum documents and in the interview with the staff, the programs focus on preparing "reflective practitioners", teachers who are reflective about their teaching and the functions of schooling. Norms of professional collegiality also exist in the two programs; student teachers are encouraged to see each other as resources in the process of learning to teach. The programs also offer a fairly consistent view of learning as the active construction of knowledge, although different terms are used when the concept is introduced to student teachers.

In analyzing the features of the programs that influence the development of pedagogical knowledge in teacher planning of prospective teachers, it is helpful to put the programs into a larger context by looking at frameworks that try to define programs of teacher education. Griffin (1986), for example, analyzes the features of effective clinical teacher education and identifies seven critical features, four of which apply to both the teacher education programs described above. The four features include a well-articulated purpose, participation and collaboration, a developmental progression, and an analytical and reflective perspective toward practice. A second framework, developed as part of the National Centre for Research on Teacher Education (Cohen, 1986), proposes three features related to the academic quality of teacher education programs. Posed as dichotomies, these features distinguish between the portrayal of knowledge as static versus knowledge as evolving and indefinite; teacher education students as passive empty vessels versus students as active creators of knowledge; and teaching as transmission of knowledge versus teaching through discourse. In both courses, knowledge is seen as ever developing, students actively engage in dialogue reflecting on their own learning and teaching experiences.

A third framework, developed by Katz and Raths (1988) expresses persistent dilemmas in teacher education as dichotomies. Arguing that the solutions to each dilemma are mutually exclusive, they suggest that how a teacher education program resolves these dilemmas contributes to its impact on students. They raise issues such as covering breadth of content versus a focus on mastery or depth; offering eclectic programs or thematic programs; emphasising current needs of students as opposed to future needs; adoption of an evaluative stance or a supportive stance; teaching towards current school practices or encouraging innovative practices; and whether to assess students globally or specifically. The two Diploma in Education programs in the present study resolve these dilemmas in favour of fair coverage of content; a thematic approach; a supportive relationship among lecturers and students, and global assessment of students. While the courses are designed to meet current needs of students, they serve both current and future needs and encourage innovative practices of students.

A final framework for thinking about the philosophical stance of the courses derives from Farnham-Diggory (1994), who outlines three predominant models in teacher education - the behavior, apprenticeship and development models. A teacher education program derived from a behavior model will place preference on what teachers need to know and be able to do in schools. The apprenticeship model places an emphasis on socializing teachers to fit into existing school contexts. The development model will focus on building teachers' confidence in their own learning and teaching, as well as comprehending their own experiences. According to Northfield and Gunstone (1997):

> *A teacher development perspective would seem to imply a teacher approach where the teacher educator is able to form a long-term relationship with a small group of teachers assisting them to interpret their own experiences. If possible the value of collegial learning must be demonstrated while acknowledging that teaching has isolating pressure and working and sharing with others will require levels of trust and confidence which are not always possible in school contexts. (p. 54)*

With emphasis being placed on a group structure enabling the establishment

of a relationship among the university staff and novice, the two programs clearly ascribe to a development model in teacher education in its orientations. Two frameworks discussed above suggest the importance of a coherent and consistent vision of teaching and learning: what Griffin (1986) terms "purpose" and Katz and Raths (1988) name "thematic". Programs that feature explicit visions of teaching and learning may be more powerful interventions than programs that lack this conceptual coherence. Judging from the curriculum organization and philosophical orientation, the two professional education programs appear to ascribe to a development model in teacher education. Having examined the general setting of the professional education programs in which the neophytes participate, the following section examines how teacher educators perceive teacher planning.

5.2 Conceptions of teacher planning

How teacher educators perceive of the concept of teacher planning meshes inextricably with their view on teaching and learning. It can well be argued that conceptual frameworks, models of planning, or lesson plan formats they advocate and adopt for use in the teacher preparation program reflect their perception of teaching and learning. The following section explores their conception of teacher planning and the approaches they employ in the dissemination of the learning experiences.

5.2.1 Teacher planning as developing teachers' working knowledge

The course coordinator of City University, Ronnie, believes that lesson planning starts way back with students' choice of subjects. He considers that planning is based very much on epistemological considerations of what prospective teachers like to teach and what they would like to know. Because of the previous choices novices have made of what not to learn, he believes that they will run into problems if they once saw their career as being that of, for example, a micro biologist, but now find themselves teaching botany. If they have not studied botany, this may become a big issue in teaching secondary science. He believes that prospective teachers must think about how they get to know their subject area until

they feel confident enough to teach it. This involves reconstruction of their knowledge base in the subjects student teachers are trained to teach. For the group of novice teachers at City University, lesson plans are provided first as units of analysis. At the beginning of the course, lesson plans are seen as a crutch to act as pedagogical rules for student teachers to reduce anxiety to a point where they might be able to function in school. As the course progresses, student teachers are prepared for the planing task focusing not only on individual lessons, but also on the process of learning in a variety of ways. They have to reflect on the kind of inquiry associated with different teaching and learning contexts.

In Shulman's (1987a) model of pedagogical reasoning and action, planning is about comprehension, transformation, instruction, evaluation, reflection, and new comprehension. This model is adopted and codified as teachers' working knowledge and is introduced to student teachers in the initial teacher education course at City University. A Teacher's working knowledge is categorized into understanding, interpretation, instruction, evaluation, reflection, and new understanding. Interpretation is further sub-divided into framing, portraying, producing and staging. Arguing that planning was part of a reflective inquiry and the focus was on learning, Ronnie proclaimed that:

> *I want them to think about the learning and not just the behaviours. Ideas have to come in. What ideas did you have about this lesson? What was the big idea? What was the pedagogical move? And to see that how the lesson is structured around an idea and getting it across. The drama has to be in the knowledge. It (knowledge) wasn't something you will import to the lesson, or to just have a game to entertain. It has to come out of something. So that is why I am not alarmed when people are saying I have got something to teach. I worry about the way (that) people say they don't think they have. [Ronnie: May]*

The conception of lesson planning first as a survival kit, then as reflective inquiry is illustrated in how student teachers are prepared in teacher planning. This will be discussed in Section 5.3.

5.2.2 Teacher planning as anticipatory reflection

According to Jerry, the course coordinator of the Post-Graduate Diploma in Education program at Metro University, the context for learning about teaching lies in the experiences of being a teacher and a learner. The thinking that underpins the pedagogy adopted in his teaching is to let student teachers discover the "why" of teaching through his explicit demonstration of the "how" of teaching. Subject content knowledge, though important in teaching, is used as the vehicle to help student teachers better understand teaching and learning. He contends that learning does not occur through being told, but by being taught. So, learning episodes are created for student teachers so that they better understand what it is like to be a learner of the content. Student teachers learn by experiencing how the content is taught and having an experienced person guide them through the episode such that in the end student teachers will consider their own developing practice and make informed decisions about their teaching. Since Jerry believes that learning is a collaborative adventure best experienced in a group setting, good relationships and trust must be built among the participants in the learning environment. Yet, individuals' independence should be respected and acknowledged if good relationships are to be maintained and made use of in the collaborative learning enterprise. As learning is seen as more than knowing and teaching more than telling, teaching needs to be purposeful and this is important from both the teacher's and the learner's perspective. Challenges from across the teaching and learning environment create cognitive dissonance when alternatives to teaching and learning are explored. Accordingly, some form of risk taking in a safe learning environment, such as in the university setting, might help student teachers practise things they would not normally do in a classroom. Such risk taking is considered a necessary stepping-stone to encourage students to take risks in their normal teaching in the school context later. Yet, the crux to learning about teaching by student teachers is linked to their ability to reconsider and reframe their own actions, and their willingness to inquire into problematic situations. In this regard, reflection is viewed as the cornerstone to the process of learning to teach and his (Jerry's) explicit modeling of his own practice aims to encourage the student teachers to approach their teaching in ways similar to those that are exemplified in the university

classrooms.

When the conception of learning and teaching is operationalized in planning for teaching, it is seen as an organizer of what student teachers will do. The requirement to write lesson plans in the teaching round is a way of formalizing student teachers' thinking processes. Much emphasis is placed on designing learning activities to engage school students in the process of actively constructing knowledge. The themes for planning revolve around four fundamental questions: what is the teacher doing?; what is the student doing?; why you [teacher] are doing it?; and, what are the resources and timing for the activities? A final note is on the self-evaluation or the reflection on the lesson. The rationale of such an approach is to try to get the student teachers to see, from the start, what the lesson will look like from their perspective and from the school student's perspective as a learner in the class. Although lesson planning is considered important, there is no particular conceptual model for lesson planning. The notion behind such a practice is to avoid using unfamiliar terminology in the daily business of planning for teaching, and novices appear to accept the everyday language more readily. In his view, the main function of teacher planning is:

> *...anticipatory reflection. It is trying to consider what might happen. How you might respond to it? And how you might learn from it? So there is a need for the student teachers to consider the learning they want to create and how they might teach in a way that encourages that learning. That is planning. [Jerry: October]*

How this conception of teacher planning as anticipatory reflection is disseminated to student teachers will be discussed further Section 5.3.

5.2.3 Teacher planning as a thinking process

Laurie, an experienced teacher educator in a humanities subject at Metro University, portrays teacher planning as a process of defining what the teacher wants for the class. This points to some fundamental questions a teacher needs to resolve. What does the teacher want to achieve in terms of understanding and skill development? What are the steps the teacher is going to use to achieve them? What

are the steps in evaluating the learning? How is the teacher going to resource the lesson? It is a thinking process whereby the teacher thinks about how he or she is going about managing teaching and learning from the beginning of class to the end of class. What is the role of the teacher and what is the role of the students? Laurie believes that student teachers must be allowed to construct their own learning. They must be engaged and be active in the process. They must take into account the mixed abilities of their pupils. As an important starting point in planning, student teachers must have some clarity as to why they are going to do what they are going to do. They need to have clear objectives in what they are going to do in a lesson. In addition, there must be the knowledge, and there must be the skill development. They need to identify resources since resources are the key to the way that the lesson is framed. Since learning activities are central to accomplishing the objectives for the lesson, the lecturer purposefully models the kind of teaching strategies she expects the student teachers to use in their classroom.

As the course progresses over the year, Laurie attempts to integrate much deeper issues that influence and inform teacher planning. She looks into how education policy informs teacher planning, how curriculum changes impact on teacher planning, how the big issues on the education agenda impact on what teachers decide to do and how they intend to do it. Planning becomes more complex and student teachers are expected to look at a wider range of issues that need to be integrated into a whole unit plan. In other words, teacher planning should move from the specific to the more global as student teachers progress through the course. The process keeps repeating throughout the course and the lecturer adopts a spiral approach when structuring planning experiences for the novice teachers. Although there is not an explicit conceptual framework for lesson planning, the lecturer believes that there needs to be expectations and there needs to be a model for the students to follow and for them to develop such that the elements in a lesson will not be left out. Without a conceptual model for the lesson plan, it could degenerate into a loose series of statements about what student teachers want to achieve. Therefore, it is important to plan the lesson and think it through, put it down on paper and be able to be in a position where the plan can be critiqued and commented.

5.2.4 Teacher planning as a developmental process

Echoing his colleague in humanities subject departments, Thomas, a lecturer in a different humanities subject discipline at Metro University, believes that teacher planning is a developmental thought process. Teacher planning is perceived as an on-going process handled not only at the beginning of the year but as something developmental over the course. Being a strong proponent of Gardner's theory of multiple intelligences, he believes that pupils learn in different ways and in different styles. In his view, learning involves not only motivation and arousal of students' interest, but also acknowledgment of different abilities and intelligences in students. The approach to enhance this practice is to devise learning situations that enable students to develop understanding. When planning for teaching, student teachers should consider their own abilities, knowledge level, and the pupil as an audience and as clients. Teacher planning should take account of important elements like aims and objectives, processes by which aims and objectives are achieved, evaluation of learning and teaching, as well as relevant contact points between the informing documents like the Curriculum and Standard Frameworks (Board of Studies, 1995a) and school policy documents.

Thomas considers it a real danger to look at planning as just an end in itself because teachers cannot divorce planning from practice. He sees the prime purpose of planning being effective learning in the target audience. For prospective teachers, he feels the need for them to produce something tangible after the mental process whereby teacher educators can look at something that enables them to run through the thinking process as associated with student teachers' planning. In doing so, the teacher educators themselves are in a position to offer guidance, advice and help should student teachers need it. Nevertheless, self-evaluation plays a pivotal role in planning. In his opinion, novices should come back to self-evaluation at the end of the lesson as it is critical for the student teachers to reflect on the lesson, discuss it with their supervisors in school and lecturers in university. They must have the opportunities to interact, comment and participate in the developmental process. Key competencies and the Curriculum and Standard Framework in the areas of Studies of Society and Environment (Board of Studies, 1995b) are reflective tools student

teachers can refer to for thinking about the way the lesson might operate more effectively.

Despite the well-structured lesson format suggested to student teachers for use in planning, he does not prescribe a distinct conceptual model for teacher planning. He argues that there is more than one model from which he draws wisdom when formulating the lesson format he introduces to student teachers. He regards the format not as being unalterable, invariable and inflexible. Instead, it should serve as a structure for student teachers to build their lesson on, as well as something that guides them through the process of lesson planning.

In summary, although conceptions of teacher planning vary among teacher educators, all of those interviewed see the need to create learning situations for student teachers to learn about teaching through experiencing it in structured teaching and learning contexts in university and in schools. Teaching strategies that teacher educators uphold as effective in promoting learning are modeled and demonstrated in their own teaching. In a way, they practice what they preach. Some learning experiences are more structured than others, but, in general, students are responsible for creating meaning from the experiences they have encountered in various contexts. The following section describes how students are prepared for the task of learning how to plan lessons and coursework.

5.3 Types of learning experiences in teacher planning

For the two teacher education courses under study, teacher planning is dealt with formally in teaching methods. Education studies and foundation subjects deal with topics that are directly or indirectly related to the planning task. Such themes as learning theories, adolescent development, philosophy and sociology of education provide student teachers with knowledge closely related to issues in teaching and learning. Student teachers are expected to use the knowledge in their planning. The following sections describe very briefly how prospective teachers are prepared for lesson planning in their teaching methods.

5.3.1 Learning to plan through immersion

In the City University teacher education program where conversational grouping plays a vital role in the preparation of teachers, student teachers are prepared formally in lesson planning through their teaching methods. This happened after they had been immersed in teaching situations in their early field experiences. Lesson planning experience started early in the course. The need for a resolution to an instructional problem was created as early as on the first day of the teacher education program as described in Section 5.1.1. Student teachers were requested to design lesson plans for small group teaching tasks and then defended these when they met in the tutorials at the University after the early field experiences. As an introduction to lesson planning, a one-hour session was organized in the first week of the course and student teachers were presented with a lesson plan sample and told of the requirements of a lesson plan. The lecturer then took the prospective teachers through concept mapping as an adjunct to their planning when propositional logic was involved in the lesson.

In the early field experiences where lesson planning experiences begin, pairs of student teachers were deliberately organised in close range with a small number of pupils to engage themselves in conversations with their colleagues and with the pupils. They had to plan for interaction and reciprocity in the teaching context. Under such circumstances, the need for resolutions to instructional problems was created and student teachers had to tackle these problems together as a team embarking on a joint venture. Formal input on lesson planning took the form of a lesson plan format, which they were expected to use in the first two teaching rounds. Student teachers had to state their aims and objectives for the lesson. The rest of the plan was written in columns assigned for what the teacher was trying to teach; what the students would be doing; what the teaching resources were; and the time frame for each of the those columns. Since the course coordinator attended more to an experience-based planning model rather than a conceptual planning model, the framework was introduced to student teachers in a very loose way and they were responsible for its comprehension and application.

5.3.2 Learning to plan through modeling

Student teachers in the science teaching method at Metro University were introduced to a lesson plan format explained in a lecture early on in the course before the teaching round. Then student teachers had to look at one of the lessons they had experienced, or a lesson the lecturer himself had taught them, and their task was to work out the lesson plan. Using a collaborative approach working together with his students on certain selected content, the lecturer modeled planning a lesson using the format suggested to the student teachers. The practice was repeated on different occasions before student teachers started their first teaching round. The format was suggested to, but not imposed on student teachers. The Science lecturer, Jerry (who was also course director) explained:

> *All you can do is to demonstrate to them the point. You can't tell them you have to do this. You tell them they have to do it, it doesn't mean they are going to do it. All you can do is model what you think is appropriate behaviour and appropriate thinking and challenge and push their ideas. But in the end, I can't make them teach in the way I want them to. I can't make them think about their work in the way I might want them to. I encourage, I push, I probe, I challenge. It is their decision in the end. If I give them rules they have to follow to satisfy me, they are not learning to teach. They are learning to satisfy me. [Jerry: October]*

Student teachers became increasingly comfortable with planning. By the second teaching round, some of them thought they did not have to do it anymore. By the last teaching round, most of the students thought that they only had to do lesson planning to fulfill university requirements. But it did not take long for the students to move away from the original format suggested and work on their own framework.

5.3.3 Learning to plan through lesson templates

The humanities subject departments at the Metro University provided intensive lesson planning experiences to student teachers before the first teaching round. A total of four three-hour workshops extending over four weeks was set aside for this purpose. Samples of planned lessons with clearly specified cognitive and affective learning outcomes; teaching rationale and objectives were introduced to

students. The lecturer then role played the learning activities incorporated in the lesson plan to let her group have a feel for the lesson in operation. Having seen a plan in action, students were given the task of actually constructing a plan in groups and role-playing the activities in the workshop. A model lesson plan format was introduced and explained. This became their lesson plan template and student teachers were required to follow the suggested format in the first teaching round. Planning in relation to curriculum documents took place in the third week. Student teachers were reminded to meet the intended learning outcomes as formulated in the curriculum documents. Further practice was given on analyzing sample plans designed by the lecturer for an understanding of what a plan might look like. Lesson planning for VCE (Victorian Certificate of Education, final two years of secondary school) classes was dealt with in the fourth week. As part of the process of understanding planning, the lecturer introduced an array of teaching and learning activities considered useful for the teaching methods. As the course progressed, there was training in sequencing lessons into units of work that brought together all the understanding on lesson planning they had developed over the course. However, the lesson plan template remained the framework for students from these two humanities electives and had to adhere to them throughout their program.

5.4 Orientations to teacher planning: conceptual frameworks compared

In practice, subject lecturers from both Universities suggest lesson plan formats for student teachers early on in their respective programs (See Appendix 10 for samples of lesson plan formats). While some of the lesson plan formats are loosely structured, most of the frameworks suggested contain rather rigid configurations and are inherently prescriptive in that prospective teachers are required to follow the format closely while writing their lesson plans in the teaching rounds. Nearly all the lesson plan formats follow a logistics, objectives, introduction, learning activities, and evaluation sequence in their overall layout. An analysis of the lesson plan formats introduced in the two teacher education programs is presented as follows.

5.4.1 Lesson plan formats prescribed by subject departments at Metro University

Table 5.1 **Lesson plan formats from Metro University**

Subject discipline	*Elements identified*	*Layout*	*Remarks*
English	• Preliminary preparation • Aims and objectives - in general terms • Introduction to lesson • Lesson procedures • Lesson conclusion • Evaluation	Linear flow in lesson sequence • introduction • presentation • conclusion • evaluation and reflection	• Samples of lesson plans and explanatory notes attached for reference • A guide to four basic skills in reading, writing, listening, and speaking attached • A lesson plan checklist provided
Geography/SOSE	• Logistics • Intended learning outcomes on knowledge, skills, values and attitude - in general terms • Resources for classroom use • Learning experiences • Evaluation	• Lesson logistics laid out in linear sequence • Learning experiences in two columns describing content/subject matter on the left and method on the right. • Evaluation to be written last	• For the method column, it is divided into three stages: introductory, developmental and concluding activities designed for students • Lesson plan self assessment guidelines • Guidelines for observation • For SOSE, a brief explanation on the purposes of a lesson plan and self evaluation criteria on lesson plan included. Examples on objectives, learning activities included
History	• Logistics • Objectives - knowledge, skill, values and attitudes - in behavioural terms • Key questions • Materials for classroom use • Content/method • Broad summary	• Lesson logistics laid out in sequence • Content/method written in two columns with content on left and method on right • Broad summary, supervisor's comments and self evaluation to follow in sequence	• A detailed sample lesson attached for reference • Objectives divided into cognitive and affective domains • Explanatory notes on matching objectives with Bloom's taxonomy

	• Supervisor's comments • Self evaluation		
Mathematics	• Background knowledge • Aims in objectives - in behavioural terms • Contents • Equipment and resources • Method, a step by step outline - explanation, activities, exercises, organization and timing • Major difficulties anticipated • Student evaluation • Extra activities • Supervising teacher's comments • Self evaluation	Linear flow in lesson sequence: • logistics • introduction • lesson procedures • conclusion • self evaluation	
Music	• Logistics • Entry level of students • Objectives - for students & teacher - in behavioural terms • Resources to be used • Procedures and content - with timing • Measurement of students' performance • Self evaluation • Supervising teacher's comments	Linear flow in lesson sequence • logistics • introduction • main body • conclusion	• Brief explanatory notes on each element • Minimum and maximum number of objectives specified • A lesson outline given

Science	Key questions are asked: • What are the students doing? • What is the teacher doing? • Why am I doing this? • What resources are needed and what is the timing for the activities? • How will you evaluate your lesson?	Lesson plan is written sideways in columns organized under the key questions	• Students are not required to follow the format rigidly • Reflection on teaching and learning much emphasized

5.4.2 Lesson plan formats prescribed by subject departments at City University

Table 5.2 **Lesson plan formats from City University**

Subject discipline	*Elements identified*	*Layout*	*Remarks*
Mathematics	• Logistics • Student objectives - in behavioural terms • Teacher objectives - in general terms • Resources • Lesson structure - introduction, learning activities, ending • Assignments • Chalkboard plan • Supervisor's comments • Self evaluation	Linear flow in lesson sequence: • logistics • introduction • learning activities • ending • assignments • chalkboard plan • supervisor's comments • self evaluation	• Students are required to follow the format closely while writing the lesson plans for mathematics
Science	• Logistics • Objectives - in behavioural terms • Specific background information • Safety precautions (including key questions) • Content/method (activity) /timing/objectives check • Evaluation	• Lesson logistics laid out in sequence • Timing/activity (method) /notes (content)/ objective check written in four columns in order from left to right • Evaluation to be written last	• Brief notes on Shulman's working knowledge attached for reference and it is considered as the framework for teacher planning • Concept mapping skills introduced as part of lesson planning preparation

5.4.3 An analysis of conceptual frameworks for teacher planning

Though not explicitly and formally taught to preservice teachers as a model of planning, the fundamental questions expressed in Tyler's rational model (Tyler, 1950) are evident in all the formats introduced to the students in the planning framework. Common elements identified include teaching objectives or learning outcomes in general or behavioural terms; methods encompassing content, lesson procedures, learning activities or learning experiences; teaching or learning resources; and, evaluation of learning. While not necessarily following the linear process as depicted in Tyler's model, all these elements are central to the planning models or formats laid down by the subject departments:

- specifying objectives (either in general or behavioural terms, or answers to question related to objectives);
- choosing appropriate learning activities (subject knowledge is seen as an important variable);
- organizing and sequencing the chosen activities (the main emphasis in most lesson planning exercises); and,
- selecting evaluation procedures.

For some teaching methods, writing objectives or learning outcomes in general or behavioural terms leads the planning process. Some method lecturers require students to differentiate objectives into teachers' objectives and pupils' objectives, while some ask students to classify learning outcomes into knowledge, skills and attitudes organized under cognitive and affective domains. With teaching content being incorporated into appropriate learning activities, organizing and sequencing of the activities captures much of the effort in the planning process. Evaluation of learning forms an integral part of most lesson plan formats. However, the element of self-evaluation, or reflection, becomes an important component of some of the lesson plan frameworks.

In contrast to the planning practices as envisaged in the initial professional education programs described, research on teacher planning seems to suggest that

teachers engage in a planning process that in many ways runs counter to the objective-first rational planning model outlined by Tyler (1950). Shavelson and Stern (1981), when reviewing teachers' thinking, claimed that the instructional task in which teachers intended to engage pupils constituted the main part of their planning activities. The instructional tasks might include content choice, materials, and activities, making up the lesson scripts or images (Morine-Dershimer, 1978), which guide the teachers through their interactive teaching. Other investigations have pointed to the fact that teachers have different priorities when planning lessons. For example, activities (Zahorik, 1975), context (Taylor, 1970), and subject content (Peterson, Marx & Clark, 1978). Objectives are not found to be a particularly important component of the planning process, and they are seldom the starting point for the preactive preparation. Rather than objectives or evaluation, planning seems to focus on content and activities (Borko & Shavelson, 1990). The first planning decision made by teachers usually involves the subject matter. Teachers typically identify the subject matter to be covered and activities to be used and then consider other components such as materials, goals, objectives, and evaluation (Borko & Niles, 1987; Clark & Peterson, 1986; Egeler, 1993).

However, the Tylerian prescriptive approach still seems to be the predominant model used in introducing student teachers to the complexities of planning (John, 1993). Borko and Shavelson (1990) report that the model has been advocated for use by teachers of all levels and all subject matter areas and has been taught to preservice teachers in the United States and elsewhere in the world for a considerable period of time.

When asked to review their own conceptual framework in lesson planning, the teacher educators interviewed did not identify their own practice with the Tylerian model of planning, though the elements of the model are incorporated in the format they construct for their students. Indeed, they did not consider that their planning framework was based on any one model of planning. In one interview, a lecturer stated that the Tylerian model was open to interpretation and therefore could be used in many different ways, not necessarily in the linear sequence prescribed. Teachers could adapt it when constructing their lesson. He argued that, "yes, for Tyler has so many interpretations that have appeared. I would never advance it as

being a linear thing as some people see Tyler. I don't believe his model is tied to what I would say is a hard line". [Ronnie: May] When asked if the model was interpreted by teachers as something linear in orientation, he commented that:

> *Well, yes. That is by some people. And yes, by some people in schools too. Student teachers have to understand that it exists out there in the world in order to understand how people think teaching is actually constructed. It is not the way they do it, but it is the way they rationalize. So, I am going to introduce them to the way in which that is done in a loose way. For some people, that is the best that I can inspire them (Tylerian model as a loose framework). For some people, I will insist that they stick to Tyler because they never seem to spend long enough thinking about what they are trying to achieve. [Ronnie: May]*

Despite the fact that the four fundamental questions in the Tylerian model are addressed in his lesson plan format suggested to preservice teachers, Thomas, lecturer from the humanities department at Metro University, saw that the, "Tylerian model or somebody else's model is beside the point as far as I am concerned". The conceptual framework he suggested to his students, "is not based on any particular epistemological view" because, "an epistemological argument is just fairly abstract, and it is never going to reach an agreement. So we have to rely to some degree on a simple model, an effective model". Whether such a model is enabling or prohibitive to the development of the novices' pedagogical knowledge in lesson planning will be discussed in Chapter 6.

From a different perspective, Laurie, lecturer from a different humanities subject department at Metro University stated that, "I don't know if I actually refer to a theoretician". Drawing from various models of teaching when conceptualizing her lesson plan format, she referred to Bloom's (1956) Taxonomy for different levels of learning in the cognitive hierarchy. Edward DeBono's (1973) and Gardner's (1993) models were sources for critical thinking skills. To her, the conceptualizing process was a journey from teacher to teacher educator.

> *I guess I have done this for a long time. I suppose I have learned from others and learned other people's models. So the person you have just referred to I am not familiar with.... Yes, I am using that without knowing that. I think that is interesting because it is also about the way I have come into teacher education.... I came in and there was nothing. So what I had*

to do is to think about how I would develop an appropriate program for beginning teachers. It was about finding anything that I could that others had used. Looking at models from other method lecturers. And perhaps not always informing myself with the literature but developing a repertoire by exchanging with others and by reading when I could.... That I may not have known that it was a particular theory that I am using. It just evolved. [Laurie: November]

Though lecturers interviewed all recognised the importance of a conceptual framework for lesson planning, it appears that no formal conceptual framework is introduced to students. Students are required either to follow the format closely or to use it loosely to suit their own planning practices. Having discussed the aspirations of the teacher education programs, the conceptual issues in lesson planning and the approaches teacher educators employed in the preparation tasks for students, I now turn to examine how the vision of the teacher educators matches the expectations of the students.

5.5 Students' perception of the role of subject specific preparation in teacher planning

Both education programs being examined in this research project prepare neophytes for the task of teacher planning in the teaching methods. However, student teachers' perceptions of the role played by subject departments vary. Seventy five percent of the twelve student teachers believed that the subject departments played a vital role in embarking on programs of training in lesson planning, the remaining twenty five percent had very negative feelings about how they were trained in their subjects. Responses elicited from preservice teachers illustrate the extent to which lecturers' aspirations and intents are realized. It is briefly described as follows.

5.5.1 Subject preparation at City University

Regarding the role of subject preparation in planning, responses from seven students elicited in interviews illustrate two extremes. A respondent from the Mathematics group, Frank, considered that, "Without this course, I would not be able to plan. You have to do this course. Put it this way, there is no way you can go into teaching without doing any course" [Frank: April]. In his opinion, the planning experiences were excellent. A lot of time was spent on lesson planning in lectures

and workshops in various teaching methods. However, further probes into the conception of lesson planning produced only sketchy responses and descriptions on how lessons were planned by the student. In contrast, several other student teachers expressed very strong feelings of disapproval towards the way they were prepared in the teaching methods. Negative feedback ranged from bad, pretty bad and not prepared at all indicated that this group of students considered the program on planning to teach to be inadequate. Prospective teachers were given lesson plan formats and told to use them. Little discussion, if any, was devoted to explaining and elaborating rationale underlying the formats. His classmate, Tommy noted, "It is sort of like being thrown into the cold without really knowing what happens in real life, which is a bit of a problem" [Tommy: April]. This was echoed by his counterpart from the Science group, Valerie, who said that, "I don't think they could have taught us anything at university about lesson planning because you can't do it without experiencing it. I don't think they could give us anything else" [Valerie: April]. Learning experiences acquired by students through trial and error were considered as sketchy, unrealistic and too theoretical. The only training in lesson planning was when they were given instructional problems and told to plan lessons or units on content areas at different year levels in the best way they could. "We got a handout, and were told how to do it in the assignment. We had to write a lesson plan for any sort of lesson.... And then we got to put it in for assessment. And that was it. That constituted lesson planning" [Eliza: April]. This approach certainly produced negative views in terms of the university preparation for lesson planning.

To this group of student teachers at City University, the way they were prepared in lesson planning was disappointing and barely fruitful. Tony of the Mathematics group commented, "I remember being given an outline, like, basically, I remember things about a lesson plan. It took ten minutes. Like you have your objectives. You have the time down one side. You have a column for your activity and a column to check if your objectives have been met. And that is all I remember about lesson planning" [Tony: April]. According to these student teachers, subject preparation concentrated mainly on learning activities designed for specific content areas. Little was done on how to tie things up into a coherent lesson. To them, lesson planning was "thought, not taught".

5.5.2 Subject preparation at Metro University

Preparation in lesson planning seems to be more substantial and concrete at Metro University. Students were given ideas on how to do a lesson plan, followed by structured practice and feedback. Then they were placed in a position in which they had a direct experience where they needed to use lesson planning. Jenny considered that learning how to plan was a carefully guided journey. She commented:

> *I think that they [the lecturers] recognise at the beginning of the year we need a crutch, we need a confidence booster. We need something in front of us so that we don't fall to pieces in the first round. It is well thought out and spelt out. But everyone will adapt it to himself.... Basically after these first four weeks, after we go into the first round, they never mentioned lesson planning again. [Jenny: April]*

For this group of students, detailed formats and samples were given. Some formats and lesson plan samples were followed by explanation and some were illustrated through supplementary booklets and checklists for lesson planning procedures. The booklets contained good tips and had exactly what student teachers wanted at the beginning of the year so as to build up their confidence to go out and face the classroom. They were meant to be doing their lesson plans in the way that best suited them.

Her classmate, Michael, stated that he was adequately prepared for most of the management areas. In actual planning, he was given a layout of a plan at the start of the year and then was told what was central to a plan. The group spent a lot of time practising planning. However, he considered that he was not really taught how to plan for different learning outcomes and for different learners. Three students from other subject disciplines shared this perception. For example, Rachel thought that she was prepared very generally in lesson planning at University. She learned lesson planning through trial and error through doing it in teaching rounds. When she recognised that no more further formal training would be given on lesson planning, she saw a need to experiment with the lesson plan format in the teaching round. Nevertheless, when contrasted with their counterparts from City University, students from Metro University appeared more thoroughly prepared for the task of lesson planning. Due emphasis had been placed on introducing the suggested lesson plan

format and practices were structured to guide them through the learning process.

Having described how student teachers perceived of the role of subject specific preparation in teaching planning, I now turn to explore their perception of the relationship between the education foundations and teaching methods.

5.6 Mapping the relation between education foundation subjects and teaching methods

Since the two teacher education courses use education foundation subjects as the organizing framework for the curriculum, the following section describes how student teachers perceive the relationship between education foundation subjects and teaching methods.

5.6.1 Link between education studies and teaching methods at City University

As mentioned in Section 5.1.1, the initial teacher education course at City University is designed to enable student teachers to establish a link between the foundation subjects and the teaching methods under the guidance of the group tutor. Education studies cover educational psychology, special education, special political and organizational themes, philosophy, and studies in educational thought. As part of the requirements in education studies, students are required to select three subjects out of the following electives: basic counseling skills; the culture of Victorian schools; the education of gifted children; introduction to the Macintosh computer; using the Mac for desk top publishing; school and teacher effectiveness; and, education, quality and community. How student teachers saw the relationship between education studies and teaching methods differed. Some student teachers derived meaning from the education studies and considered that it impacted on the way they perceived teaching and learning, while others considered that the education studies did not produce any effect on them at all. In general, prospective teachers saw value in subjects such as educational psychology and electives such as gifted children since these were more related to learning theories, adolescent development and pupil thinking. Whereas subjects like philosophy, history of education, social, political and organizational themes attracted an array of responses from highly

regarded to a waste of time. Tony made the following comment:

> *Educational psychology is very good. It is invaluable, in fact. It taught me a lot of things about how kids think and learn. So it is very relevant to my teaching and development of my teaching. History of education is a waste of time. Social and Politics is boring. I didn't enjoy them. I don't think it contributes anything to my teaching. [Tony: October]*

In contrast, his classmate, Frank, quite enjoyed history of schooling. He said:

> *History of the Victorian schools. It was good. It is valuable for me to have a different perspective of the system. I thought it was great because I learned about things I have never heard of before. To become a teacher, it is very good for me to know something about the system. I thought it was quite useful. [Frank: October]*

The above vignettes provide a glimpse into the idiosyncratic nature in the personal construction of meaning from learning experiences. Regarding the link between education studies and teaching methods, all participating student teachers from the City University thought that they could not see any explicit relationship between them. In most cases, subject lecturers in the science methods made little reference to what had been dealt with in education foundations. It was the students themselves who made the link between these two areas of knowledge. The attempt to refer to education studies happens only when novices see the need to draw upon this area of knowledge when planning for their teaching tasks. As Tony noted, "There is no connection made between the education studies and methods. As far as I can see it, it is all being very much an individual thing" [Tony: October]. But not every respondent is ready to make the connection, Tommy from the Mathematics group stated that:

> *the time trying to draw up the links could be better spent learning about the links if somebody else is there to help us and guide us through them .... I can draw the link between education psychology stuff and how students learn .... That is something that I have taken on board. But nobody has told me to do that. Nobody has taught me how to do it. That is something I had to work out for myself. Which means that I probably learn it well but not as efficiently as I could have otherwise. [Tommy: November]*

He further expounded on the difficulty in making the connection himself.

> *Yes, you almost need contact with more people. You need an important range of ideas because when you really have contact with three major lecturers.... And you spent like a large amount of time to couple their ideas. I don't really know how you tie up together. I just got the feeling that you need a broader range of ideas and you need maybe a mentor or someone at university whom you can talk to. [Tommy: November]*

When asked how they would like to see the two areas of knowledge related, Tony believed that "the core stuff [education studies] should go before the teaching method training. Therefore, the method training should be built on education foundations subjects laid down for the course. It should serve as prerequisite knowledge to teaching methods" [Tony: October]. In brief, despite the intentions of the course coordinator to effect a holistic curriculum through integration, five out of seven student teachers from City University did not see a clear link between education foundation and teaching methods.

5.6.2. Link between education foundation and teaching methods at Metro University

As mentioned earlier, the teacher education curriculum at Metro University is organized around the foundation subjects. Lesson planning is dealt with mainly in the teaching methods. Foundation subjects provide an overview to important issues in teaching, learning, and social and political issues in schooling. Similar to their City University counterparts, prospective teachers from Metro University have different views on the relationship between the foundation subjects and the teaching methods.

Susan thought that one of the foundation subjects "Teaching and Learning" was related to her teaching methods because it was connected to the way people learn. The teaching methods provided her with [teaching] methods. She thought that they were inter-linked and students needed to have the knowledge of one in order to complete the other. In contrast, Rachel perceived the foundation subjects as an eye opener. She valued the subject "Teaching and Learning" for its capability to open her up to different aspects of things involved in teaching, as well as to situations and

circumstances that helped her reflect, which, in turn, helped her think about how she went about teaching. In her view, all the areas of knowledge presented in the subject were interesting and thought provoking. Yet, on practical application of the knowledge she gained from the subject, she was still floundering "because I have to read about that and absorb that a little more. I don't think I have practically applied that yet. So that is kind of, at the moment, just hidden knowledge. I don't know how to use that". Regarding the relationship between "Teaching and Learning" and her teaching method, Rachel commented that, "They are kind of giving you this theory, but I don't know how to use it. So there needs to be that link. Maybe they [lecturers] need to help us make [the link]. [But] I make [the link], nobody else" [Rachel: October]. In contrast, one student who had studied a theory of learning in another tertiary institution thought that she did not formally learn a theory at all. She had the impression that learning theory was not a focus in the course and that the theory had been infused into the course without students even knowing it.

In fact, student teachers from Metro University involved in this study regarded the subject "Teaching and Learning" as having value in helping them teach. They all saw themselves responsible for making the link between "Teaching and Learning" and their own teaching methods. However, whether subject lecturers referred to what had been taught in the foundation subjects and brought it into their method teaching hinged very much on their understanding of the foundation subjects and their willingness to initiate the link themselves. Such kind of linking was entirely voluntary.

As for the other foundation subject "Social Foundation in Schooling", most of the student participants from the Metro University saw no explicit relationship between it and their teaching methods. Yet, Jenny who took LOTE and History as her teaching methods, asserted that there was a lot of overlap between the two foundation subjects.

> *Within themselves, they are different. But I found a lot of overlap when you look at things like active learners and passive learners and those sorts of learning styles and then looking at social problems presented in Social Foundation of Schooling, there is quite an overlap.... A lot of those learning difficulties and different sorts of learning styles are directly related to students' social background or social situations. All the development issues that we went through in Teaching and Learning are inextricably connected to Social Foundations of Schooling. But as far as methods and foundations is concerned, there is quite a lot in the method that occasionally duplicate the Teaching and Learning classes." [Jenny: October]*

All student teachers at this University saw that the foundation subjects had contributed to preparing them for the lesson planning task because they dealt with how pupils learn and how contextual factors in school affect pupils' learning. It appears that they would relate this area of knowledge to their planning when they saw the need to use a variety of learning activities to cater for individual differences and learning styles.

5.7 Summary

This chapter describes the nature of the teacher education programs from which the participants in the research project were recruited. Both programs employ a constructivist stance in that student teachers are given the opportunity to personally construct meaning from the lectures, tutorials and practical teaching they have experienced throughout the course. Conceptions of lesson planing of teacher educators differ, including developing teachers' working knowledge, anticipatory reflection, lesson planing as a thinking process, and as a developmental process. The lesson planning experiences the teacher educators create for their students reflect to a great extent their philosophy of teaching and learning. Nevertheless, responses from student teachers as to how they perceived the way they were prepared for lesson planning varied, ranging from highly valued to very negative comments. In addition, student teachers did not see a clear link between foundation subjects and teaching methods. In the next chapter, attention will be paid to examining student teachers' initial conceptions in learning, teaching, and lesson planning.

CHAPTER 6
INITIAL CONCEPTIONS OF LEARNING, TEACHING AND LESSON PLANNING

Introduction

Previous research findings (for example, Calderhead & Robson, 1991; Feiman-Nemser & Remillard, 1996; Hollingsworth, 1989) assert that student teachers are largely influenced by their substantial learning experiences of their school years. The way that they were taught and the learning opportunities that they had influence the way they perceive learning and teaching (Kagan, 1992). Their perceptions of teaching and learning, in turn, no doubt impact on the way they plan their lessons.

In order to identify changes in student teachers' perceptions of learning, teaching and lesson planning over their initial teacher education courses, this chapter first describes student teachers' conceptions of teaching, learning and teacher planning, then explores how they completed a simulated planning task, and finally examines their thinking processes through this simulated planning.

6.1 Views of learning

Bramald, Hardman and Leat (1995) found that student teachers' knowledge of teaching gained from earlier experience influenced their views on teaching and learning and their interpretations of the course, differences between individuals and curriculum groups also emerged, which suggest that the course of training could reasonably be considered as a constant; as had been assumed by many earlier studies. For example, Hollingsworth (1989) reported that personal, program, and contextual influences or constraints could effect changes in the patterns of intellectual change from novice preservice teacher to beginning classroom teacher.

In order to trace the development of student teachers in teacher planning and to identify possible intellectual changes in knowledge, belief and dispositions

over the Post-Graduate Diploma in Education program, an initial understanding of particiapnts' pre-existing conceptions in learning, teaching and teacher planning serve as a platform from which comparison and contrast can be made at successive time frames in the cycles of transformation (as illustrated in Figure 3.2). A knowledge of student teachers' demographic characteristics, education background, and in particular, their views on learning, teaching and teacher planning will be the main focus - drawn from the first interviews conducted at the beginning of the course. Themes are drawn from responses of student teachers on their views of learning and they portray a dichotomy of passive acquisition to active construction. The following sections report student teachers' initial conceptions of learning.

6.1.1 Learning as knowledge acquisition and application

For nearly all the student teachers, learning involved the acquisition and retention of knowledge. Clara, one of the student teachers from Metro University, recalled that a lot of her learning experiences involved, "sitting down and absorbing information and getting to know it." Learning represented 'cramming' in a lot of knowledge into the short-term memory the night before examinations. She did not consider this sort of regurgitating information in examinations learning. In contrast, she believed that learning took place only when learners could retain knowledge for a long time.

Student teachers believed that learners needed to build up their working memory, and their long-term memory with valuable experiences that might then continually expand for life. Although the knowledge may not necessarily be useful to them at the time of acquisition, student teachers still thought that knowledge acquired contributed to the formation of self as a person.

Retention of something that a person believed to be valuable and applicable to life situations was seen as enhancing understanding. Knowledge was therefore valued on the condition that it could be utilized in different ways. This view was expressed by Ada from City University: "Learning is valued exactly how it is applied to real life. That is what the whole learning experience has to be for them. They have

to learn the theory as part of everything but they have to be able to put it to some practical use. Or they will discard them as irrelevant to real life" [Ada: April]. The foregoing description clearly points to a product-oriented view of learning and this perception affects how these participants plan for their teaching.

6.1.2 Learning as knowledge construction

In contrast to learning as knowledge acquisition, the notion of knowledge construction is among one of the major themes identified in these student teachers' responses to their view of learning through the interview data. Saran from the City University portrayed her view of learning simply as understanding, which for her meant learning to explain how something worked and why that ·' the case. However, knowledge construction was not facilitated in classroom learning. Her classmate, Ada, noted restrictions when students attempted to construct knowledge in the learning context of classrooms. She commented, "I know it is really bad. But probably learning is what you do in mathematics. You sit down. You copy out questions in the textbook and do it. This appears to be something that is going on all the time in the classrooms" [Ada: April]. Rachael from Metro University shared this view. She commented:

> *The most important [thing] for them [students] to learn is that they can be themselves.... But the sad thing about school is that they are so much into an overall way to learn. You have to follow this guideline. You have to answer these questions to please the teacher. Forget exploring for the sake of just wanting to know. Do it because it is said or, otherwise, don't do it. I like students to ·arn how to explore what they are interested in, to discover what it is they like and what they want to go on [to do]. [Rachael: February]*

Despite the restrictions embedded in classroom teaching, student teachers still believed in the importance of helping students make connections between prior learning and their teaching. As Clara from the Metro University reflected, the most important thing was linking up what a student already knew; because students learnt considerably from earlier years. It was difficult to learn something in isolation, linking was important in shaping the way the new learning was remembered. It was important to find out where learning was located, what students already knew, and

how students used knowledge. Concerning knowledge construction, learning involved not only learning from books but also seeing the 'big picture'. To Clara, it was important that learning had a purpose.

Other than looking for a purpose in learning, Clara's classmate, Michael viewed learning as creating space for students to explore. He believed that:

> *Learning is getting in there and doing it. Learning does not happen in boundaries.... I mean it is not being confined.... In my other analogy, filling the space, feeling the space, feeling free enough to go and try this or ask that or whatever. It is creating sort of very free space, mental and physical. Let them [students] explore, let them discover. They may come up with some discoveries. They don't like to be told. They like to explore. But I think students like to be told enough to feel comfortable enough to explore. [Michael: February]*

For knowledge construction to take place, Susan from Metro University considered that linking what one already knew to the new learning was crucial. She more explicitly built on the notion of linking noted above:

> *The most important thing is the building, the linking, in what you already know because you start learning from early years. So, I find it very difficult to learn something just in isolation and it doesn't relate to anything. So, for, me, it is all important to say whether this is located, what I already know, where I am to use it, what I need to be finding out as well as to go along with it. [Susan: February]*

Eliza from City University shared Susan's view on linking previous learning to new learning. She considered learning as understanding, which was to learn to explain how things worked and why. When she experienced cognitive dissonance through being shown how to see things from a different perspective, she saw that she might need to learn more to broaden her knowledge base.

On top of the predominant view of knowledge acquisition, student teachers also saw the need to construct knowledge through linking up prior knowledge to new learning to broaden their knowledge base. The impact of this constructivist view of learning is reflected in their view of teacher planning. This will be discussed in Sections 6.3 and 6.4.

6.1.3 Learning as a process

Other than content knowledge to be acquired, Rachael and Susan from Metro University identified learning as an on-going process. They considered the learning process important because without it, students would not have learning products like knowledge, skills or attitude. Process and product were complimentary to one another and had to be treated equally in teaching. Teachers and students alike had to keep the learning process going. As to who controlled the process, Rachael from Metro University commented, "Teaching you can control. It is you. But learning is a 'two' theme. It is not just how you communicate to them [students] but how they communicate to you. You have to make sure that you ask him the right question. Get them involved in and to know that they are learning. Just because you teach doesn't mean they will learn" [Rachael: February].

Regarding learning as an on-going process, Susan noted that, "[I] still think of myself very much as a learner. That won't switch off the minute I become a teacher. So I see learning as something you should go on doing. And something we need [to] sort of consciously be aware of" [Susan: February].

Since learning can happen in many different ways, Michael from the Metro University believed that students could learn intuitively. In his opinion, "Learning normally happens in whims, you go along and you get something. And then you sort of understand. You've got to work with it a bit. Like in mathematics, you got the concept. Within this concept, you got to do these questions whenever you work with it. And sort of, you get it. Ah, this is how it happens. I mean it often happens in sort of jumps like that" [Michael: February].

Knowledge is not the only product student teachers perceived as important in the process of acquisition, Frank from the City University pointed to the fact that multiple intelligences were keys to learning. At a more philosophical level, he regarded learning as a right to every individual:

> *I think we have a right. People have got the right to learn. I don't believe in putting people into groups because of their income. I know that it is*

something political but I just believe that if you've got intelligence, you should get the opportunity to learn without having any barriers out on you by money or background, or your income or anything like that. I feel very strong about that. I have the idea of having to let all those who got intelligence to learn. [Maths group, Frank: April]

Indeed, his classmate, Tony, viewed learning as a privilege as well as wealth to students. He wanted to instill this love of learning in his teaching. The conception of student teachers' view on learning is summarised in Table 6.1.

Table 6.1 **Initial view of learning**

Student teachers / *View of learning*	*Clara*	*Jenny*	*Michael*	*Rachael*	*Susan*	*Ada*	*Eliza*	*Frank*	*Saran*	*Tommy*	*Tony*	*Valerie*
As knowledge acquisition	X	X	X	X		X	X	X	X	X		X
As knowledge application	X	X			X	X				X		
As understanding and as knowledge construction		X	X	X	X		X	X		X		X
As explaining to enhance understanding									X			
As a process						X						
As opportunity for education equity								X				
As intuition			X									
As a privilege or a right											X	

Taken together, student teachers from the two Universities viewed learning as a process through which students acquired and constructed their own knowledge and understanding. How these views on learning impact on teacher planning will be discussed in Section 6.3.

6.2 Views of teaching

When compared with their views of learning, these student teachers appeared to have well articulated views of teaching. This is commensurate with previous research findings on the impact of prior knowledge and experience on student teachers' conceptions of teaching (see Section 3.1). Jenny from Metro

University felt strongly about the public perception of teaching. She complained that a lot of people saw teaching as something a university graduate chose to do when he or she could not find any other thing to do, "If you have got a degree, and you can't do it. Then you teach. I mean I heard that from a lot of people. What do you want to teach for? Why don't you do something useful, in industry or do other things?" [Jenny: February].

Following Lortie's (1975) notion of the *apprenticeship of observation*, it seems reasonable to suggest that for most students, they inevitably have preconceived views of teaching derived from their experiences as learners. On observing their teachers for an extended period of time in their schooling, student teachers have therefore developed various views of teaching and when they move into teacher education, these views are perhaps more powerfully re-conceptualized through their learning experiences in various contexts.

Some student teachers saw teaching as the transmission of knowledge, skills and values. Some wanted to transmit their love of knowledge or love of learning to the new generation. Others chose to become teachers because they cared for students and wanted to help develop their students' potentials. Some student teachers saw teaching as contributing to the growth and development of students while some craved to establish in their students the need to learn. All of these views are important in shaping student teachers' perceptions of what teaching means to them.

6.2.1 Teaching as transmission of knowledge, skills and values

In contrast to viewing learning as understanding and knowledge construction, the transmission model (Barnes, 1975) is a common view professed by seven out of the twelve respondents. They considered passing on knowledge to be vital as the role of a teacher. Student teachers acquired the knowledge in their education and considered that their prime duty was to find ways for their students to be able to acquire it. For some, the most important thing in teaching was to be able to present knowledge in a way that it would be 'absorbed' and understood by the learners. One student teacher tended to focus so much on getting through the content

that she almost pushed aside the problems that slowed this process, as she would not deal with them in her first teaching round.

> *So it is just the reality of it, the complexity of it that there were a lot more things to get through. And I was very conscious of my first teaching round that I ignored a lot of things. I almost gave myself permission to ignore something. For example, learning a lot of their names. I said to myself, this was the first week in my teaching round. There were a lot of things to do as a teacher. Realistically in three weeks, I am not going to be able to cope with good questioning techniques and lesson planning and everything else, plus learning everyone's name and learning about their backgrounds and all that sort of stuff. [Susan: April]*

Clearly, in the technical sense of teaching, it is very important for the teacher to be able to 'explain' subject content to students. Yet, this can overpower the teaching conception. For example, Saran from the City University saw teaching as teachers channeling knowledge to keep students on track such that they could pass their examinations at the end of the year. She considered that teachers should be able to bring everyone in the class to a certain level so that they could pass the examinations at the end of school term and that explaining the information was foremost in allowing this to occur.

6.2.2 Teaching as exercising control over learning

Although imparting knowledge is one important area of teachers' work, some participants considered the development of students' learning skills, such as research skills and communications skills, as also being important. These novices thought that these skills were valuable for their students even though they might not immediately see the value in these skills themselves. With these learning skills, students would become more employable as they could be more communicable and could better learn for themselves and control their own learning. Michael perceived of teaching as involving a lot of 'nuts and bolts'. For example, getting the equipment and learning settings prepared for the students and helping the students to be confident enough to explore. He thought that teachers needed to create an environment where students could actively learn. In his words:

> *One thing that really grabs me in teaching is having people learn.... Having students actively learning. I think it is very important. And creating an environment where students can actively learn is very important. Somehow like making an environment for people comfortable enough to work.... You [teacher] make the space and hopefully they will fill that space and do some learning.... Teachers apply methods which hopefully creates space for people to have it happen. [Michael: February]*

In his opinion, this creation of space could help students know how they learned and help to develop their own motivation and their own reason for learning. He also considered that teaching the students to learn for themselves and helping them develop the ability to learn 'whatever subject students may come across' was the main purpose of teaching.

In essence then, as teachers, these participants felt that they could not just look at how much students can learn from the curriculum, they also needed to find out what was happening around them and such a knowledge of the environment would therefore influence what students learnt.

6.2.3 Teaching as a love of knowledge and learning

This view was shared among three student teachers. For Jenny, she had such positive learning experiences herself that she wanted to pass on her passion of learning to her students. The main reason why she wanted to teach "might sound a bit terribly idealistic. I just really feel like I had such really positive experiences in learning and I love learning and I always do. I love school. I love university. Hopefully, by passing on my love of my subject area, I will be able to draw that out maybe one kid out of every thirty. But it would be worth it...Hopefully, in that little bit of time in my classroom, they [students] might find something that stimulates them to think. I can do that. I can be that. I can learn that" [Jenny: February].

On the other hand, Tony from City University noted that a lot of students saw learning as a means to an end, just passing examinations. He believed that students did not have a love in learning at all. In his case, he did not start to love learning until he was about half way through year 11. He loved playing guitar. He learned everything, the scales, the chords, and all the theory. However, one night, he

thought to himself, "well, if you can spend so much effort doing something like that, why can't you make your studies like a hobby as well. When I did that, I became a different person altogether. We as teachers can inspire their desire to learn" [Maths group, Tony: April]. Hence, Tony had made a major shift in his conception of learning and this consequently helped him to reshape what he considered important in formulating his view of teaching.

6.2.4 Teaching as meeting the needs of students and developing their potentials

This is perhaps a more philosophical view of teaching. Jenny thought that teachers should be able to recognize the needs of students and be able to meet their needs. An effective teacher would be able to 'identify in students what exactly their needs are and to present the information in a way that student can absorb and understand'. She believed that defining the needs of each individual student was difficult but catering for individual differences was an important task of teachers. She stated that:

> *There may be thirty kids in the classroom and they may supposedly be learning the same thing. But each one of those is going to take something different away. To be able to recognize that they are at different levels of needs in the classroom, and different levels of expectation and be able to deliver something they can take away from that. I think that is very important. [Jenny: February]*

When discussing the purpose of teaching, Eliza expressed the view that teaching should develop students' potential. Teachers had to prepare their students to cope with the future. Based on their ability, teachers should help students realize what they could do and help them to broaden their mind. With this conception, the prime purpose of teaching was to lead students down a path in order that they could explore and do as much as they could and what they liked to do. She believed that it was an attitude a teacher could get across to thirty people in a class. The teacher should let students know that he wanted them to do their best. Her classmate, Tommy, described it through an analogy, "getting the light out of the students" [Maths group, Tommy: April].

6.2.5 Teaching as care for students

On top of developing students' potential, Michael and Rachael from Metro University and Eliza from City University perceived that a teacher should be alert in identifying needs of individual students. Helping students to get what they wanted in life was more important than just forcing them to do what the teacher wanted them to do. Good teachers were those who could stop and address whatever issues were there for their students, and who cared enough about what was going on with and around the students. These student teachers considered carefully the position that the students they would be teaching were at a very crucial stage in their lives because of the physical and emotional changes they faced at the stage. This view incorporated the understanding that the students were at a time in life when they really needed a lot of encouragement. To achieve that, teachers should teach to the interest of the students and teach to the level of their vocabulary and by not using "huge words that students do not understand" [Ada: May]. Teachers had to be enthusiastic and to show to the students that they wanted to be there. Teachers had to be on the same level as their students when they taught. Teaching was more than transmitting knowledge; teachers should use the knowledge to develop the self-esteem of their students.

6.2.6 Teaching as meeting personal challenges

Some student teachers chose to teach for idiosyncratic reasons. The mature age student teacher, Tony, mentioned that he had new challenges every four years 'like the Olympics'. He did not feel comfortable talking in front of people. He regarded that the most difficult challenge he could imagine for himself was to become a teacher. He believed that this was probably a result of his fear of the unknown. He saw taking up teaching as the hardest possible challenge. Tony's counterpart, Frank, thought he was like a beginner swimmer being pushed into the deep end of the pool in his first teaching round. He thought that this was a good way of learning teaching because a student teacher had to learn to swim - and swim fast. Indeed, his classmate, Ada also shared the same view when she was placed in a renowned girls' grammar school in her first teaching round. She felt like, "starting off in the deep end in terms of teaching" [Ada: May].

Overall, student teachers' views of teaching were expressed in a more confident and articulated form than their views of learning. Calderhead (1988) argued that early conceptions of teaching played an important role in shaping student teachers' conception of teaching. Student teachers begin their initial teacher education with some general conceptions of what teachers' tasks are like. The strong *apprenticeship of observation* (Lortie, 1975) undertaken as a student at school, has equipped them with (what they think is) a knowledge of what teachers' work is like. These formative impressions of teaching are a powerful influence in shaping the beginning teacher's classroom practice (Davies & Rogers, 2000; Doyle, 1997; Tabachnick & Zeichner, 1984).

Student teachers start their pre-service training with some specific images of teaching in mind. Sometimes these are ideal images of the kind of teacher they would like to be, based on recollections of teachers who served as their role models. Occasionally, student teachers had bitter experiences of encountering negative models like distant authoritarian figures that they definitely did not want to take after. In the first round interview, Susan commented that, "I think I learned a lot of the negative things that I saw. So I learned as much of what not to do as what to do…I observed a few of the bad ones but I must say I didn't want to see too much of it. I want to see some good teaching. Something I can model my own teaching on" [Susan: February].

This initial characterization of these student teachers' views of learning and teaching are important and are a touchstone for the changes they make as they proceed through their school teaching experiences within their teacher preparation programs. This is developed through Chapter 7. However, as a brief overview, Table 6.2 illustrates how these views of teaching appear across the cohort of student-teachers involved in this study and illustrates how sometimes conflicting and other times complimentary views of learning are held by student-teachers.

Table 6.2 **Initial view of teaching**

Student teachers / *View of teaching*	*Clara*	*Jenny*	*Michael*	*Rachael*	*Susan*	*Ada*	*Eliza*	*Frank*	*Saran*	*Tommy*	*Tony*	*Valerie*
As transmission of knowledge, skills and values	X	X	X	X	X	X			X			
As exercising control over learning		X	X		X		X		X			
As love of knowledge and learning	X	X				X					X	
As meeting the needs of students and developing their potentials		X	X	X	X		X			X		X
As care for students	X		X	X		X		X				
As meeting personal challenge								X			X	
As a profession						X						
As fulfilling personal aspirations	X	X		X								

6.3 Views of lesson planning

Teacher planning is one of the key components of nearly all initial teacher education programs throughout the world, including the programs offered by the City University and Metro University. How student teachers are prepared in teacher planning has been discussed in Chapter 5. The following sections describe the initial conceptions of student teachers in teacher planning. Their views are codified into five categories, namely: general conceptions; procedures in lesson planning; elements; concerns; and, sources of knowledge for teacher planning. While lesson plan elements are identified in their simulated lesson plans, their concerns and sources of knowledge for teacher planning will be discussed in Section 6.4.

6.3.1 General conception of teacher planning

At this initial stage, beginning teachers' views of teacher planning reflect to a very large extent their preconceived conceptions of teaching and learning. For example, Clara, described teacher planning as, "the time previous to the lesson that you work out exactly what you are going to do.... It is pretty broad, like getting your objectives and big ideas and going through the procedures" [Clara: February]. As a whole, the majority of the student teachers regarded planning as enabling them to go into the classroom appropriately 'armed, giving them a sense of readiness and confidence to deliver something that they, "have to deliver". Rachael commented that:

> *Making sure that you have got all the details, everything together, [the] resources so that when you go up in front of the class to teach, you know enough of where you want to go.... So you are prepared should the students change their direction on you like they don't understand something you thought they would, then you are prepared for that. So it is a plan on what you are going to teach, [and] how with the resources you are going to use. Where you want your students to be when you finish. [Rachael: February]*

However, the knowledge transmission orientation of teaching was reflected in the conception of planning for teaching of Saran who honestly admitted that, "When I think about [the] lesson plan, I think of the book ahead of me. The page number, where I should go, when I am asked to teach and the experiments I will do and the demonstration I will expect them to look at" [Science group, Saran: April]. Indeed, she was not alone in this transmission view of teacher planning. One of her counterparts, Ada, described her view of lesson planning as "What I am going to do? What I want the kids to get out of it? What sort of knowledge I am going to be able to impart to them and in what form I am going to be able to do it" [Ada: May].

The importance of preparation before a lesson was reflected in the response of Tony who quoted the army saying that preparation prevented poor performance. He said:

> *I think that part is true. If you actually go through this beforehand, I am sure the lesson will go far far better than if you don't do it at all.... [The] Pre-preparation part is very important. You have to know what you are going to talk about before you go in there. [Maths group, Tony: April]*

Although the need for lesson planning was strong for Tony, he expressed doubts about the value of lesson plans. When asked about his view on lesson planning, he said:

> *Honestly, I think of boring. It is boring. I also feel that it is a little bit of a waste of time because when you get to the classroom, everything is in my head working so fast, I can't look at a page - a take off of what I want to see. I have doubts, if I want to get something off the page [in the lesson plan], I have to have huge headings down the page.... [Maths group, Tony: April]*

His classmate, Valerie, was also rather skeptical about spending so much time planning lessons, she said, "I was thinking the other day, probably the lesson is about fifty minutes. It is no point taking about an hour and a half to do it [lesson planning].... At the beginning, I found it very difficult to work it out.... " [Science group, Valerie: April]. Nevertheless, both Tony and Valerie exhibited changes in their conceptions of teacher planning over the course. This will be will be analyzed in Chapter 8.

However, student teachers generally spent a long time writing their lesson plans during their first teaching rounds. To avoid making mistakes, some students wrote scripts for their lessons. Tommy described vividly his experience in writing scripts for his first lesson plans:

> *I don't mind writing down exactly the words I am going to say in the first two or three minutes because I knew that when I first walked into the class, I felt very very nervous. So what I will do is to rehearse it and let it be a drill for the first lesson. I also script my little lecture part between 5 to 10 minutes. This is the part I spend most time writing the plan. [Maths group, Tommy: April]*

Despite the fact that two student teachers responded rather negatively towards writing plans for lessons, all other student teachers believed that lesson planning was something they needed to do either to satisfy the requirements of

university lecturers or to make them feel confident enough to stand before their students. The first lesson plans were more like scripts focusing on what content to get through and how to do it. The notion of knowledge transmission was strong among these novices at this initial stage of their teacher education program. Student teachers were more concerned with survival in the classroom and planning to teach represented a response to this concern. Nevertheless, implementing what had been planned for the classroom was not a simple two-step business, particularly when student teachers encountered difficulties interacting with supervising teachers and students during their teaching rounds. These experiences created cognitive dissonance and post-lesson reflections at schools and in university affected their overall conceptions of teacher planning. This will be analysed and discussed in Chapter 7.

6.3.2 Procedures in lesson planning

Following the ideas that lesson plans are like scripting for performance, procedures student teachers adopted in lesson planning varied. Generally, they started focusing on content to be dispatched in the lesson. They then moved on to how the content was to be presented. The procedures normally reflected how they interpreted teaching from their past experiences of the lessons they had undergone as learners. The lesson plans followed a rather didactic orientation; Tommy from the Metro University portrayed his procedures when planning to teach:

> *Yes, my first step is to work out very carefully what I want them to come up with. Like, when I was sitting down with a book, the first thing I will ask is: where do you go up to, what concepts need to be taught.... I guess I normally start with an introduction. Just do something interesting and to start the coverage to grab their interest. And then, I try to develop the activities around the main body of the lesson. [Maths group, Tommy: April]*

Some student teachers thought of content presentation in terms of steps to take. They had pre-conceived mental pictures for the lesson. Clara described her planning scenario:

> *Getting your big idea. Getting that organized first. Figuring out what you think they know already. Getting to know what points you need to start from. And then start going through step by step what is going to happen in the lesson.... I thought of the number thing myself just because it helps me and it distinguishes sections with other line. It's like a running sheet. Like a script. [Clara: February]*

When student teachers were given the teaching task, their prime concern was how they went about teaching the content. One way to organize the content was through converting it into questions. Eliza from Metro University restated her experience, "At the beginning, I write down questions but I will have to sit down and think in my head how I am going to ask it, how it will lead into. So, I will be having this sort of re-run lesson in my head. Otherwise, I stand up there and go blank" [Science group, Eliza: April]. On the other hand, her classmates, Saran and Valerie, would also think of what they thought their students would already know and then think about what they needed to cover in the lesson. They would then think of available resources in their practice schools to support their teaching approach.

Sequencing of the lessons was one of the concerns for these student teachers when planning. Susan described her procedures in arranging for the lessons:

> *When I knew what subject I will be teaching and the timetable, then I work out an outline for the lesson I will be teaching and work out how much content I am going to teach.... I divided it up and worked out how many lessons did I have before the testing.... I brainstormed all the different activities we have done at university and tried to weave them in to the lesson in terms of activities. [Susan: February]*

In summary, the procedures student teachers adopted for planning for teaching started with identification of teaching content, then selection of teaching activities, time allocation, and finally availability of teaching resources. Their main concerns were twofold: the teaching content and the teaching methods. The planning procedures observed by student teachers at this stage demonstrated clearly rudiments of a technological orientation in teacher planning (Yinger & Hendricks-Lee, 1995) in which objectives, content, activities and assessment are arranged in a linear sequence as in Tyler's rational model in lesson planning. Based on Yinger and Hendricks-Lee's conception of teacher planning, Table 6.3 illustrates lesson planning orientations of

student teachers at this initial stage. Yet, it is noted that assessment for learning was barely accounted for in their lesson plans in this initial phase of learning to teach. It could well be argued that this approach reflects, to a great extent, that they focus more on teaching than on learning at this initial stage of teacher training program.

Table 6.3 **Lesson planning conceptions of student teachers in the first attempt of the simulated planning task**

Planning Conception / *Student teachers*	*Technical*	*Psychological*	*Ecological*
Clara	■		
Jenny	■		
Michael	■		
Rachael	■		
Susan	■		
Ada	■		
Eliza	■		
Frank	■		
Saran	■		
Tommy	■		
Tony	■		
Valerie	■		

6.4 The simulated planning task

In order to find out how student teachers came to construct their approach to teaching through lesson planning, simulated planning tasks were conducted with five novices from the Metro University and three groups of students from the City University. The administration of the simulated task was arranged on commencement of the teacher education program such that student teachers' competence in lesson planning could be assessed at this initial stage. The planning task was modeled on *The Teacher Assessment Project* undertaken at Stanford University (Shulman, 1987b). In the simulation task, student teachers were asked to plan and explain a lesson that

he or she would teach to a junior secondary class. In view of the importance of the subject knowledge in teaching, student teachers were given choices in the topic for the simulated tasks. They worked mainly on selected topics extracted from subject textbooks for their subject methods including: Music, Geography, History, Mathematics, and Science. Each student or each group of student was given a textbook from which they would choose a familiar topic to plan a single lesson of forty minutes duration. They were not obliged to use the textbook, which was provided simply to give an idea about the kinds of materials available to them and to the students. The list of topics they chose is tabulated as follows:

Table 6.4 **Distribution of lesson topics in the first simulated planning tasks**

Student	*Institution*	*Level*	*Subject*	*Topic*
Ada	City University	Year 8	Mathematics	Percentage
Mathematics Group	City University	Year 8	Mathematics	Percentage
Science Group	City University	Year 9	Science	Molecules and ions
Clara	Metro University	Year 8	Music	Recorder
Jenny	Metro University	Year 8	History	The Crusades
Michael	Metro University	Year 8	Science	Fossils
Rachael	Metro University	Year 8	Mathematics	Percentage
Susan	Metro University	Year 8	Geography	Introduced Species

Written instructions and guiding questions were given to student teachers and they were required to verbally walk through the lesson plan with the researcher on completion of the simulation task. They then answered the following questions:

1. What would you like to know before planning the lesson?
2. What would you be trying to achieve?
3. What are the important teaching points for this lesson?
4. How would you go about teaching your students?
5. How would you know whether the lesson is successful?
6. What do you need to know, or to use, to help you plan the lesson?
7. Do you follow any steps when planning for the lesson?
8. Will you follow the same steps when planning a lesson for a different subject?

The whole simulated planning task took approximately one hour, followed by the semi-structured interviews. Student teachers first familiarized themselves with the content before attempting the planning task. The majority of the preservice teachers spent less than 10 minutes studying the texts before working on their lesson plans. In general, student teachers completed their tasks within half an hour. The lesson plans student teachers designed are illustrated in Appendix 11. The following sections describe and analyze the lesson plans constructed in the simulation exercise.

6.4.1 Elements identified in the lesson plans

Most of the lesson plans produced in the simulation exercises described the teaching activities student teachers would use to deliver the content. The lesson plans were like running scripts describing how student teachers would teach the content assigned to them. Elements identified in all the lesson plans are presented in the following table:

Table 6.5 **Elements identified in the lesson plans on completion of the first simulated planning tasks**

Elements & Formats / *Student(s)*	*Assumption*	*Objective(s)*	*Content*	*Key questions*	*Activity*	*Resources*	*Diagram*	*Board work*	*Worksheet*	*Evaluation*	*Logistics*	*Time*	*In column form*	*In script form*	*In points form*
Ada		X	X		X	X				X		X	X		
Maths Group		X	X		X	X	X								X
Science Group			X	X	X			X	X				X		
Clara	X	X	X		X						X		X		
Jenny		X	X	X	X	X		X				X	X		
Michael			X		X						X	X			X
Rachael	X		X		X	X						X		X	
Susan		X	X	X	X	X			X		X	X	X		

From Table 6.5, the main components identified in the lesson plans include 'activity' and 'content', which appear in all the lesson plan outlines. This reflects the relative importance of these elements in student teachers' perceptions of lesson planning, which generally coincides with Taylor's (1970) earlier findings in experienced teachers' planning practices in seeing activities as the point of departure when formulating their lesson plans. Resources for organizing activities and time arrangements are also important elements. Except for Susan and Ada who had some lesson design experiences, lesson plans of the student teachers included an average of approximately five elements.

As displayed in the simulated lesson plans, it is not surprising to find that student teachers generally focussed on content they wanted to impart to students. This appears to be the prime focus of the concerns of nearly all the student interviewees and content serves as the point of departure for many of them. As Jenny put it:

> *I look at the content, what I really want to impart given that time based on these things. Once you've got the content, I suppose you try to find activities and ways of expressing it and relate to that age level or whatever level it is. Try to fit that into the time frame. And that is basically what a lesson plan is about. [Jenny: February]*

In contrast with Taylor's (1970) assertion that experienced teachers do not follow Tyler's rational model in planning by stating objectives for the lesson, quite a number of student teachers mentioned that they thought of objectives when they planned for a lesson. Clara recalled how she planned for her task, "When I start to plan an actual lesson. You've got some sort of goals in mind as to what you are supposed to be doing. So I start writing out my objectives for the lesson and what I want to achieve out of it" [Clara: February]. However, these student teachers had vague conceptions of lesson objectives at this stage. Writing objectives for lessons could be a result of their work habit. As Susan pointed out, "I am a very sequential person. So I go through my little template. And I think the big thing I notice that I do is I take these knowledge objectives and form them into questions as the content and then for each question I work out different activities" [Susan: February].

Closely related to the presentation of content are the teaching activities. Except for two student teachers, Ada from City University and Susan from Metro University, who had some work experience as a trainer or a demonstrator, most of the remaining student teachers had comparatively limited experiences in organizing learning activities for students. They all regarded learning activities as an important means of dispatching content. However, their teaching activities were modeled largely on their own learning experiences. Clara, the music student teacher from Metro University, described vividly how she would organize her recorder lesson:

> *I would like to sit them into a semi circle. If I could, it would be good for them to sit in chairs in a semi circle in front of me. They can sit down on a chair with the music stand in front of them. If they have a music stand in front of them, they've got nothing to fiddle with. So when you say, instruments down, they can put their instrument on their left or they can put it on the floor. If they've got nothing to do, they just watch you. They can't write note. They can't do anything. Whereas in rows or tables, they are sort of hidden. That is the setting I like. That is the setting as far as ensembles are concerned. [Clara: February]*

While the focus of the previous teaching activity seems to focus on maintaining discipline in the lesson, other student teachers used question and answers sessions as the main means of presentation. Some beginning teachers thought of using group activities to present their teaching of content. Examples such as observation, group discussion, and group work were also mentioned, as teaching activities student teachers would employ in their lessons.

Time is one important element that student teachers considered when planning the lessons. This view was shared amongst five of the respondents. For these student teachers, the time frame for different parts of the lesson was like guesswork. Jenny made the following remark, "What are you going to do in a lesson? I guess a big part of that for me is time management as well. Because you don't want your lesson planning end up being 50 times longer than your lesson because that is just a waste of time" [Jenny: February].

Taken together, elements identified in student teachers' simulated lesson plans focus on content, learning activities, and time allocation for different parts of

the lesson. The next section summarizes their concerns in lesson planning elicited in the post-task interviews.

6.4.2 Concerns in lesson planning

When student teachers were asked about the concerns they had and the knowledge they needed to acquire for lesson planning, they identified a number of issues. These included: students' prior knowledge on the topic; students' needs; time frame for the lesson; contextual factors related to schools; class management; and, flexibility. They also considered that they needed a good knowledge base of teaching objectives, teaching content, teaching strategies, time management, resources, ways to handle contextual constraints at schools, guidelines for lesson planning, and personality issues.

Student teachers thought that they needed to know more precisely what they were going to teach. They needed to equip themselves with an appropriate level of knowledge and 'brushed up on their skills' before the lesson. An example of this was expressed in Clara's concerns over her inadequacy in skills in musical instruments. She said, "I would like to know that I can at least do what I am teaching. For example, when I have got to go out when I do my first teaching round, I have to teach year 8 drums. I have done some basic drums, but I would like to brush up on my skills again before going to the lesson to teach them" [Clara: February].

For unfamiliar topics that student teachers had to teach, they were prepared to do some research work but they generally had confidence in picking up the subject knowledge. For example, when a history student was asked to teach a topic she was not so good at, she gave the following response, "You need to have a knowledge about the material, I don't have any problem with this area [Crusades], but say, if I am teaching Australian history, I have to go and research and try to stay at least one step ahead of the kids. I need to brush up on areas I am not familiar with. I am prepared to do some reading on this to equip myself better" [Jenny: February].

In general, student teachers were confident with their subject knowledge.

The importance of subject knowledge in teaching was well recognized among them. But some student teachers were anxious about how the knowledge could be presented effectively to students. As Michael pointed out, "The knowledge of the subject will help. But knowledge of the class interacting with the knowledge of what students know is different. I am not sure. I don't really know" [Michael: February]. Except for Michael, such a vague conception of pedagogical content knowledge was seldom expressed by other student teachers at this stage. It was not until they felt more at ease with lesson routines that they could spare more time for such things as management issues, knowledge of students, and better ways of representing knowledge through meaningful learning activities. Since all student teachers majored in the discipline of the teaching methods they elected for in their Diploma in Education, they picked up the subject content more easily and readily after the first teaching round. Developing pedagogical knowledge in such areas as class discipline and teacher-student interaction, as well as in delivering subject content at levels appropriate to students' understanding became increasingly viable for this group of student teachers.

The issue of time captured nearly all respondents' attention in lesson planning. Student teachers seemed so conditioned by the conception that teachers had to cover a certain amount of content within a specified time. Frank from City University explained that, "I think time is crucial because schools work on a time frame. You have to get through the materials anyway. So, they look at it. Teachers do not have the time to spend on things not to be covered" [Frank: April]. With chapters of content to get through in a fixed time frame, often followed by assessment tasks like tests and examinations at the end of the practice period, student teachers were often unable to cover the teaching syllabus assigned in their teaching round. Regarding individual lessons, student teachers tended to plan more than enough in advance in order not to fall into an under-timed classroom scenario where they stood in front of the class speechless. But, quite a number of student teachers stated that they did not feel at ease with their timing for the lesson. Jenny disclosed her worry over time control in her lesson:

> *To plan a lesson, the first thing I will think of is how long it is. That sort of time frame I have to put it into. I may be totally off the track but at least I*

> *have in mind the time. I know that it is one of my real weaknesses. I tend to ramble. I tend to go off at a tangent. I tend to find something interesting and pursue it and try to bring it back and so I am really aware that it is one of the things I am going to have to try to control. So, time frame, definitely. [Jenny: February]*

Depending on the nature of the subjects and teaching activities employed for the lesson, student teachers thought that they would like to locate as many resources as possible for the lesson. Resources like musical instruments, posters, pictures, visual materials, and models were something student teachers needed to build their teaching activities on. For student teachers using group work in their teaching, they needed a rich teaching repertoire of strategies to bring variety to the lessons. Lacking a rich knowledge of teaching methods left Rachael rather helpless in her Mathematics teaching. She could not think of any creative and lively way in presenting her lessons. She could only think of the way she was taught mathematics – chalk and talk. In her opinion, "They [chalk and talk lessons] are effective, but not many [students] are involved. If you don't break it up, someone may not learn. But without resources at my disposal, I just couldn't think of a way to do it. So from that point of view, my content wasn't a concern. It was how I am going to present it [the lesson]" [Rachael: February]. Expressing concern over a lack of teaching methodology was not uncommon among student teachers.

In addition to the foregoing concerns, student teachers also expressed their worries over discipline issues in practice teaching. Michael expressed vividly his worries for the first teaching round:

> *I feel very uncomfortable with timing. I don't know how long a lesson has got to go. I don't know how long it takes to set up, how long it takes them to recall the previous lesson. Even in discipline, I would face situations like that. I have no idea what it is like in a classroom with discipline problems. And the clarity of how I am going to present big ideas. [Michael: February]*

Concerning discipline, he continued:

> *I am just trying to think about classroom management. Generally, it hadn't.... But right now, it is coming up. It is graded as base work that is going to happen when learning is going to happen.... Depending on your*

lesson, classroom management will vary [in terms of] what you need to do.... You've got to create something that the students are going to be happy enough to be there. You got to somehow plan in relation to students. You need to create a relationship. [Michael: February]

Other than the discipline issue, Clara was among three student teachers who worried about what to teach. She would welcome supervising teachers assigning topics for her. Otherwise, she might find difficulty in getting the right "stuff" to teach the students. She felt that she needed some foundation knowledge to build her lesson on. At this initial stage, she was not too sure if she had the ability to plan for a lesson. In her words:

Not really [confident in lesson planning]. In a sense, yes. In another sense, no. In the sense no in that it is just so open to what lesson I am planning. If only I knew what lesson I am planning I could probably plan it. I am big on planning but I just need some guideline in that. It is too abstract to teach something.... I need something more, more of a foundation to lay on.... I don't know too much about what is involved. I don't know what I need to know because I don't know what it is, if you know what I mean. [Clara: February]

At the initial stage of the Diploma in Education course, student teachers were not yet very sure of what they needed to know and what they should be able to do in lesson planning. Their concerns focused mainly on teaching content, teaching strategies, time management, discipline and some contextual factors related to practice teaching. The following best sums up the concerns of student teachers in lesson planning at this initial stage of learning to teach:

The things I need to know: About this content, I have to know about the unit, where to fit it. I have to take into account the special needs of some children. Time, how I am going to teach it? Is it going to be in groups, game, or whatever? And...what is the form I'm going to use to get this knowledge across. What do I want to get out of it? The understanding. [Ada: May]

6.4.3 Sources of knowledge for lesson planning

Echoing the assertion of Bramald, Hardman and Leat (1995) and Hollingsworth (1989) that prior beliefs and experiences of student teachers influence

how they interpret their teacher education programs and how they make meaning out of them, findings from novices' responses on the sources of knowledge for lesson planning attest further evidence to their assertion. As Jenny reported:

I think the main influence is from my own research, or else my own learning. Like I have to adapt it to a set unit because you become very aware of your own research pattern and your learning pattern as you go along. And you have to recognize that not everyone is the same. But unfortunately, a lot of mine are still very much based on my learning pattern and the way I go about [it]. You know, taking notes and drawing things together. And also from my experiences in classrooms, primary schools to university. [Jenny: February]

The influences of prior classroom experiences, particularly the way that they were taught and the teaching and learning activities they experienced have produced strong modeling effects on student teachers' planning for teaching. When asked where he got the ideas for lesson planning, Michael responded:

Concepts are going to be influenced by the curriculum I am given. I've got to get this across. Probably depend on what year you are at, how it is done. And then the old activities that I have seen before. It is sort of reflecting on how I have been taught in my high school or in university. It depends so much on that. [Michael: February]

Other than learning experiences acquired in the classrooms from primary school through to university, work experience can also be influential. Susan who worked in a training firm before her Diploma in Education course reviewed her planning practices:

I do it like that. I have done exactly the same thing for the last year writing training materials and so that has been the same: working out what you want them to know, designing activity, dividing up the time, making sure that you've got objectives and everything meets the objectives.... I had a lot of training. I went to America on a training course to do performance design works, which is all this sort of stuff.... [Susan: February]

A further examination of Susan's simulated lesson plan reveals that the layout and procedures of the plan follow steps in the systems design in instruction. However, like her counterparts who considered that past learning experiences had been sources of knowledge in lesson planning, she admitted that:

My whole background is in Geography. I think [that] because I haven't studied history as a learner, I don't have such a wealth of memories of what worked really well. See, in Geography I can think back and think oh, that was fantastic when we went on a field trip and got to research or other things. But I think in history, my memories are learning dates and writing notes from the board. So I think I have to put a little more creative work into it. [Susan: February]

Taken together, the prime source of knowledge for lesson planning for student teachers at this initial stage of the teacher education course derived mainly from their experiences in learning and in work.

6.4.4. Role of lesson planning in general

Student teachers viewed lesson planning as an organizer in preparation for teaching. When asked what role lesson planning played in teaching, Tony commented, "Much as I dislike it, at least it formalizes the need to prepare for your lesson" [Maths group, Tony: April]. The view was shared by Ada, who stated that:

It has a major role in that it organizes me. I got all these thoughts coming into my head. If I went into a classroom with everything in my head, I know what I am going to do and how I am going to do it. I got it under these headings and in these strategies. I know I have to do this first, and lead to this and then this. Without that strategy, I will be lost. I will be really lost. [Ada: May]

For these student teachers, it appeared to be a way of "setting up" their mind. It also served as a reminder about the nature of implementation. Eliza commented:

There is so much you have to do when you are in the classroom. There is so much to think about that if you write down the things you are going to do on a piece of paper [it helps]. Like [you may need to] make sure you collect their books, then you walk out of the classroom and you find that you forget to do that. If you got any plan to remind you at different points of time of what to do, it is sort of secure. Yes, I have done that. I am happy that I have done it. [Science group, Eliza: April]

Respondents also saw lesson planning as building up their confidence in the classroom. Susan from Metro University admitted that:

It plays a great role in my confidence. Because, at least, by the time I have done that I knew that I thought about it. So, I had some starting point to adapt on. And I think it plays a role in my credibility in front of the class because they could tell that I had something that I knew I wanted to achieve with them.... Compared to a situation when I was suddenly teaching a class with no plan, no context. I thought, oh, that was terrible. [Susan: April]

She thought that lesson planning could help students learn. In her words:

You have to plan what you hope to achieve. If you don't plan at all, they just don't learn at the time. I don't know if you could ever get things through [to them]. So, I think you need to know what you are hoping to get done and you need to be flexible to work out the best way of doing it. [Susan: April]

While most of the respondents considered lesson planning a means of formalizing their thinking processes, some of them perceived the preparation work as important in identifying likely problems they would encounter in the lessons. Clara noted that, "When you are planning, you can think about possible problems and solve them before they happen. So, I am not going to come across chaotic situations. It is more than just content planning. It is sort of problem planning, it is sort of role playing in your mind" [Clara: April].

This view was also offered by Jenny, who believed that:

If something doesn't go the way it is expected to go, then there is always like a backup resource for the teacher to refer to. Because you never know what might be thrown at you. And you don't really want to stand there floundering like an idiot. I think in some way, lesson planning in that respect, means that the possibility [of it happening] becomes less. It improves through time and experience because you will have more strategies to cope with. But at this early stage, I think it is important that you've really thought it through beforehand. I mean what has actually been done on the paper is probably relevant in some respect. It is the actual process of formulating and deeply thinking about what is going to happen in those 50 minutes. So you have to have in your head some levels of expectations and some level of plan B as well. [Jenny: February]

Overall then, student teachers saw lesson planning as playing multiple roles in organizing their thinking processes, formalizing the need to plan, building up their confidence, and helping them predict problems. The foregoing discussion on student

teachers' view of lesson planning is summarized in Table 6.6. The notion of flexibility and alternate planning appeared in some of the students' discourse and conception is reflected in conceptual changes to be discussed in Chapter 7. In Chapter 12, student teachers' conceptions of lesson planning represented in concept maps constructed at the beginning and at the end of the teacher education programs will be analyzed in detail in order to further explore their conceptual schema in planning to teach.

Table 6.6 **A summary table of the initial views of lesson planning**

Categories	*Initial conceptions of lesson planning*
General conceptions	➢ Reflections of the pre-conceived conceptions of teaching and learning ➢ Preparation time before teaching ➢ Identifying objectives, contents and going through the lesson planning procedures ➢ Giving a sense of readiness and confidence ➢ Preparation prevents bad performance ➢ A boring practice ➢ A waste of time
Procedures	➢ Like scripting for teaching, procedures generally did stic and arranged in the following sequence: 1. Identify teaching contents 2. Identify appropriate teaching activities 3. Time allocation 4. Identify learning resources
Elements	Lesson plan elements: in order of importance ➢ Teaching activities ➢ Teaching contents ➢ Teaching objectives ➢ Teaching resources ➢ Time allocation ➢ Key questions ➢ Logistics arrangements ➢ Support materials - board work, diagram, worksheets
Concerns	➢ A good grasp of the content knowledge to get through in the teaching round ➢ Inadequacy in pedagogical knowledge, teaching skills and class management ➢ Time allocation for teaching activities ➢ An understanding of students' prior knowledge
Sources of knowledge	➢ Prior beliefs and work experiences
Roles of lesson planning in general	➢ Lesson planning as an organizer to formalize the need for preparation before teaching ➢ A means of formalizing the thinking process ➢ A means to predict problem situations ➢ Building up confidence and credibility in the classroom

These views and conceptions were challenged and re-constructed as new teaching and learning experiences were engendered from the teaching rounds and input from the teacher education courses. How these influences act as interventions in their growth and development of their views on teaching, learning, and lesson planning will be discussed in chapter 7.

6.5 Summary

This chapter has described student teachers' views of teaching, learning, and lesson planning. At this initial stage of their Diploma in Education course, student teachers perceive learning as knowledge acquisition, knowledge application, and as a process. Regarding teaching, the majority of them see it as the transmission of knowledge, skills and values. Some student teachers use teaching as means of exercising control over learning. Others want to develop students' potential and to foster their growth and development. Some teach for idiosyncratic reasons. They see teaching as meeting personal challenges and as a way of expressing their love of knowledge and learning. On lesson planning, novices' views are examined in terms of general conceptions, roles and the planning procedures. The simulated planning tasks were described and analyzed. In general, most of the student teachers took on a rather simplistic view of planning, following mainly the pattern of learning activities they had come across as learners themselves. Students' concerns and sources of knowledge in lesson planning were also investigated and it was found that prior work and learning experiences played a role in their planning practices at this stage.

Resnick (1989) considered learning to be a process of knowledge construction, not simply knowledge recording or absorption. Learners use current knowledge to construct new knowledge and learning is highly tuned to the situation in which it takes place. For the participants in this study, changes in their conceptions of learning, teaching and lesson planning were observed after their first school practice teaching experience.

Chapter 7 will describe and investigate how the teaching rounds in the Diploma in Education course influenced the student teachers' conceptions of learning, teaching and lesson planning.

CHAPTER 7
IMPACT OF STUDENT TEACHING

Introduction

Broeckmans (1986) asserted that learning to teach was seen as a process of qualitative changes in the psychological structure of teaching behaviour. These changes could result from developments in the student teacher's potential for teaching actions, and from all kinds of actions taken by the student teacher in the university or in the practice teaching contexts. These actions might include, for example, studying pedagogical theory or subject matter, observing model lessons, engaging in student teaching, interpreting pupils' behaviours, reflecting on one's own teaching, or conferring with supervisors or lecturers after lessons. According to Broeckmans, it was plausible that the effects of teaching practice on later teaching behaviours were mediated by cognitive processes during planning and interactive teaching.

In this study of preservice teacher planning, school teaching experiences for student teachers are seen as points of intervention in mediating the growth and development of student teachers in pedagogical knowledge, beliefs and dispositions in lesson planning. Despite the influence of their pre-existing beliefs and conceptions about teaching, learning, and lesson planning, all kinds of actions taken by the student teachers in various contexts, when acted upon through interacting with various agents such as supervising teachers, lecturers, students, and peers, might bring about changes in student teachers' conception in lesson planning. Indeed, transformation in such aspects as conceptions of teaching, learning, and lesson planning were witnessed in teaching rounds and thereafter at university coursework. These cycles of transformation are illustrated in Figure 7.1. When student teachers were confronted with problem situations as in planning tasks and interactive teaching, cognitive dissonance occurred, challenging their pre-existing conceptions. Subsequent reflections through post-lesson conferences with supervising teachers at schools and through discussion with lecturers and peers at university could procure changes in their knowledge, beliefs and disposition in lesson planning practices.

This chapter attempts to describe the impact of various student actions, as purported by Broeckmans (1986) in general, and student teaching in particular, on the lesson planning practice of the student teachers in the first two teaching rounds.

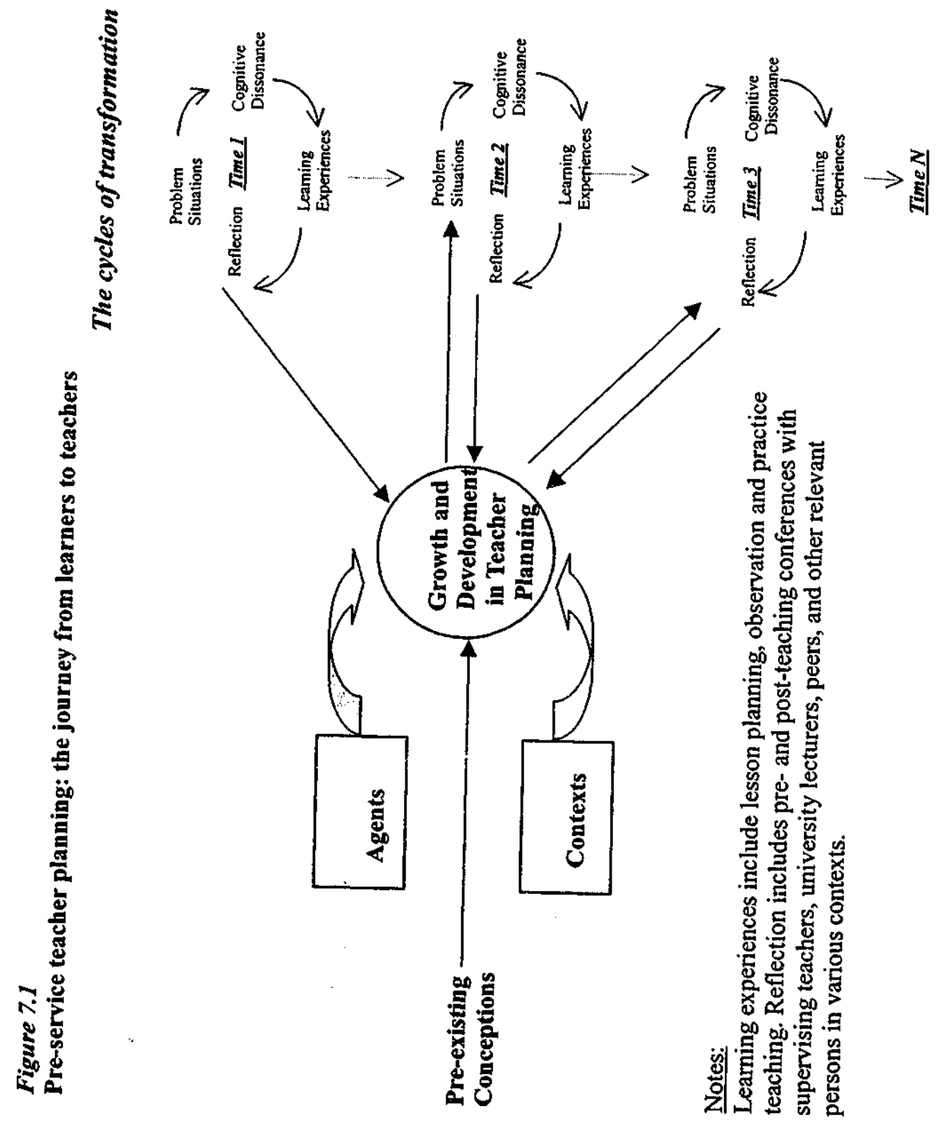


Figure 7.1
Pre-service teacher planning: the journey from learners to teache

Notes:
Learning experiences include lesson planning, observation and practice teaching. Reflection includes pre- and post-teaching conferences with supervising teachers, university lecturers, peers, and other relevant persons in various contexts.

Practice teaching is an integral part of the teacher education programs in which these participants were enrolled. As described earlier (Section 5.1.1), student teachers from the City University were exposed to their early field experiences on the first day of the program. Block teaching rounds, each of three weeks, were organized at different points of time throughout the City University Post-Graduate Diploma course. In addition, students were also required to take part in teaching projects in which they were responsible for teaching small groups of secondary students. Student teachers from the Metro University were required to undertake three blocks of teaching rounds, each of three weeks, in their Post-graduate Diploma course. One group of student teachers had an extended teaching of seven weeks in the third term. In general, practice schools for beginning teachers from both City and Metro University comprise a wide range of secondary schools of varied background, size, denomination, standard, and contexts. The following section describes how student teachers perceived the application of lesson plan formats or knowledge obtained from their University course on their lesson planning during the practicum.

7.1 Putting theory into practice

Lesson planning was treated thoroughly in the Post-Graduate Diploma Programs at the two universities before the first teaching round. As described in Section 5.4, lesson plan formats varied from a loose framework using only key questions as organizers to very detailed formats with set procedures for student teachers to follow closely. In the first teaching round, preservice teachers were requested to follow the suggested format when planning for teaching. The following section explains student teachers' perceptions of the theory into practice paradigm in the first two teaching rounds.

7.1.1 Lesson plan formats from University

As discussed in Section 5.1.1, lesson plan formats were introduced to student teachers at the very beginning of the programs in order to prepare them for their teaching rounds. At this initial stage immediately after the first teaching round, most student teachers generally thought positively of the lesson plan format. For

instance, Clara, a music student from Metro University, expressed her opinion on the usefulness of the lesson plan formats prescribed by her lecturer:

> *I found it pretty good actually. They [lecturers] gave us like two sheets [lesson plan format] about what to basically include. It is pretty thorough. So I am sort of following that. I am doing it with the lecturer's example of setting it like this. It has been really helpful as well. Though I found that sometimes it was a bit too detailed. [Clara: April]*

This view was echoed by Ada from City University. She claimed that the prescribed format enhanced her ability in writing lesson plans:

> *It [the format] is fantastic because it was very detailed. Everything was set out in headings. It wasn't chunky. It was with student objectives, teacher objectives. All these headings are great because you can write a little bit on each. It got you to think about what a lesson plan involves. It organizes me. It did. It got me to think about how I am going to structure my class. It was all very useful. [Ada: May]*

In the first teaching round, the idea of following a lesson plan format was generally acknowledged as instrumental. Indeed, Jenny considered the lesson plan format useful in that it helped her go through the thinking process. She explained:

> *This format idea, you have to plan a lesson because you have to think about it beforehand. You have to think about the class and what you want to achieve and all that sort of stuff.... I can't think of any other way lecturers would teach us as preservice teachers to plan lessons and it is appropriate to ask us to do this. [Jenny: April]*

Her classmate, Rachel, described how she was prepared in two subject methods, music and mathematics:

> *We are taught to use the guidelines we are given. OK, in music, really, we were given a lesson plan outline. Like what might be one way to follow it. We were given lots of practice doing the lesson, but not specific guidelines to write down what we are going to do. Some music students don't think that it is necessary. But I found it useful. In mathematics, well, we were actually given [a format]. We had to do a lesson [plan] before our teaching round as an assignment. We have a formal structure we have to follow and examples from our lecturer. And we spent one hour actually going through step by step what each section involves and what she expects us to do. So, we were quite well prepared in that. And I transferred that to music too. [Rachel: April]*

Though feeling confined by the lesson plan formats prescribed by subject methods, Susan who was trained in humanities subjects at Metro University thought that:

> *It was really good. I felt well prepared with all of that. But I don't think University makes us feel that lesson plans are going to work perfectly or be enough. I think I was well prepared. [Susan: April]*

Though the majority of student teachers from the two Universities followed the lesson plan formats as suggested in the first teaching round, not every student teacher was confident in applying them in their planning. Tony from City University commented:

> *I used [the format] a lot. I think the Maths one is OK. I wasn't sure if I have the criteria met. I had looked at the sample sheet. He [the lecturer] gave us the sheet with these headings. He gave us another sheet where a student prepared the lesson using most of the headings. I did use the example sheet more than the other sheet because it was more sensible. Just seeing the headings from general to specific. I wasn't really quite sure if this is specific application of his principles. [Maths group: Tony, April]*

In the first teaching round, student teachers' perceptions of the lesson plan formats were generally positive. On the one hand, the formats provided them with something they could cling on to when preparing for teaching. On the other hand, the formats were requirements prescribed by university lecturers for student teachers to work on in their first teaching round. These formats served as safety nets or as crutches for novices at times when they felt rather uncertain with the first endeavour in classroom teaching. However, perception on the usefulness of the lesson plan formats changes over time. The following section describes briefly these changes.

7.1.2 Match and mismatch between university preparation and student teaching

Lesson plan formats vary. Most students are enrolled in two different subject methods (e.g., English and SOSE, LOTE and ESL, Biology and Science). Hence, the formats for lesson plans might be different. In such a case, they had to 'switch' modes to fit into the requirements of the university lecturers and supervising teachers. The issue had been raised in one of the 'Teaching and

Learning' tutorial groups at Metro University before the first teaching round in March. Student teachers queried the relationship between subject methods and the 'Teaching and Learning' course, as well as the structure of the Post-Graduate Diploma course. They pondered the feasibility of the 'Teaching and Learning' course providing a generic framework as a backdrop for lesson planning for use by different subjects. One student teacher expressed views strongly against the 'stupid duplication' in that three versions of the same format were taught in different subjects. Other students considered that the lesson plan formats introduced were didactic in nature and that there appeared to be only one right answer to plan for the lessons. In their opinion, they were not introduced to any principles in lesson planning but were only given examples illustrating how to write a lesson plan in the subject following the prescribed format.

In view of the varied formats prescribed by subject methods, student teachers complained that they had to write different lesson plans to meet the requirements of lecturers in different subject methods. One student who took up science and mathematics as his subject methods identified such a discrepancy. He critiqued:

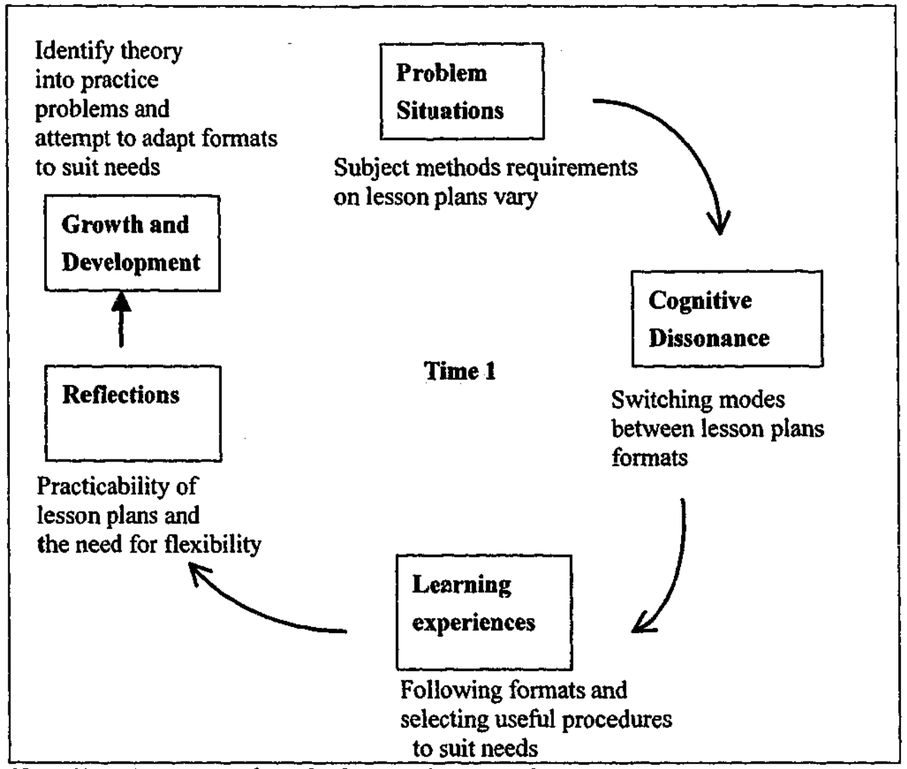
> *Some are good. Some of the lesson plans were right on target. The science ones worked a couple of times. Then the next time, you wanted to do it a totally different way. But it is hard to keep switching between different forms. Why don't they use one common form? [Michael: April]*

Jenny who took History and English as her subject methods spoke differently of the two lesson plan formats she was given:

> *The lecturers gave us formats and asked us to follow. The English one is OK. It was quite loose, actually quite useful. And I did use it. Whereas the history one is much more concerned with skills, values, attitudes, and outcomes. And you have to divide it into: content to teach, method to teach and more of that stuff.... Practically speaking, it [the lesson plan format] makes you think about a few things. But, some of it was very repetitive. I mean, you have basically the same learning outcomes right through the unit. It is pointless to say the students will be willing to do this. It was quite theoretical. Lots of theories. Up with the fairies, not practical. [Jenny: April]*

Student teachers ran into problem situations when they were required to write lesson plans using the different formats prescribed by different subject methods. It triggered cognitive dissonance and student teachers had to switch modes in order to fulfill lecturers' requirements. For example, Jenny used a loose structure for her English lesson plans. However, she had to observe closely the rather rigid lesson plan format prescribed by her History lecturer. Her lesson plans were divided into columns matching the knowledge, skills and values objectives with the contents and the learning activities. As student teachers reflected on experiences in using the prescribed lesson plan formats, student teachers began to adapt the formats to suit their needs in the teaching contexts, taking into consideration lecturers' requirements and the planning tasks. For example, Susan from the Metro University deliberately correlated the content, skills and value objectives for her Geography lessons to meet the lesson planning requirements suggested by her subject method lecturer. Michael posed the four fundamental questions in fulfillment of the subject method requirements. The problem situation was framed and re-framed in the planning process and cognitive dissonance was resolved through learning experiences and reflections. The theory into practice paradigm was resolved through cycles of transformation, as illustrated in Figure 7.2.

Figure 7.2 **Cycle of transformation - Theory into practice paradigm**



Note: Time 1 corresponds to the first teaching round

Despite the perceived usefulness in some of the lesson plan formats by some of the student teachers, they also identified the limitations of the formats assigned to them for use in the teaching round. This is reflected in Rachel who had a sense of discontent with lecturers' emphasis on content in the lesson planning formats. She noted that:

> *Yes, I think you need to know where you are going. But I think here [Metro University] it emphasizes content at the expense of classroom management. I mean we had a few things on discipline and classroom dynamics. But the lesson plan tends to push the content side and not the fact that it is also inclusive of classroom management strategies which is an important part of lesson planning. [Rachel: April]*

On the other hand, her classmate Michael saw the limitation of the lesson plans in helping lesson delivery. For science lessons, he was required to write down

in his lesson plans what he was doing, and what the aims were of students' talking, listening, and circulating. But, in his opinion:

> *The lesson plan has got nothing to do with the actual lesson in terms of delivery. I think it is all about making you realise [what you want to do] before you deliver your lesson - what kinds of lesson you are delivering and make a point of action if you really want to change them other than keep on talking. Then you might think I have done something wrong - I've got to revise my lesson plan. I mean that is the purpose. The purpose we have for lesson plans is to help us deliver our lesson. Answer a couple of questions [as specified in the science lesson plan format] that I think is a waste of time. [Michael: April]*

In view of the practicability of the lesson plans formats, both Jenny and Rachel considered that the formats were not practical in real life teaching. But Jenny forced herself to do it that way and made it a habit. She would make the lesson planning more of a mental process than of a written process when she became a teacher. Yet, Rachel thought that the lesson plan formats were more theoretical and they were not very practical in the classroom simply because of the time constraint and the actual workload involved in daily teaching. However, she considered that:

> *Probably I wouldn't use it [the format] once I become an actual teacher. I mean, it is too detailed. You don't have time. I might use it for the first year, a simplified version. But like most teachers, after a couple of years, when I get to a stage, I will just make sure I know what I am going to do and just go in. But I think this part of preservice training is important because most of the students do not have inherent teacher abilities. They got to learn to use it [lesson plan format]. [Rachel: April]*

As reflected in these student teachers' responses, the impact of the first teaching round on their perception of match and mismatch between university preparation in lesson planning and student teaching is evident. The following table summarizes the significance and meaning derived from their experiences.

Table 7.1 **Summary table of themes related to perception of match and mismatch between university preparation on lesson planning and student teaching emerged after the first teaching round**

Components	*Tendency*	*Significance and meaning*	*Number of respondents (total number being 12)*
Lesson plan formats	Match with expectations	Useful in preparation for student teaching	N = 8
Organizer for preparation	Match with expectations	Lesson plans as instrumental - helping students go through the thinking process, also as safety nets and crutches	N = 3
University requirements in lesson planning	Uncertain	Formats and expectations of subject methods lecturers vary, requesting students to switch between modes in order to meet requirements and this causes discrepancy in planning practice	N = 6
Training in lesson planning duplicated in program	Mismatch with expectations	Versions of the same format taught in different subject methods.	N = 5
Inadequacy in terms of practicability	Mismatch with expectations	Lesson plan didactic in nature, leaving little room for flexibility. Focus on content at the expense of classroom management, lesson delivery	N = 5

While some student teachers saw strengths in the ways they were prepared in lesson planning in university, some saw limitations in the lesson plan formats and they queried the usefulness of university preparation, particularly when the plans were implemented in interactive teaching. The following section attempts to delve into their conception of lesson planning after their first teaching round.

7.1.3 Students' conception of lesson planning

In general, student teachers saw lesson planning as a prerequisite to teaching. It plays an important role in building their confidence. They viewed lesson plans as crutches, as a safety net, and as their yardstick when probing into the unknown complexities of classroom teaching. Susan described how she was caught unprepared in a lesson:

I got to a camp with another teacher who was obviously quite casual about this [lesson planning]. He told me he was going to do something for fifteen minutes. I get up and teach and he just left. This was the really bad experience I had in the whole teaching round and I wasn't even in my class. He shouldn't have done it. I shouldn't have been left with this class. They play all sorts of games like you don't know who they are. You don't know where they are up to and what they are supposed to be doing. Literally, I didn't know what they were supposed to be doing. And the big thing that had dawned upon me was how important lesson planning was to me. For every class I taught, I had to plan and I knew what I wanted to achieve. Compared to this situation when I was suddenly teaching a class with no plan, no context. I thought, oh, that was terrible. [Susan: April]

When lesson planning was viewed as preparation work before going into the classroom, it was also perceived as an organizer. It served as a proactive measure to possible problem situations such that students might not be caught unprepared. Lesson planning was more than just planning for dissemination of subject content, it was perceived also as planning for problem solving. The lesson plans were running sheets for them so that they could work through the content ideas, and more importantly, the plans were like reminders to help students organize their lessons. Clara illustrated how she used the lesson plan as an organizer:

As far as content is concerned, thinking that well beforehand, so I can make sure I have got all of the points I want to get through. And then I can read over and identify some potential problems. So I jot a little note down. You make sure that you will tell them to do this or something else.... I write the full thing down. But to write a separate running sheet to read during the lesson is a lot more concise. So I must have a quick running list of reminder points like one or two words. I can just refer to it and not to weave through like three pages of notes. [Clara: April]

Clara also saw the importance of having a purpose in lesson planning. She thought that lesson planning helped her create purposes for her lessons. "In planning a lesson, you will be thinking about what your purpose is. For the lesson, what you want them to learn. What they are going to get out of it. So if you don't really plan it, you haven't really got anything to lay that on" [Clara: April]. She also thought that lesson planning could help her think through the lesson before it happened. She pondered, "If you sit and sort of think it through a bit, then you can have a clear idea [about] how it would go better. It gives you a better chance to think of other things, or improve, predict problems and stuff like that" [Clara: April].

Three respondents from the City University noted that the lesson preparation work was very important. Frank mentioned that, "without it, I would be at a loss. I would have a lesson plan because I felt that I was not experienced enough not to have it. I have to plan and write it down" [Maths group, Frank: April]. While Tony from the same interview group further stated, "I followed it tightly. I think there is a real need to do that, work beforehand" [Maths group, Tony: April].

Though lesson plan formats provided a framework for student teachers to keep track of their preparation work, preservice teachers also saw the need to be flexible in planning for teaching. They saw the need to change or adapt their lesson plan to suit students. Rachel stated that:

You might have thought they [students] get through so much or something might be easy to understand. But if it is not, or if they are missing something you didn't realise you thought they had, you almost throw your lesson plan through the window. Which is not something I like doing and I probably didn't do it very much but I learned that I had to start getting used to that idea. I also plan a back-up lesson. Maybe not a detailed plan. But I will have in mind what I will do if either they [students] get too gaudy, or nobody listens to me. [Rachel: April]

The idea of having an alternate plan was shared by Susan who considered that implementing lesson planning in teaching was not a simple two-step process. She thought that she re-planned while implementing her lesson plans. Her experience in the teaching round revealed that:

For a few times, when things don't go according to the plan, you are not just rigidly implementing the plan. Because if you were, you would probably be in trouble. You re-plan. What I got them to do is some activities. I might look at my plan and see [that] I've still got three activities I plan to do. And then I might decide, well, no, they won't respond well to doing pair work. So I might make it an individual activity. I have in a sense, just re-planned the rest of the lesson while I am still implementing it. I think I need to be flexible and keep adapting lesson plans and not to plan too far in advance because you really need to plan it reflecting on the lesson you had and changing it so that it keeps evolving. [Susan: April]

Indeed, the idea of flexibility emerged also in Clara's response to lesson planning. She stated that:

More often, I try to plan more than I can get through. And you know, sometimes I found that I was going through exercises that were boring. So I need to make it more spicy at the time. Or I would do something and they would do heaps better than I thought they would. So I have to skip the next bit and move on. So I have to be flexible. Even if it [the lesson plan] is there, it doesn't mean I have to follow it exactly. It is a guideline. [Clara: April]

Basically, student teachers found lesson planing to be a prerequisite to good teaching. They perceived lesson planning as organizers, frameworks, and as reminders about teaching behaviours. They saw the need for a purpose in lesson planning and the role it played in helping them identify foreseeable problems. Yet, they discovered the need to make alternative plans and to incorporate flexibility into their planning and teaching. A summary of conceptual changes in lesson planning after the first teaching round is tabulated in Table 7.2, as follows.

Table 7.2 **Conceptual changes in lesson planning after the first teaching round**

Previous conceptions of lesson plans	***Conceptual changes***	***Triggers for change***
Lesson plans prerequisite to teaching	Lesson plans as crutches, safety net, and yardstick when probing into unknown complexities of teaching	Experience of being caught unprepared in a lesson
Preparation time before teaching	Lesson plans as conceptual organizers	The need for proactive measures to predict and prepare for possible problem situations
Give a sense of readiness and confidence through scripting lesson procedures in written plans	Written lesson plans as reminders to lesson routines and teaching behaviours	The need for systematic organization and presentation of lessons
Help identify objectives, content, teaching activities and teaching resources	Lesson planning helps create purposes for lessons	The need to work out what they expect of students at the end of lesson
Lesson plan boring and wasting time	Lesson planning a real need	Found themselves at a loss without lesson plans
Lesson plans are running sheets or scripts	Need flexibility in lesson planning - alternate plans or re-plan if necessary	The need to change or adapt their lesson plans to suit students - implementing lesson plans not a two-step process (plan and teach)

Other than observing university requirements laid down by lecturers, student teachers were still very much under the influence of their supervising teachers. They were very much the apprentices of their supervising teachers at this stage. In the next section, the phenomenon of an 'apprenticeship-approach' will be discussed.

7.2 Apprenticeship-approach through school supervision

During the practicum, student teachers were under the guidance and supervision of subject teachers who would serve as their mentors and supervisors at schools. Student teachers taking up classes of the supervising teachers were required to discuss their lesson plans with their supervisors before the lessons. Though not compulsory, they were encouraged to observe their lessons and acted as their teaching assistants when necessary. Supervising teachers were requested to write formal reports on student teachers' performance in the teaching round. In view of the nature of the 'work' relationship between the mentors and the beginning teachers during the practicum, these student teachers were like apprentices to their supervisors. Hence, they were influenced by Grossman (1991) identified as an 'apprenticeship' to their senior partners at schools. The following section explores how student teachers perceived their supervising teachers during the first two teaching rounds.

7.2.1. Influence of supervising teachers

Supervising teachers played a pivotal role in shaping how the student teachers perceived their teaching performance. While some supervising teachers allowed space and freedom for novices in designing their own lessons, most of the student teachers observed lessons of their supervising teachers and other teachers and planned their lessons to suit the preferences and meet the demands of their supervisors. Clara described her teaching experiences in her first teaching round:

General impression of the teaching round? I felt good about that. I can see areas to work on and improve. But overall, I thought I wasn't experimental with what I did. I mostly followed what the supervising teachers did, and

their styles and their way of teaching. So I wasn't too much of myself. Teaching as I was supposed to be from observing. I watched my supervisor do the lessons and I did like her with [an]other class later on the same lesson. So I tried to watch for things which I thought she could have improved on. [Clara: April]

When she was asked how she planned for her lessons, she made the following response:

When I did it, I found out from my supervisors what the lesson was. Because I had a set progression of what they wanted to get through by the end of term. So I had to keep posted with that. I found out what I basically had to do. I was told what I was going to do, but pretty much sticking to what they were doing, almost exclusively. I did a few little bits and pieces on my own but not very adventurous. I think next time I will be more adventurous in not only my content but my own presentation and everything. [Clara: April]

Nevertheless, Clara's prime concern in this teaching round was to get through her lesson, even at the expense of classroom management. She recalled one classroom scenario:

Whereas I know what you should be doing is saying if somebody is playing, you should take it off them. I tell them just not to and keep going [with the teaching] .... When you are the only person up there, you are in control of the whole class. And you get both the content and discipline although just keeping them focused; I tended to let the focus slip and just concentrate on getting through the lesson. [Clara: April]

On top of the school requirements of the content to cover, student teachers commented about their supervising teachers' work style or supervision style. Jenny was grateful for the positive reinforcement her two supervising teachers gave her in the first teaching round. In the post teaching round interview, she remarked that:

My English supervisor was very casual. He didn't write comments or anything but a couple of words after the class. And I was amazed to see the report he gave me after the teaching round because I didn't realize that he thought all of those really nice comments. He was just like that personality and it suited me fine. My history supervisor was really meticulous. He wrote a couple of pages on every class. He was great. I had a lesson I thought was a total disaster but he said that it was an excellent lesson. He said he loved that lesson because I had learned something he wanted me to do it. He was really great. I got so much feedback. I thought I had learned a lot and my confidence level has risen considerably. I am really confident now. And I feel like I can be a teacher. [Jenny: April]

However, when she was asked how her supervising teachers planned their lessons, she saw some contradiction in the way they were prepared for lesson planning in the university and the lesson planning practice by teachers at schools. She reported that:

Within school, every single teacher, without fail, even with the one who was their first year out said: I don't plan lessons like you do in University. We wrote a few lines in our chronicle, some might write a page. Some just got out their materials together and thought about it. One lady teacher told me she had a six-step lesson plan. In the last six steps on her way into the classroom, she thought about what she was going to do in that lesson. [Jenny: April]

In the first teaching round, the planning practice of supervising teachers could provide examples for student teachers to follow, especially when they were required to complete the teaching content assigned to them. Michael recounted that:

I was told this was the topic I was going to do. I worked out the content. And then how I was going to do it. I was expected to use a science textbook and followed how a lot of other teachers were doing the same unit. So I observed their lessons, looked at that, and saw how I was going to vary from their lessons. That's how I learn to do it. I fill in my lesson plan at the end. [Michael: April]

The notion of apprenticeship was explicit in the class of Susan, who felt constrained when addressing different learning styles in the first teaching round. In her opinion:

Not as much as I am aware needs to be done to reach different learners. But I thought I was really constrained by the fact that it was not my class. It was my supervisor's class and I was stepping in for three weeks. I very much adapted to their ways of doing things and put my little bit of individuality into it. But I didn't change that much in the way they did their lessons. [Susan: April]

Indeed, she encountered a situation when she was asked to use a video for four lessons. The video was obsolete and the teacher kept pausing for questioning. She thought that she could not appeal to different learning styles during the video lessons. The practice also limited the way she planned for her Geography lesson on China's population policy. She remembered that:

So my lesson plans for all my geography classes was one lesson plan. And I got really confused when I came to this. And I thought video is a legitimate thing but when coming to lesson planning, I got really stuck because there wasn't much to write down. I certainly write the questions I've got to ask and a few logistics. But there wasn't much to put on my lesson plan. So lesson plans seemed to be irrelevant for geography in this [teaching] round. [Susan: April]

For the student teachers, time constraint was a constant hurdle. They were usually asked to complete a certain amount of content and do a test at the end of the teaching round. They thought that they had to rush through things, particularly when they lost class time through school functions like 'Peer Support Day' and 'Games Day'. Michael mentioned how he wanted to create space for students to explore discovery learning in Mathematics, "But my supervisor wanted me to get back to more writing in the book so that when they come to a test, they can do it" [Michael: April].

Although student teachers customarily acknowledged positive commendations from supervising teachers, sometimes, high ability students questioned the usefulness of supervising teachers' comments in helping them improve their teaching and student learning. Susan expressed how she felt about her supervising teachers:

I was getting such good encouragement from my supervisors who were saying: I think you have achieved your objectives for this lesson. I guessed I was relying a bit on my supervisor to know whether I achieved them [objectives] as well. I think the hardest part for me to find out is whether it [the lesson] is beneficial from the learners' point of view after I have finished the lesson. Because it is easy to say: oh, yes, that was a well-taught lesson. But whether students learn in the lesson is another question. [Susan: April]

While some student teachers attracted very positive comments from supervising teachers, Clara and Rachel felt bitter at the way supervising teachers commented on their performance. Rachel complained that:

He thinks who he is. He forgets he was there to help me. And by telling me, but he doesn't realize that helping is also affirming that I am doing right as well as wrong. I don't mind being criticized. It is just a little bit hard when all you are getting is things to improve on and not the things you have improved on. [Rachel: April]

By virtue of the authority vested in supervising teachers, they worked as mentors in modeling, guiding, supervising, monitoring, and supporting the student teachers. However, as revealed in the above reflections, mismatches between students' and supervising teachers' expectations were evident. While lesson planning was integral to practice teaching, most supervising teachers did not offer a good role model as far as lesson planning was concerned. The prime focus of supervising teachers was on students' ability in delivering teaching content properly in a 'well managed and disciplined' classroom. Nevertheless, as detailed lesson planning helped address student teachers' concerns for survival in the first teaching round, the apprenticeship-approach did not impact too much on students' planning practice at this initial stage of learning to teach. Their approach to lesson planning was still much influenced by University requirements. The following section briefly delineates supervising teachers' comments on students' performances in the first teaching round.

7.2.2 Comments from supervising teachers

Viewed from the supervising teachers' perspectives, the prime focus of concerns seemed to fall into the categories of class management, dispatch of content, and teaching strategies. In general, supervising teachers played a pivotal role as mentors of novices in the process of learning to teach in 'real' classroom contexts. They commented mainly on student teachers' performance in terms of class management and its relationship to student behaviour. One supervising teacher commented on the performance of a student teacher in a history lesson:

Period six [the lesson immediately after lunch] is considered by many teachers to be a very difficult time of day to push students to work. A teacher has to work a lot harder because of this fact. There is also the, "inheritance of a prior lesson". What happened to them in period 5? They can bring the success or failure of that lesson into your period 6 class. [A History supervising teacher: March]

He further reminded the student teachers of the importance of establishing 'teacher image' before becoming relaxed with class discipline. He remarked that:

Humour definitely plays a role in a teacher's repertoire. "Yes, another time-line" was meant to show the students you empathized with them and made light of the situation. A teacher needs to have earned credibility points before they can safely lean on humour to help the lesson along. If it is used without having established your 'persona', it can often be misconstrued in various ways. Within minutes of your humour, you then pulled the reins in with a stern, "hands up if you want to talk." Students then had to figure out which way to take you - easy going or serious? There is a saying that teachers should not "smile until after Easter" so that they have in their first six weeks clearly established their control and their ground rules. Humour causes students to relax, and they may have a different definition of "relax" than you. [A History supervising teacher: March]

An equally important demand of supervising teachers on student teachers concerned their ability to convey the teaching content. The supervisors focused on subject knowledge and associated activities, such as teaching resources, worksheets and the like. The same supervising teacher critiqued:

Your worksheet worked well. It provided the students with the tasks required. Hole punching would be a handy thing for you to do before distributing. Diagrams need to be more realistic rather than schematic. Kids have trouble 'conceptualizing'. They can 'visualize', so a diagram that goes close to realism is ideal. If this is too complicated, then best provide them with a photocopy handout. Year 9/10 students cannot handle schematic diagrams well. [A History supervising teacher: March]

From the above comments, it clearly points to the management role a supervising teacher expected of a practising teacher. This is not uncommon among supervising teachers. The importance of student teachers' management role was further elaborated by a science supervising teacher who commented on a student teachers first science lesson in the first teaching round:

You didn't settle the class down before they came in; consequently they entered noisily and continued that way. You tried to talk to the class and couldn't be heard. You approached individual students and asked them to settle down - but the others kept talking. You tried to ask questions but very few heard you because they were talking. Do not try to talk over their talking - wait until they are quiet and attentive because if you have something to say - it is important that they all listen. [A Science supervising teacher: March]

The following table captures the salient features of the apprenticeship-approach and its impact on student teachers' planning practice after the first teaching round.

Table 7.3 **Impact of the apprenticeship-approach on student teachers' lesson planning practice in the first teaching round**

Salient features	*Student teachers' perception*	*Supervising teachers' perception*
Preparation work on lesson planning	- Prerequisite to student teaching - Divided between university requirements and supervising teachers' demands	- Detailed lesson planning considered not prerequisite to teaching - Lesson planning more casual, less detailed and follow individual work styles and preferences in terms of forms and functions
Impact on teaching practice	- Strong influence from supervising teachers in choice of teaching contents, teaching and management styles, and planning practice - Contextual constraints and time constraints leave little space and freedom for individuals who are to observe closely existing practice	- Those with low expectations: See student teachers as substitutes, not committed to own mentoring role - Those with high expectations: See self as a teacher educator, conscientious coaching and reflections
Focus/concerns	- To get through the lesson - To complete tasks as required	- Class discipline and student behaviour - Establishing teacher image - Lesson content delivery - Teaching strategies
Interactive experience	- Positive: supervising teachers being supportive and encouraging - Negative: supervising teachers being critical and inconsiderate - Neutral: supervising teachers being encouraging but not helpful	- Generally positive with student teachers cooperating and responding to advice
Role in classroom	- As an apprentice to supervising teachers - As a learner	- As a mentor and role model - As a critical friend - As a supervisor

In retrospect, it appears that the focus of supervising teachers falls mainly on content and class management. Based on their close relationship with the student teachers during the practicum and on their authority to comment on their performance, their influence on student teachers was strong, particularly when student teachers were new in their roles as teachers in the practising schools. The

teaching styles, planning practice, and contextual factors at schools could determine to a certain extent how student teachers planned for their teaching, as reflected in Section 7.2.1. Student teachers could fall prey of the apprenticeship-approach and become captive to the supervising teachers in terms of teaching styles and planning practices. In view of supervising teachers' focus on content dispatch and class management, this could have reinforced student teachers' preconceived belief in teaching as the transmission of knowledge. However, Grossman (1991), in a study on how lecturers from a university used innovative methods to help student teachers correct preconceived ideas in the teaching of English, suggested that student teachers could use the following strategies to limit the effect of the apprenticeship-approach, as follows:

1. reflection on past experiences as learner from the perspective of the theoretical framework of instructional scaffolding;
2. critic to apprentice-approach which provides a limited view of teaching;
3. break with personal experience;
4. over-correction: providing extreme examples of innovative practices;
5. introduce the concept of common language: professional collegiality; and,
6. principled practice: reflective stance towards teaching.

Indeed, reflections of student teachers in the post-teaching conferences with lecturers and with their peers at schools and later on in the university could have effected changes in the way they viewed teaching, learning and lesson planning. These changes will be identified and cycles of transformation will be discussed in Chapter 8.

7.3 Summary

This chapter reports and summarizes the findings from the impact of the first teaching round on student teachers in their knowledge, skills and disposition in lesson planning practice. It is evident that students depended on the lesson planning formats from university when preparing for teaching in the first teaching round. However, match and mismatch in expectations between university preparation and

planning tasks occurred and student teachers attempted to adapt the lesson plan formats to suit their own needs in order to complete assigned planning tasks. They underwent some form of cognitive dissonance in the theory into practice paradigm and began to question the practicability of the lesson planning formats. The supervising teachers played a role in establishing theses students' confidence in classroom teaching and changes in their view of learning, teaching and lesson planning were identified after the first two teaching rounds. These changes and the triggers for them will be discussed in Chapter 8.

CHAPTER 8
A TIME OF CHANGE

Introduction

Student teaching provided testing grounds for student teachers to put theory into practice, and reflect on their own planning and teaching. However, the reality shock they might have experienced through interacting with supervising teachers and students, together with the contextual constraints they had to tackle or the freedom allowed for them in planning and teaching in the school contexts could have contrived to create cognitive dis-equilibrium in some student teachers. The intertwining forces generated from various agents in different contexts enacted on their pre-existing knowledge structure, thereby effecting changes in their conceptions in teaching, learning and lesson planning. The following sections report and analyze these changes detected after the second teaching round.

8.1 Changes in views of teaching

As revealed in the interview after the second teaching round, student teachers began to move away from a knowledge transmission mode of teaching. Content was not the only concern they focused on in their lessons. They "survived" their first teaching round, and they received positive reinforcement in post-teaching conferences with supervising teachers and in subsequent discussion and reflection sessions at university. This contributed to a boost in confidence in their competency to teach. For example, Jenny claimed that, "I learned quite a lot in this round [second teaching round]. I was less apprehensive about my own teaching. I think I was more confident that I could do it" [Jenny: June]. Lessons became more interactive in that she was not so concerned with getting through the content written down in the lesson plan. Having herself grasped the ideas of what she wanted to do, she would go in the classroom, see what the mood of the students was and feel more relaxed about seeing where the lesson was going to take them. Then she would work through it. She considered that this was a better way of conducting the lesson.

In addition to moving away from mere presentation of subject matter, student teachers began to question why they were doing what they were doing. Clara remarked that, "I was a bit confused as to what to teach them because I didn't want to just teach. I wanted a reason for teaching what I wanted to teach" [Clara: June]. When student teachers observed innovative ways of doing lessons differently to how they were taught in their own schooling, they attempted to move from didactic teaching to more student-centred teaching. Michael witnessed student-centred lessons in action in the second teaching round. This triggered his urge to follow suit and try out different ways of teaching. His contact with PEEL (Project for Enhancing Effective Learning; Baird & Mitchell, 1986; Baird & Northfield, 1992) prompted his trial of the learning station approach in his Mathematics lessons. He described vividly his 'PEELish' kind of set-up in his Mathematics lessons:

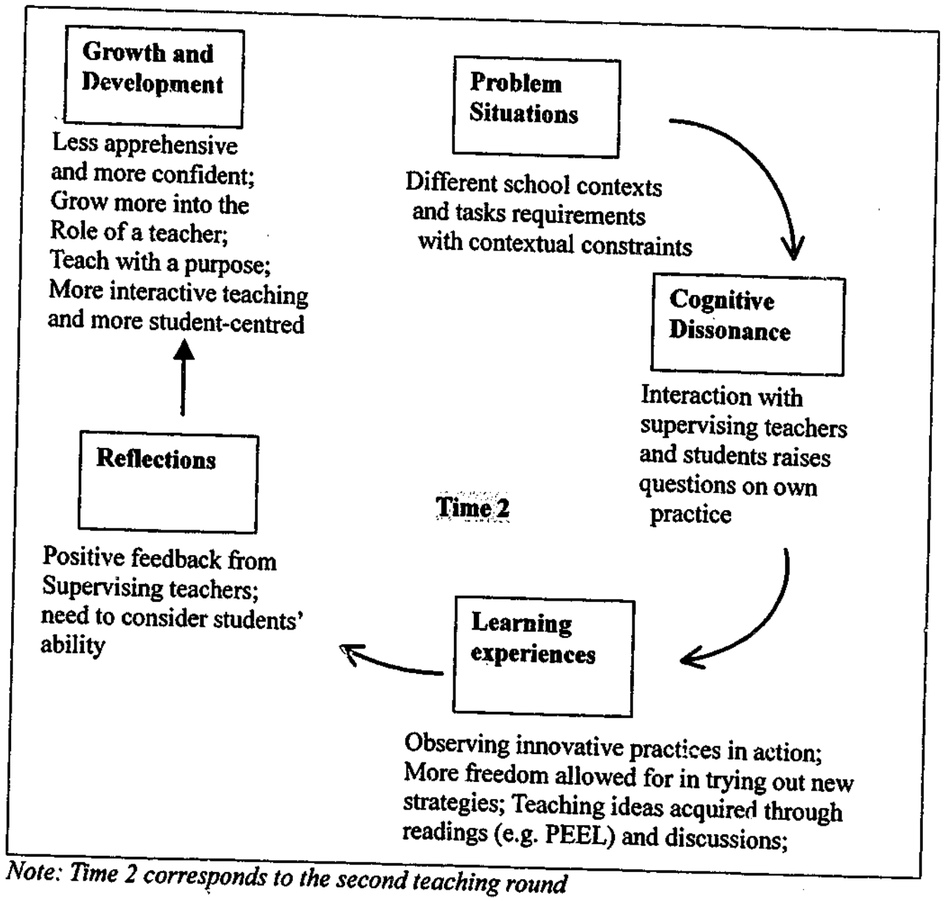
> *I set up stations. Like doing a revision, I had six desks set up with manila folders all loaded with questions with different points. I got a certain amount of points on substitution and a certain amount of points for other Maths topics. I introduced it but kids didn't seem to like it. But they loved doing it later. It is different from a game. I think Maths has so many opportunities for that kind of thing. So I have opened my eyes in that way. [Michael: June]*

As student teachers became more confident after the second teaching round, they perceived themselves differently and considered themselves more as a teacher than a student. Rachel admitted, "I adapted to being a teacher. In my first teaching round, I was a bit apprehensive like I had been a student for so many years. And in this teaching round, I am a teacher that was really easy to come into it" [Rachel: June].

In general, this view was common among respondents from the Metro University after the second student teaching. For their City University counterparts, they shared a different view on being a teacher. Ada reflected on how she thought of being a teacher:

> *Before I did this course or even when I was on rounds, I saw it as a job. Teaching as a job. But now after the round, I see teaching as a profession. I mean it really is not the nine to three thirty or whatever job most people think it is. I mean I am discouraged by this [view]. It doesn't worry me. But, yes, I mean, it is a profession. You have to be good at it. It really has quite a high demand. Rather than just sitting at the desk actually writing, you are actually working. I mean you have to think on the spot. It is very tiring. I would see this as a profession, simply profession. [Ada: May]*

Figure.8.1 **Conceptual changes in views of teaching after the second teaching round**



Note: Time 2 corresponds to the second teaching round

8.2 Changes in views of learning

Changes in the view of teaching occurred concurrently with changes in the view of learning. Course input at the two Universities added impact to how these student teachers perceived learning. As described in Section 5.1.1, lectures in

'Education Studies' at City University discussed themes on educational psychology, philosophy of education, sociology, and history of education throughout the year. Students were to attend seminars after each 'Education Studies' lecture. These lectures were arranged after the first teaching round in March and students were requested to complete a scaffolding assignment related to their extended teaching experiences.

At Metro University, emphasis was placed on issues related to learning in the 'Teaching and Learning' course in lectures preceding the second teaching round. Students were exposed to such themes as: How do people learn; What do people learn; How able are people to learn; and Multiple intelligences. These lectures on learning were extended to include two other themes after the second teaching round: Learning in the classroom: learners' perspectives; and, Learning in the classroom: teachers' perspectives. The 'Social Foundations of Schooling' were introduced also before the second practicum and addressed such broad issues as the compromise between liberal and vocational education, history of Victorian education, and other wider contexts in education.

Course input as such could instigate reconstruction of student teachers' perceptions in learning, particularly when the issues were related to assessment. Student teachers at Metro University were required to submit an analysis of their classroom teaching from a tape recording of a lesson after the first teaching round. One special form of assignment was to ask students to present their view of learning in the form of a poster. On the other hand, students from the City University were asked to complete a task on scaffolding for a talk with a small group of students they taught for a period of six weeks. The task served as a reflection exercise aiming at raising student teachers' self-awareness of their own capabilities, pre-dispositions, and self-identity as teachers. Some of the thought- provoking guiding questions included: How were your conceptions of your group of students and the way they learned in general altered by the exercise? How has your own self-awareness been altered by this experience? Did you become more sensitized to anything that is important to you or your usual way of thinking about things? How did this experience contribute to any of your own convictions, concerns, or aspirations for

future classroom practice?

The following excerpts taken from two of the scaffolding tasks collected from the respondents from the City University illustrated lucidly how their view of teaching and learning changed after the small group teaching experiences. One of the respondents, Tony, accounted for how he thought about science teaching:

> *I am surprised to learn that I actually enjoy teaching year seven and eight students. Before I began the Diploma in Education course I had resolved to concentrate on year eleven and twelve, but now I am not so sure. I can feel myself growing into the role of a teacher, mainly because I am becoming less conscious of myself, but more conscious of the cognitive processes involved with learning Maths. Probably the most valuable lesson I have learned from my teaching experiences here are to listen more closely to what the students are saying. Upon reflection, I think that I probably felt that my agenda was more important than theirs and I could not spare the time to follow up on some of the sillier questions and suggestions from the boys. [Tony: June]*

His classmate, Eliza, connected the scaffolding exercise to her conception of teaching and lesson planning. She recognized that students should be at the heart of her teaching and lesson planning:

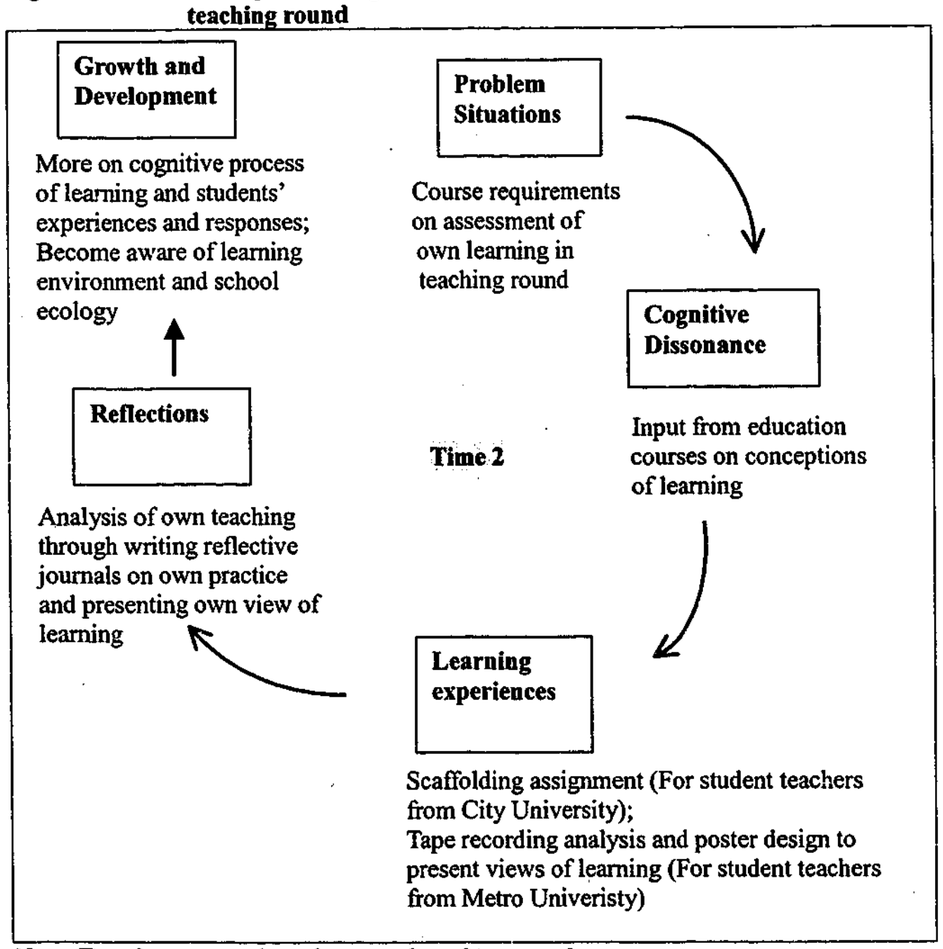
> *Working with a small group of six students gave me a teaching experience that I had never had before and allowed me insights into teaching that I may not have gained otherwise. It illustrated how teaching could be less formalized and more integrated with the students' own experiences and knowledge. It also taught me to learn from students by looking to them as resources during lessons. Listening and flexibility became two key aspects of teaching in a small group. At first, I was too eager to follow my lesson plan at the expense of passing over good leads from the students themselves. This meant that the lessons lacked the richness of the students' own ideas and instead they were compelled to participate in class according to the way I visualized it. Once I realized that I could integrate the students in to my lessons I found that not only did I relax and take the pressure off myself, but also that the students became more confident that their knowledge and input was valuable. Once I began to base my lesson more around the individual students within the group rather than a preconceived idea of how a typical lesson should be conducted, I became more aware of the type of environment that the students would need in order to work productively. [Eliza: July]*

She further commented on the conceptual changes in teaching and learning:

Teaching a small group of students here and on my first teaching round has taught me to be a more open and receptive teacher. I have found teaching so far to be more challenging than I thought it would be and that my concept of what it takes to be a good teacher has been changing. My main concern about education is how to shift the focus from purely academic achievement to helping students reach their potential as students and as individuals. [Eliza: July]

From these detailed reflections on their perception of teaching, it is obvious that the respondents were moving away from the simple didactic approach of knowledge transmission. Such a shift in focus would impact on the way they planned their lessons. This is accounted for in the next section.

Figure 8.2 **Conceptual changes in views of learning after the second teaching round**



Note: Time 2 corresponds to the second teaching round

8.3 Impact of the second teaching round on student teachers' conceptions in lesson planning

Impact on lesson planning stems from changes in student teachers' perceptions on such aspects as planning procedures, lesson plan elements, and concerns and knowledge they considered necessary when planning for lessons.

Planning practice differs greatly among student teachers. While most student teachers followed the lesson plan formats and thought along that line when writing out their plans in the first teaching round, they began to break away from the planning routines and developed their own planning practice in the second teaching round. Some student teachers focused mainly on the thinking process, others attempted to set their own steps to go through in their planning. For example, Su[illegible] gave a vivid description of her planning procedures:

I thought about where we were up to. What were the logistics, what needs to be covered next, what needed to be reinforced etc? Then I would go to the actual physical steps. I will go straight to my little template. I will go back to my outline and check that I actually had enough lessons to do everything I planned.... I work out what I want to know first, the knowledge, the skills and the values and attitudes. And then I look through resources or brainstorm ideas that might go into the lesson. Activities that might go into the lesson and then I do type them in, cut and paste, fiddle around and work out. Fit in with the timing and the rest of it. I fiddle with that a lot. Lastly, I think about the evaluation based on what I have already worked out. [Susan: June]

This practice was shared by Jenny who visualized clearly her history lesson in which her students were to present their projects. Content and focus of the lesson were still the first things she woul[illegible] take into consideration in the planning process. Once she had worked out all that, she had to work out which groups and the sequences they would follow in the presentation session. Then she would take the following steps in writing down the lesson plan:

I wrote down. I mean each step was like a writing step. I structured the unit in such a way that I could refer to it when I needed to. That was the basic format of a lot of my lesson plans. They are like a list of what I must say, what the kids should be doing. Which is not as structured in a lot of ways. But it was still addressing the same objectives as in a formal lesson plan. But I felt more innately aware of them. I didn't have to remind myself. OK, values and attitudes, what I am going to have. [Jenny: June]

In contrast, Michael focused more on how to begin and end his lesson. He analyzed the steps he followed in the planning process:

> *I must get an introduction. I must have a settle down time at the very start. As an introduction to the activity, that is a must. And I want to have a wrap up at the end. Some form of coming together what the ideas were. These are the things to open up. In the introduction, I make it really very clear what the big idea is and why students are doing it. Make me actually notice what they are learning. And then I thought [about] how long each section is going to take. I have tried to put [it] into sections. So after I got that roughly worked out in my head, then I go to the computer, start doing it, and start timing as I go. Take a bit here, a bit up there. Refine on this sheet as I go on. I think about why it is interesting. Why people are doing it? [Michael: June]*

As reflected in the quotes above, student teachers began to develop some personalized steps in their planning procedures. Such differentiation emerged in response to changes in their conceptions in teaching and learning, and changes in their perceptions elements of lesson planning. Students' prior knowledge, needs and their characteristics surfaced in their planning agenda. So did the teaching and learning strategies, evaluation and resources. However, their general conception in lesson planning after the second teaching round shifted in focus. Other than as a formal requirement to meet in the teaching round, lesson plans served as a means to formalize their thinking processes. Rachel commented on her experience of this change in conception of lesson planning:

> *Yes, I got to the stage where I sort of use this lesson plan more as a process for me to think through, to know what I was going to do but not to use it as merely a reminder. I still say it would remind me what the next step was going to be. But it would not tell me what I was going to teach. [Rachel: June]*

In retrospect, changes in conceptions in lesson planning bring about growth and development in planning practice. Changes on the planning procedures, lesson plan elements, and concerns and knowledge were evident in the student teachers. Indeed, conceptual changes were also identified in their actual lesson plans. The following sections account for these conceptual changes of student teachers after the second teaching round.

8.4 Conceptual changes and knowledge growth in lesson planning

In the first teaching round, most student teachers adhered to the lesson plan formats prescribed for them by their subject lecturers. They did not question, to any real extent, whether the lesson plan formats were appropriate for addressing contextual factors like student characteristics, idiosyncratic constraints, and teaching and learning styles. As some student teachers became more experienced in handling classroom situations in the second round, they began to query the applicability and appropriateness of the formats. Planning began to differentiate and conceptual changes in lesson planning began to spurt after the second teaching round. Themes that emerged after the second teaching round included: internalization of planning procedures; mental planning; changes in concerns; awareness in evaluation; flexibility; and, planning orientation.

8.4.1 Theme one - Internalization of planning procedures

In contrast to the first teaching round when most student teachers relied quite heavily on the lesson plan formats prescribed for use in their teaching practice, Jenny from Metro University felt quite strongly about the rigidity of format. She reflected that:

> *It is the format I have problems with. The fact that you had to come up with three skills objectives for every lesson. It was very rigidly formatted. This is the content we are teaching. This is the method we are teaching, things like that. These I thought should be much more integrated rather than as discrete elements. Certain elements should take precedence over others. It is ideal to balance everything. Now I still use the same sort of elements but they are much more at the forefront of my mind. But there are going to be occasions when I say, well, they are not really learning any skills today but they are going to digest this information in order to get through. So, you've got to place more emphasis on one area. To me, the elements are not that set out. But they are still there. [Jenny: June]*

It appears that students began to break away from the conforming requirements of lecturers from university or from supervising teachers at schools. The classroom experiences they accumulated in the two teaching rounds equipped them with a growing knowledge of classroom routines and these were then

internalized. Detailed scripting of what they were going to say or do in the lessons as recorded in their plans in the first teaching round began to diminish. Instead, student teachers developed their capacity in mental planning. This is illustrated in their skilful manipulating of their personalized planning templates in the following section.

8.4.2 Theme two - Mental planning

The internalized routines in managerial tasks of teaching lessened the load of writing down these steps in the written plans; mental planning emerged and was gradually adopted as more practical in daily teaching. Clara brought to mind the following scenario:

> *Well, I had basic ideas of what I wanted to do with the lesson. I wrote down the basic ideas. But specifically how I would execute that idea, I didn't write down. I sort of had it in my head. Kind of knowing what I am going to do. Now I feel like, I understand what I want to achieve in each lesson. I can do it innately with my own mental process and plan in that way. [Clara: June]*

But Clara still saw value in a written plan because, "simply writing it down makes more sense in my head. If we think something through it is still in different areas in your head. But when I set it out, it is kind of logical and in order. In that way, I put it in sequence in my head" [Clara: June].

Clara's experiences were common to several other students. Her classmate, Michael revealed his planning practice in the second teaching round, "In lesson planning for this round, I don't normally do [it] on paper. I am sort of putting down the end results of my thoughts" [Michael: June]. Indeed, his classmate, Jenny, found writing down details unnecessary since she found that as long as she thought through the lesson and did what she needed to do, she did not need to write it down in her plan. She was so confident that:

> *I really felt like it was internalized. My objectives were very clear, way in advance, and it was just a matter of what were the things I have to do, what are the things kids have to do to achieve these objectives. Now those things are pretty much inside my mind. They are imprinted and I know which one is important and which ones are not. It becomes almost second nature. [Jenny: June]*

The above reflections are commensurate with Bullough's (1987) findings on student teachers developmental stage in lesson planning. They moved through the survival stage in their first teaching round and some then began to move into the mastery stage of lesson planning, which is exemplified with a growing concern towards the students.

8.4.3 Theme three - Changes in concerns

The development of internalized lesson routines in the form of a mental structure helped alleviate the need to spell out the logistics of lessons in written forms. The focus began to shift from delivery of content to thinking more about the classroom context, and taking into account more of the students' characteristics and idiosyncrasy when designing their lessons. Jenny pondered that:

> *Yes, my concerns change. It wasn't so content focused. It is more on what are the kids going to be like to day, what do they want to do. Do they have a really bad day? Are they going to be settled? So, we can have more stuff. I would plan, but it wasn't rigid and it wasn't as detailed and complex as I was doing in the first round. In the first round, partly because my supervising teacher who was very content-based, who was very much a chalk and talk, content type person...So it was a lot less content-based this time. There is more thinking about it, planning and considering different aspects of it. [Jenny: June]*

This change of focus triggered student teachers' concerns towards students. For example, Susan began to consider individual differences when planning her teaching. She wanted to find out such things as students' ability, their co-operativeness, how prepared they were to speak up in class, how strong they were on verbal and written communication skills, and how they responded to different learning activities working in pairs or in groups. Though supervising teachers could supply her with some information, she believed that she needed to find out the information through teaching the students. In her words:

I think I got a lot more flexibility in terms of thinking about the students with different levels and abilities. Because all of a sudden, this time [second teaching round] I had to deal with learning difficulties. I had to have something they would be able to achieve some success with. So I think I was a lot more flexible in catering for their mixed abilities this time and evaluating how they went. The things that really stood out to me as really important is to know something about the students which I didn't know about before the round. But that seemed to be the most important thing I learned in this round. Your planning starts to fit better with how your class might behave. So if you know it is a Friday period six and your class is always terrible, then you will take into account a fair bit of that information. [Susan: June]

The notion of evaluating students' responses emerged in Susan's conception of planning. She contended that:

Student feedback was important. Because it fits right back into what you are doing next. And I would say right now my lesson planning will alter greatly based on the analysis I am doing on student feedback. Not to say that if lots of students didn't say they liked an activity then I wouldn't use it. Because I don't think you always just do the activity students find the most fun. But students don't know necessarily everything that is good for them. You have to analyze why they have said something that way. That definitely guides what I will be doing next time. [Susan: June]

These changes in concerns occurred only when student teachers mastered the fundamentals of lesson planning and developed their teaching repertoire from their teaching practices. With more experiences accumulated through teaching, observation, and reflection, they began to develop flexibility in their lesson planning and such flexibility extended to their interactive teaching.

8.4.4 Theme four - Flexibility in lesson planning and interactive teaching

Another major change in conception of lesson planning was that student teachers became more flexible when putting the lesson plans into action. Instead of getting through the planned lesson even at the expense of contextual constraints like classroom management and students' needs and interest as described by Clara in Section 7.2.1, she herself saw the need to be flexible when implementing the lesson. She considered that getting the content across as planned might not necessarily be the prime concern of her lesson. She commented:

Things I got on to too quickly from the point in the beginning, therefore we couldn't do the next bit right because we hadn't really got the first bit yet. So I mean I was learning in that sense of making sure I got everything in the right proportion in the lesson. I was looking for that flexibility. In that sense, I could say I was flexible trying to make sure we got this bit right when moving on. Not necessarily I had to finish my whole lesson. I didn't care so much in finishing the whole lesson. [Clara: June]

Clara's view was shared by Jenny who claimed that she was much more flexible in her lesson planning. She contrasted her first teaching round experiences with the second:

Yes, [I am] heaps more flexible. Like I said, I didn't write four pages of content that had to be got through at the end of that lesson. At the beginning of the first round, I realized that I was re-fitting it [the content] in everywhere [so that I could finish it]. Now, OK, we've got this stuff, if I don't get through it today because they [students] are off colour or because they are more interested in other stuff, we will get through it eventually. I think, it is more realistic to be a bit more flexible. [Jenny: June]

For Susan, the flexibility extended to the implementation stage, she asserted that:

The process of the plan often ends when you walk into the classroom. When you see students not responding to what was there in the plan, you need to plan on the spot. You still look back and say, I really think this activity is valuable. I don't want to cut them off from that. So, we might leave the next thing to the next lesson. [Susan: June]

8.4.5 Theme five - Planning orientations

Being more flexible in planning also brought about changes in lesson organization. The practice of planning for single lessons was gradually replaced by planning more holistically across lessons. Students began to orient towards long term planning, as in the case of Jenny, who described how she perceived her planning in the second teaching round:

In the first teaching round, I thought I've got three weeks. I've got all the stuff to get through. I'd better make each one independent of each one. I just assumed that they got the last one [lesson] before I went on to the second one. But now, I think it [each lesson] is just part of a continuum. In

general, planning is more holistic in the second round. I didn't plan according to the formal history lesson plan. I started off doing like an overall plan. So I know I need to have an introductory lesson which is a single one. I would have a double period where I can get the framework for Australian history and the timeline and everything I did early on. Then I did like group lesson plans because I had three periods after that. [Jenny: June]

The more global orientation in lesson planning was not unique to Jenny. Susan also shared the same perception of allowing more space in unit planning in the second teaching round. When asked how she went about planning for her lessons in the second teaching round, Susan thought that she adopted a similar strategy. The difference was that the supervising teachers allowed her more freedom. She recalled that:

Um, [my planning procedures] basically the same but different in the context that I had more freedom. So, in my first teaching round, I didn't really have much of the idea of really thinking what needs to happen now. I was only really thinking one lesson at a time. I was thinking that I could just write all the lesson plans at the start. I was just saying, OK, well, I will write up to group activity and then I will see. I will write this lesson plan very much based on where they [students] are up to at that point. But in this round, I planned my whole three weeks unit of work to the topic level. That is the difference. I knew what topic I wanted to cover in this lesson. [Susan: June]

8.5 The flow of changes in stages of development in lesson planning

Viewed retrospectively, student teachers from the two universities experienced growth and development in lesson planning practices after the two teaching rounds. They expressed changing concerns over lesson planning. In particular, they were aware of the need to acquire knowledge of students, and the class they would be dealing with and contextual factors like: the nature of the individual school itself; requirements of lecturers and supervising teachers; teaching and learning strategies; resources; and, evaluation. In fact, it was in the teaching rounds and in the subsequent reflections that these teachers-to-be started to construct their own ways of doing their lesson planning. Table 8.1 traces the flow of conceptual changes identified from the first simulated planning task through to the second teaching round.

Table 8.1 **Conceptual changes in lesson planning after the second teaching round**

Stages in lesson planning	*Conceptual changes in lesson planning*	*Corresponding time frame*
Impact Stage		*3rd Teaching Round and beyond*
Mastery Stage	▲ *Input from University on conceptions of learning* ▲▲▲ *More confident with self as teacher* *Reflections on own teaching* *Influence from supervising teachers and student feedback* ↻ Lesson plans as means to formalize thinking process ↻↻ Planning procedures internalized ↻↻ Growth in mental planning practice ↻↻ More concern towards students ↻↻ Greater flexibility in planning and interactive teaching ↻ More global planning orientations	*2nd Teaching Round*
Survival Stage		*1st Teaching Round*
Fantasy Stage	▲▲ *University input* *See the need to follow prescribed lesson plan format in the first teaching round* No change identified at this stage. Lesson plan focus on getting teaching content across to students	*Beginning of PGDE course*

▲ *Triggers for changes italicized*
↻ Conceptual changes in planning

Table 8.1 illustrates the growth and development of student teacher planning in terms of Ryans' four stages of teacher development, namely fantasy stage, survival stage, mastery stage, and impact stage, which were used as basis for discussion in Bullough's (1987) study of changes of the lesson planning processes of a secondary school teacher over the first year of teaching (refer to Section 2.6.3). It is clear with these student teachers in the present study that their development in lesson planning from their first attempts in the planning tasks through to lesson planning in the second teaching round unfold in the sequence as identified by Bullough. Recapitulating student teachers' first attempt in the simulated planning tasks (refer to Chapter 6), their main concern was to get the content through using whatever teaching activities they could think of at that time. Transmission of teaching content through activities was paramount at this stage, which Bullough labeled as the fantasy stage.

Their planning in the first teaching round took on a very careful stance, mainly to fulfill the requirements of university lecturers and supervising teachers. However, the practice teaching required interaction with supervising teachers and students and planning for teaching was different from the lesson planning assignments required of them in the subject methods. Teaching in this round was more than just getting the content across to students. It had two major task structures organized around the problems of learning and discipline. They began to see the need to establish order and to identify activities and establish routines. They entered what Bullough had coined as the survival stage. As discussed in Section 7.3, they underwent cognitive dis-equilibrium in their conceptions in teaching, learning and lesson planning and the first cycle of transformation took place. Reflections in post conferences with supervising teachers at schools and with university lecturers and peers at university triggered re-conceptualization of their views on teaching, learning and teacher planning.

In the second teaching round, student teachers grew more mature and felt more confident of themselves as teachers. They began to feel that they had better control of the class and were able to identify and apply a richer teaching repertoire of teaching activities, partly because of the input from subject methods and education

courses, and also from observation and discussion with supervising teachers. Their instructional routines began to establish and their mental planning assumed more significance in their planning agenda. When some student teachers began to feel confident enough to follow their own planning procedures and challenge lecturers' or supervising teachers' planning suggestions, they began to move into the mastery stage of planning. Once lesson routines were established and internalized, student teachers were more confident of their role as teachers and they began to attend more to student learning. They displayed signs of mastery and they planned with more certainty. This was fully demonstrated in the last teaching round and will be discussed in Chapter 9.

8.6 Summary

In summary, this chapter discusses the conceptual changes in student teachers' lesson planning after the second teaching round. They generally adhered to the lesson plan formats in the initial stage of their practice teaching but as they accumulated knowledge and experiences in the practicum, they began to internalize classroom routines and construct mental images of their teaching. This helped them to "lighten their load" in spelling out their lesson in detailed written forms. Agents like the supervising teachers, lecturers, peers, and in particular, students, challenged their perceptions and impacted on their conceptions of teaching, learning, and lesson planning. Growth in their knowledge of lesson planning was evident in eight out of the twelve participants after the second teaching round. They started to raise questions on content, students, teaching and learning strategies, and contextual factors. Their planning practice began taking on diverse views on the role of lesson planning. In the next chapter, their perceptions of teaching, learning, and lesson planning after the last teaching round will be examined in detail.

CHAPTER 9
DETECTING AND INVESTIGATING CHANGES IN TEACHING AND LEARNING

9.1 Detecting and investigating changes in the views of teaching and learning

As described in Section 3.1, the beliefs and commitments held by student teachers significantly influence what they learn in teacher education. Feiman-Nemser and Remillard (1996) identify three areas of beliefs that may cast impact on what student teachers do and say, how children learn, and what should be taught. On beliefs about teaching and learning, many student teachers believe that teaching is a process of knowledge transmission from teacher to student and that learning involves memorizing information and practice skills. This conception considers teachers as the sole authority for knowing and the source and provider of information. It is also common with regard to beliefs about subject matter that some teachers see it as a fixed collection of facts, concepts, and skills that must be learned before they can be applied. Given these views of knowledge, it is not surprising to find that many student teachers believe they already know most of what they need to teach. Further to this, when considering beliefs about students, the tension between treating them as individuals and treating all students equally may, in some instances, cause student teachers to disregard student diversity that is ability or class related. These three aspects of knowledge related to teaching and learning (amongst others) then create many dilemmas for student teachers.

According to Feiman-Nemser and Remillard (1996), teacher education students are characterized as 'cultural insular' with 'limited career horizons'. Many grow up in a school system that rewards passivity and obedience rather than self directed learning. They have learned to see teachers and texts as authoritative sources of knowledge. Disenfranchised as learners they have achieved success by figuring out what the teacher wants and then doing it.

Unless student teachers undergo learning experiences that challenge their own knowledge, beliefs and dispositions, they may not be able to recognize and

appreciate the complexities of teaching and learning. As discussed in Chapters 7 and 8, student teachers were exposed to challenges of course work requirements, practice teaching, interaction with university lecturers, students and school personnel like supervising teachers and coordinators, and reflective activities in university settings as well as in schools during the course of the (respective) Post-graduate Diploma program. These interventions triggered cognitive dissonance in student teachers and engaged them in different levels of reflections - identified by McIntyre (1992) as technical, practical and critical.

At the level of technical reflection, the emphasis is on the attainment of given goals on such things as achieving and maintaining classroom discipline and imparting subject content as assigned by supervising teachers. At the practical level of reflection, the emphasis shifts to articulating their own criteria, and evaluating and developing their own practice. At the level of critical reflection, the concerns move to wider ethical, social and political issues. In the study that comprises this research project, student teachers progressed from the technical level of reflection in the first teaching round to the practical level of reflection in the second teaching round (refer to Sections 8.4.2 and 8.4.3). There was little evidence of critical reflection identified in student teachers in the present study. This phenomenon will be examined and discussed in Chapter 13.

However, as student teachers progressed in their programs and grew less apprehensive and became more confident in seeing themselves as teachers, changes in their conceptions of teaching were identified after the first two teaching rounds - these have been extensively discussed in Section 6.2 and Section 8.1. This chapter therefore attempts to identify and investigate the changes in these student teachers' conceptions of teaching and learning after their third (and final) teaching round. The next section illustrates and discusses these changes in respondents' views of teaching.

9.2 Conceptual changes in views of teaching

In the last round of interviews conducted in October and November after the last teaching round, further changes in student teachers' conceptions of teaching were recognized. These changes over the three transformation cycles at different

teaching rounds can be seen as progressing from procedural to structural and finally to conceptual levels, which will be examined and discussed in Section 9.3. These shifts also illustrate changes in inclinations of student teachers' conception in teaching. The next section describes and discusses student teachers' conceptual changes in teaching in the post-task interview.

9.2.1 Teaching as influencing students' life

In the post-task interviews after the third teaching round, conceptual changes in the participants' views of teaching became more apparent in both cohorts of student teachers from the two universities. As illustrated below, they expressed more analytical views of teaching. Student teachers from the City University considered teaching much more challenging than they considered it to be at the beginning of the post-graduate course. They began to recognize and acknowledge the complexity of teaching. The simplistic view of getting the assigned content through to students in the teaching round gave way to a more mature view of developing students' potential in learning. Teaching became more related to student learning and development of their potentials. Though transmission of knowledge was still seen as one of the prime functions of teaching, four student teachers from the City University became much more inclined to consider teaching as a mission aiming at creating positive influences on the life of students. Frank reflected that:

> *It is not so simple as I thought it was. But it is a huge challenge. It is just great work...To me, it is like, well, I have some influence hopefully in that kid's life. That, to me, is a mission. That, to me, is what teaching is all about - to see that you make the difference. [Frank: October]*

In order to have an impact on students' lives, it appears as though a re-conceptualization of teachers more as role model than a knowledge-giver has emerged. Viewing teaching from this perspective, Ada believed that her conception of teaching had changed in a number of ways:

> *Lots more work than I thought. My view on teaching: at the start of the year, it was that you have to impart knowledge to kids and that is your role. I have changed my mind since then after the first round. To start with, I thought that [it] was concepts to get through. Now I realize that you are a role model to the kids. So you have to model the subject you are teaching. It is really like acting. You have to make them [lessons] seem interesting. So you have to be the best actor. And you have to be really enthusiastic and*

have to be modeling at times to some kids. Like the kids who are falling behind, you have to take them aside and say, come on, you can do it. You know, build up their confidence. [Ada: October]

9.2.2 Teaching as developing students' potentials

Not all respondents from the City University experienced radical changes in their conception in teaching. Eliza, who still adhered to her initial philosophy of teaching, reiterated that a teacher should help develop students' potentials. Conceptualizing a view of teaching was difficult for her, but she noted that, "[View of teaching] A hard question. I think teaching is just like showing the kids what they are capable of. Like in terms of what they can learn and what they can do. That is what teaching is. It is getting them to realise where they can go and what they can do" [Eliza: October]. It was clear that the scaffolding exercise reported in section 8.2 triggered Eliza's reflections on her role as a teacher. Her initial view on teaching as developing students' potentials was further reinforced in teaching rounds when she put increasingly more effort on meeting student needs and potentials.

The shift from dispatching content as the prime concern in teaching to a concern for students apparently became more important for Valerie. She examined her purpose in teaching more thoroughly at this closing stage of the Post-Graduate Diploma course and discovered a deeper meaning in teaching, "I am also thinking why I am actually teaching. That is what I meant before [knowledge transmission]. I am thinking a lot more about you are not just getting [the content] through. You are teaching them as a person. That is why you are there" [Valerie: October]. In terms of teaching, Valerie recognized that she diverted her approach from a transmissive teaching approach in her last teaching round, as she attempted to incorporate more interactive activities in her lessons:

It is not only lecture anymore. I used to do more board work. I do less board work now and more interaction, and talking and activities. I plan more activities than me up to the board. I am giving statements and they respond. Or we have discussion about things. [Valerie: November]

9.2.3 Teaching as facilitating student learning

Attending to student learning needs was the central theme in Tommy's response to the prompt for his view of teaching, he believed in the enabling role a teacher should play in creating room and space for student learning. He came to consider students' ability, interest and motivation more in his teaching. He accounted for his view in the following way:

My view of teaching is facilitation of learning. That is why a teacher gets in there and discusses with them and stands alongside in their learning process, guide them toward the goal. Show them the goal and then help them on the path. For me, it is the enabling of the learning process in students. To enable the learning process, there needs to be something that they can work towards, something that they consider useful. And there needs to be the guiding so that you help them through the path. But there also needs to be room to make mistakes. The right path may have twisting turns. They need to go up on occasions. Otherwise, learning isn't real for them. So teaching is keeping the learning and giving kids the kinds of things they need and within their room. That is, their ability levels, their interest and their motivation. A good teacher is not just giving knowledge; it is about helping the student think. If you cannot get the students to think and see the ideas and understand concepts, you are not a good teacher. [Tommy: October]

Drawn from responses in the post-task interview after the third teaching round, nearly all seven respondents from the City University illustrated some degree of changes in their conception in teaching at the end of the initial teacher education program. The mature student teacher, Tony, thought that, "it is better to be a facilitator than a knowledge imparter because facilitating knowledge goes back to the idea of helping students discover facts and ideas themselves. That is how I see facilitation rather than me lecturing. Giving information alone is less effective" [Tony: October].

Similarly, Clara from Metro University offered a similar view to Tony's. She considered herself more of a facilitator than an "almighty knowledgeable imparter." She used an analogy of a servant -- someone who was there in the classroom to help students get the things they needed. She believed that if students felt treasured, they would be more responsive and interactive. In a similar vein, her

classmate, Jenny, experienced a shift from seeing teachers as experts to teachers as facilitators working in conjunction with the students rather than making the students work for them. She considered that she was moving out of the shell of being an apprentice of prior learning experiences. She reflected on the extraordinary changes in her view of teaching after the Post-Graduate Diploma course:

> *It is totally different from the way I learned at school. And it is very different from the way I started off the year thinking I had all the stuff to get through. My view of teaching has been changed extraordinarily. I mean teaching is inter-connected because you recognize there are so many different learning styles, so many different ways that people learn. It is impossible for a teacher to just put forward one particular model and expect everyone to learn the same. You cannot just present information in one way and just automatically assume that any of the knowledge or values or anything you are trying to impart will get through. At the beginning of the year, I still thought that you needed to address students' needs and lower your expectation in learning. But I didn't consider that you would have to fundamentally change the way you teach your students. I mean, teaching is facilitation. That is the big idea I have come up with in this course. I totally believe in negotiating a curriculum, negotiating a classroom and having a partnership with students now rather than the past conception of receiving knowledge. That was my primary belief going into teaching knowledge and all these experiences that I gained through my own learning which I love. And I really wanted to pass that onto kids. But it is not that simple. [Jenny: October]*

Susan, the more sophisticated planner from Metro University, also detected conceptual changes in her view of teaching. Having concentrated on using a wide range of possible teaching strategies, Susan came to see that, "I think my view about teaching has changed a bit. Teaching should be more responding to students and working with students and not making all the decisions yourself about what they do. So I become more of a facilitator than always the planner" [Susan: October].

9.2.4 Teaching as creating space for student learning

Considering the above reflections, the notion of teacher as a facilitator was a common theme for seven out of the twelve respondents from both Universities. Michael, like Tommy from the City University, believed in an intuitive view of teaching where students could discover the meaning of things or concepts incidentally at a later stage in their life. He also assumed that he needed to earn the

respect of students before he could go into teaching. He remarked that:

> *In some way, plant those seeds we were talking about. We often think that the seeds sowed by teachers are not comprehended by students. But it is sort of leaving it in the background - and students sleep on it. When they grow older, they will come out. Or they may not. So teaching is in some way giving students the ability to learn, giving the opportunities, the stories. All the different activities that would allow the students to come for. They will be able to reach out for a bit of the knowledge we offer and to internalize those bits of knowledge and then mix that with the knowledge or their seeds they had in the past. [Michael: October]*

He expanded further on the conception of creating space for students in the teaching process:

> *The teacher provides a role model of living. And they define boundaries the students can live within. They see students' strengths and weaknesses and provide opportunities to express those strengths and also deal with the weaknesses and to balance the child. I think we always deal with young adolescents in our teaching. And young adolescents are going through a stage when they are stepping out of their bodies, or becoming more self-aware over judgement issues. They need some kind of rhythms of the day. Some kind of structures that will get into a place. They actually have the freedom to explore learning...they get them to a place where they can actually learn. [Michael: October]*

When compared to his response in the first round of interviews conducted in February at the beginning of the initial teacher preparation program (refer to Section 6.2.2), Michael now has a more elaborated and articulated view of teaching in that he conceptualized his role of the teacher as a facilitator rather than a knowledge giver.

9.2.5 Teaching as facilitating learning to learn

Interestingly, not all participants necessarily expressed a view that reflected changes in their views of teaching. Rachael claimed that her view of teaching did not change much over the course. She thought that guiding students to enhance their ability to learn was important in order to let students experience the 'why' so that they might be more engaged in learning. She maintained that her view of teaching was:

Probably not changed. I mean I always consider that you were guiding people for what they already have. But try to enhance their ability to learn, to experience why so that they can get into it. Because you are not actually giving them anything as it were, to a degree, you are giving them an opportunity to get what they want. It is useless just giving them the knowledge without showing them the ways to use it. So my teaching philosophy is actually to aim at making students be learners throughout their lives. Not just to learn the content that I [have] got to teach them. But the most important skill is to teach how to learn. [Rachael: October]

The notion of teaching as facilitating students' learning to learn was also reflected by Tommy from the City University. As previously noted, he considered that, "teaching is not about just giving knowledge, it is about helping the students think. If you can't get the students to think and see the ideas and understand concepts, you are not a good teacher" [Tommy: October]. He also pondered the fact that it was not enough for teachers to be just able to think, a good teacher needed to be able to communicate to students in their language. When asked to further elaborate on this point, he said:

When you say people out there can think very well but cannot communicate what they think and cannot communicate in terms of adolescent mind. It is actually very hard teaching year 7 and year 8 because you've got to get yourself down to their level and work with them and you got alongside with them. [Tommy: November]

When all of these student teachers' responses are considered together, their views of teaching certainly illustrate change over the Post-Graduate Diploma course. The simplistic view of teaching as knowledge transmission was replaced by a more sophisticated understanding of teaching as a complex, interactive and ever-changing activity. Table 9.1 represents a time-order matrix in the conception of teaching over the three teaching rounds.

Table 9.1 Time-order matrix on teaching: Changes in conception of teaching in the three teaching rounds

Types of changes	Inclinations	Proportion of students with different conceptions at different teaching rounds	First teaching round	Second teaching round	Third teaching round
Conceptual	Teachers as Constructivist - the object of teaching				- As influencing students' life - As facilitating student learning - As creating space for student learning - As facilitating learning to learn
Structural	Teachers as Inquirer - the act of teaching			- Less apprehensive and more confident with own teaching - Grow more into the role of a teacher - Teach with a purpose - More interactive teaching and more student-centred	
Procedural	Teachers as Apprentice of observation - the agent of teaching		- Transmission of knowledge - Realizing personal beliefs (e.g. control over learning, care for students, developing students' potentials etc.) - Fulfilling personal aspirations		

Legend
- Conception A: Teachers as Apprentice of observation - the agent of teaching
- Conception B: Teachers as Inquirer - the act of teaching
- Conception C: Teachers as Constructivist - the object of teaching

9.3 Changes in the conceptions of teaching over the Post Graduate Diploma in Education course

From the analysis of the interview data over the initial teacher education course, three conceptions of teaching were unveiled. It was possible to describe the conceptions in terms of approach to teaching (the how or procedure of teaching), the outcome of teaching (the what and the act of teaching), and the structural and referential aspects of the what and how of teaching as they appear prominent for each conception. These conceptions are summarised in Table 9.1 and they form a hierarchy of levels of understanding of, or ways of experiencing, teaching. These conceptions reflect three types of changes progressing from procedural to structural and then to conceptual level.

9.3.1 Procedural changes in views of teaching - The first teaching round

On commencement of the Post-graduate Diploma in Education program around the first teaching round, student teachers acted mainly as apprentices of observation. Teaching focused primarily on getting the assigned content through to students just as they perceived they had experienced as school students. The strategies they adopted for use followed the procedures they observed as learners in their previous education or the teaching procedures they had been explained or demonstrated to in the university subject method courses. Teaching was seen as imparting knowledge to students. Student teachers were seen as the agents of teaching. This has been revealed by Clara and Susan in the interview after the first teaching round (refer to Section 7.2.1). They observed quite closely how their supervising teachers did their lessons and replicated as such. The outcome, described as learning, was an increase in students' knowledge, but without attention to the meaning of the knowledge. Attention was drawn to the communication process by which knowledge was understood to be imparted as well as fulfillment of personal aspirations. Successful teaching at this stage was associated with such personal qualities as firmness, charisma, being respected, having power and authority over students, and, the most important of all, smooth delivery of subject contents.

9.3.2 Structural changes in views of teaching - The second teaching round

As student teachers grew more confident and less apprehensive after the second teaching round, their teaching became more interactive and more consideration was placed on ecological issues related more to effective learning in students. Structural changes in their teaching were identified and they taught with more specific purposes in mind. At the structural level, teaching was perceived as preparing students to use knowledge. Although the focus was on the communication process, it was seen more as a two-way process between teacher and students, and not simply from teacher to students. Teachers' questions were emphasized. At this stage, student teachers became inquirers and the acts of teaching were accentuated. They observed the supervising teachers teach and reflected in the post-lesson conferences with their mentors at schools and with lecturers and peers in university. Stones (1992) asserted that as inquiring teachers,

> *...the certitudes of the 'delivery' approach are replaced by a realistic recognition of the tentativeness of our understanding of how teachers' action influence pupils' learning.Inquiring teachers will see teaching as an activity of great complexity which we hardly get to understand. They will see it as open-ended exploration in which they express their pedagogical knowledge in action that will not only improve the conditions of learning of pupils, but also enlarge their own theoretical understanding. (p.14-15)*

The foregoing quote reflects to a certain extent how student teachers' developed over the initial teacher preparation course and this influenced the way they viewed learning, which, in turn, brought about conceptual changes in their approach to lesson planning. The changes will be examined and discussed in Chapter 11.

9.3.3 Conceptual changes in views of teaching - The third teaching round

Responses from student teachers as quoted in Section 9.2 described changes in the conception of teaching at a conceptual level. Different from the first two interviews, student teachers were more inclined towards their role as facilitators to student learning. The notion of creating space and allowing freedom for students in looking for meaning in their learning was explicit in student teachers. Some student

teachers see themselves as role models being in apposition to influence students' lives. The effect of teaching students for understanding had become increasingly apparent. The object of teaching was understood as preparing students to understand and be aware of their own thinking and learning. About six of the student teachers experienced a shift of their conception of being teachers from apprentice to inquirer to constructivist. They came to identify themselves as role models to influencing students' life, and as facilitators to creating space for students' learning and meta-cognition. Although not all student teachers re-conceptualized learning as the real objective of teaching, the shift by nearly half of the student teachers toward a constructivist inclination in teaching was probably a result of the intertwining internal and external forces enacted upon them throughout the Post-Graduate Diploma course. According to Appleton (1994), constructivism takes two broad forms: cognitive constructivism and social constructivism. The former focuses on the students' internal cognitive process and cognitive structures during learning, while the latter emphasizes the role of human mediation and social context in the shaping of a student's learning. Both view of constructivism can be seen as important to the learning process. It is evident that student teachers experienced cognitive dissonance at different intervention points in the teaching rounds either individually when challenged by tasks and persons, or collectively in reflective sessions conducted in the university in between the teaching rounds. Factors contributing to these changes in their views of teaching will be considered in Section 9.6.

Table 9.1 illustrates the changing proportion of student teachers holding different conceptions throughout the year of the study. It reveals something of interest and importance about the composition of the outcome in quantitative terms. Examined in this way, it appears that, whereas there is a reduction in the number of student teachers holding conception A and an increase in those holding conception C, conception B is a resilient and comparatively stable category. Student teachers like Saran and Frank still held on being agents of teaching wherein transmission of knowledge content was still central to their teaching. They might experience procedural changes in their teaching when they observed their supervising teachers teach. Other student teachers asked question about their own practices and began to gear teaching to the needs of students through paying more attention to the act of

teaching. The notion of developing students' potentials became eminent in Eliza and Valerie's responses. They began to realise that teaching was not mere telling. Accordingly, structural changes in lesson organization and presentation emerged. In contrast, students like Clara, Jenny, Susan, Tony and Tommy saw their roles more as facilitators than as knowledge givers. While Michael who wanted to create space for students to experiment learning, Rachael proceeded to creating opportunity for students to learn how to learn. All these point to conceptual changes in their teaching wherein the object of teaching is to help students construct knowledge in the process. These changes in student teachers' conception were triggered through students' reflection, though at different levels. For Saran and Frank, technical reflection was identified. On the other hand, reflection on teaching at practical level was obvious in the rest of the student teachers but critical level of refection wherein broader issues on social, ethical and political was not yet captured in their responses.

9.4 Conceptual changes in views of learning

Similar to student teachers' views of teaching, changes in the participants' views of learning were also noticeable in the last round of interviews. They were more inclined towards a constructivist orientation (Gunstone & Northfield, 1992; Resnick, 1989) in their conception. Their initial view of learning as the acquisition of knowledge appears to give way to a view of learning whereby students' actively process and construct their own meaning through participating in learning activities. Changes in views on learning identified in the second teaching round were further re-conceptualized and elaborated in the last round of interview. Most student teachers recognized learning as a complex activity. More emphasis was placed on students as learners, their characteristics, and individual differences. Though student teachers claimed learning as understanding and knowledge construction in the first interview, their responses in viewing learning as constructing meaning were much more articulated in the last interview. Rather than focusing only on the outcome of learning as ten of the student teachers did in the first teaching round, student teachers came to grasp with a firmer belief that the process of learning was equally important as the products of learning. These conceptual changes in their views of learning went parallel with their views of teaching. Four themes emerged in the post-task interview and they are discussed in the following sections.

9.4.1 Learning as constructing meaning

As might be predicted (or at least hoped), views of learning underwent changes simultaneously with views of teaching. As the object of teaching was understood as changing the way students understand phenomena, student teachers saw learning as enhancing their students' ability in constructing meaning rather than the continued passive acquisition of knowledge through teacher lecturing. Clara stated that:

> *Learning is more complex than just acquiring knowledge. It is not something that a teacher can just do to somebody. It has to be active on the part of the student. They receive more when they are active and then they can participate more and learn more themselves. It is like a cycle. [Clara: October]*

Like other student teachers, she attempted to incorporate more interactive learning activities to involve students in the lessons. Her classmate, Rachael, elaborated on how she thought students made meaning out of new learning experiences provided by teachers:

> *You have to present knowledge in a variety of ways so they can hopefully grasp [it] but [it is] not necessarily your way [that] is the right way. But they can grasp a few different aspects of that colour. The more they get about colour as it were, the more they would integrate it properly into their own and would mix with what they already know. [Rachael: October]*

Susan recognised that her view of learning had changed, particularly in terms of assessment. She still held the belief that learning was about building on what a learner already had and understood and that a learner could construct and link things by making connections. However, she thought that these connections were not just building blocks, "I mean it goes all over the place and it just becomes more complex. I think your learning doesn't just become higher like [in] a linear fashion. It becomes incredibly complex and interwoven" [Susan: October].

Learning as a constructivist activity was further elaborated by Michael who attempted to explore how ideas could be internalized by students by turning it from an idea they were given into something they made new meaning from. He described

the process of knowledge construction as:

> *The [new] idea becomes something they have power over. At that time, that is probably what learning is to me. When you've got power over an idea, you learn it. I guess. I mean that is a way of saying when you have the power of your idea. When you understand it well enough to be able to use it. Learning is sort of a wider understanding of the world around you. [Michael: October]*

The view of learning as knowledge construction was not unique to student teachers from the Metro University, Valerie from City University perceived learning in terms of attempts at trying to link up what she said in the lesson to the outside world. She described her experience in one of her science lessons:

> *Like the last time. I was talking about plants and how we need plants to breathe. I found that a big breakthrough for me in learning because I told them something and then they connected that with something in the real world. Learning is something that where you give them facts and they can connect it to other things. If they look at things from different ways, they can see it from a more scientific way. Not just what you see is what you get. [Valerie: November]*

While Valerie illustrated a more interactive relation between learning and the environment, students from the Mathematics group were more concerned about seeing the role the student should play in constructing meaning for themselves in the learning process. Tony claimed that:

> *Probably let them construct their own meaning for what this concept is rather than me verbalize it for them. Let them construct what it is themselves so that they have a stronger ownership of it than me giving it to them. [Tony: October]*

Tony admitted that he focused more on students achieving a deeper understanding but he discovered that, "the main difference between now and then is I realize that students cannot think about and understand things at the same level as I do. I once thought they could. But I find that their understanding of many things is quite superficial compared to deeper understanding of me as a teacher" [Tony: October].

In contrast, Rachael used a colour analogy to link teaching and learning. She said:

> *What you learn comes from what you already know. So if you want to teach, you have to understand where your students are coming from. If they are coming from red and you are coming from blue, and you give them yellow, you are going to see green but they are going to see orange. I think learning needs to have compromise. [Rachael: October]*

This view has an interesting aspect to it. The notion of understanding then could well be interpreted in this instance as the students' coming to know what the teacher knows, yet in fact, developing understanding is far from simple convergence of ideas (teacher's and student's), it may well be that within the development of the understanding, some aspects become similar, but others diverge so that genuine understanding emerges in ways commensurate with that explained by White (1988). It may well be then that Rachael's analogy is both insightful but limited in the message it conveys.

9.4.2 Learning as catering for individual differences

Attending to the students' role in the process of learning was not unique to Valerie and Tony, Jenny also experienced changes in her conception of learning. She analyzed learning more from a student's perspective rather than from that of a teacher. She believed that:

> *I think it [view of learning] has changed. I don't know if I can define it now. It can be broken down into different aspects of learning. I don't think there is any overall definition that I really believe is the one anymore. Learning is different for every person. It constitutes different things. I think my idea of the body of knowledge to be learned at the start of the year was very different from what I say now because I didn't take into account that everyone interpreted things differently. And now I realise that everyone is different. Everyone learns in a different way. They were things I hadn't considered because my schooling never encouraged me to consider [things] that way. [Jenny: October]*

As far as responses of student teachers from the City University are concerned, they also generally noted that their views of learning had shifted.

However, Ada considered that her view of learning did not change much. It still dwelt closely on her view of teaching. She considered that:

> *[My view of learning is] Pretty much the same. But I guess I would have taken into account maybe more individual needs than I did at the start of the year. Catering more adequately for the low ability students and the high ability students, and boys and girls in the class. At the start of the year, I thought I had to cater for those differences. But I did not realize that there were so many differences between the way the guys and the girls think. [Ada: October]*

Her attention to catering for individual differences impacted on the way she organized her lessons. She said:

> *I think that it is very important to teach kids through [a] practical sort of medium. I mean it is, like just thinking back to my own education, it is the thing you saw or the things you did with your hands would be remembered most. It is not that note taking that you remember, it is actually the things you did. [Ada: Octob r]*

Although Ada maintained that her view of learning did not change much, there is a clear indication that she began to focus more on ways to address individual differences in the classroom; even though it may have been problematic for her. Her lessons focused very much on learning activities designed for students to obtain first hand experiences. In contrast, her peer, Saran still believed that learning should focus on knowledge acquisition, with inclusion of some in-depth knowledge for the brighter students, "I think for me it [view of learning] remains the same. Every teacher should have core knowledge to pass [on to students]. Teachers should make sure that everyone learns it. For those who have finished, they could have a little more extra to learn" [Saran: November].

In Tommy's response about his view of learning, he saw other challenges in changing the way students perceived of the world. He still wanted to see learning as helping students to 'get the light and shine [themselves]'. Tommy's concern towards students was echoed in Frank's response. He claimed that, "I was more ego-centric. Now I am becoming more for the kids than myself. So now, I am really sort of concerned about the kids" [Frank: October].

9.4.3 Learning as a process versus learning as a product

The notion of differentiating between learning as a process and learning as a product arose in responses from student teachers in the last round of interviews. Jenny, seeing herself as having been captive to a traditional way of learning, came to believe that she also had considered the learning process to be equivalent to prescribed learning outcomes. She recapitulated that, "at the start of the year, I was very much focused on the outcome, the end product. Yes, what they get at the end. I didn't think about the process. I thought about the product. The end product of this is what they will know. But the process of how they get that through to people, I just thought that it would be straight forward" [Jenny: October].

While Tony from the City University began to acknowledge learning as something more than just knowledge acquisition, he differentiated the process from the product:

> *I am not familiar with those sorts of terms. But I can say that in the beginning I thought of learning as a quantity. And now I think of it more as a process. Before I thought of it as a can of knowledge. And now I think of it as a method of inquiry. When I was thinking about learning as a quantity or you could call it a product, objectives are of paramount importance. I think it is probably more stretched now. Objectives are still the most important to me but there is more emphasis in my own mind about how I would deliver that knowledge to the students. [Tony: October]*

The process versus product dichotomy was reflected vividly in the lesson plans of student teachers in their last teaching rounds. They made an effort to incorporate learning experiences to stimulate students' active participation in the lessons. Impact of these conceptual changes in learning on their lesson planning will be discussed in Chapter 11.

9.4.4 Learning as a complex activity

Though not all respondents from the Metro University thought that their view of learning changed over the post-graduate course, Michael who thought of learning as intuition reflected that:

> *In some respect, they [first conception of learning] are still there. I still do believe learning is a gradual process where kids suddenly change. I don't know if that is intuitive. Sometimes you can make the links and join a lot of things together and it gives you a perspective to look down across everything you have learned. And suddenly you can link them all up and discover what has been going on. [Michael: October]*

It seems apparent then that participants in this study experienced different degrees of change in their conception in teaching and learning. They became more concerned with students and the shift from knowledge transmission to learning as a process was apparent in almost all respondents. Table 9.2 illustrates and compares the gradual progression of student teachers' changes in their conception of learning throughout the period of the initial teacher education program.

Table 9.2 **Levels of understanding of the conception of learning at time frames corresponding to the three teaching rounds**

Levels of understanding	*Critical features identified*	*Students displaying features*	*Corresponding teaching rounds*	*Corresponding teaching conceptions*
Recognizing learning as complex	▸ Learning is complex ▸ Learning as constructing meaning ▸ Learning emphasizes process and product ▸ Learning caters for individual differences	▸ Clara, Jenny, Susan, ▸ Tony, Valerie, Clara, Jenny, Michael, Rachael, Susan ▸ Jenny, Michael, ▸ Ada, Frank, Tommy, Tony	3rd teaching round (October)	- Teaching as facilitating learning to learn - Teaching as creating space for student learning
Awareness of learning as a cognitive and social process	▸ Learning as cognitive process related to students' experiences and responses ▸ Being aware of the influences of learning environment and school ecology ▸ Learning as scaffolding experiences	▸ Eliza, Tony, Clara, Jenny, Michael, Rachael, Susan ▸ Eliza, Tony, Jenny, Michael, Susan, ▸ - Ada, Eliza, Valerie, Jenny, Susan	2nd teaching round (May/June)	- Teaching as facilitation of student learning - Teaching as developing students' potentials
Reflections on personal beliefs and prior learning	▸ Learning as knowledge acquisition and application ▸ Learning is an on-going process ▸ Learning as linking up previous knowledge to new knowledge ▸ Learning as a privilege	▸ Clara, Jenny, Michael, Rachael, Susan, Ada, Eliza, Frank, Saran, Tommy, Tony, Valerie ▸ Rachael, Susan, ▸ Ada, Eliza, Clara, Susan ▸ Tony	1st teaching round (March)	- Teaching as transmission of knowledge - Teaching as realizing personal beliefs - Teaching as attempts to influence students' life

9.5 Changes in the conceptions of learning over the Post-graduate Diploma course

The level of understanding in the conception of learning illustrated in Table 9.2 represents a gradual progression of student teachers' growth and development in their conception of learning over the Post-Graduate Diploma in Education course Starting from a mere reflection on personal beliefs and prior learning on the conception of learning, student teachers encountered a series of cognitive tasks posing demands and challenges to their prior learning and these tasks helped them re-construct their views on learning. Nearly all student teachers considered learning as acquisition and application of knowledge. The links between prior learning and new knowledge first began to creep into the cognitive schema in what learning was in the first teaching round. Two student teachers viewed learning as an on-going process and they considered themselves more as learners than as teachers. In and around the second teaching round, nine out of the twelve student teachers started to realise that learning subject knowledge was not the only product in the process of learning, they came to be cognizant of the influence of the learning environment and school ecology as important variables in the process of student learning. University course inputs (for example, the lectures on learning in Metro University and the scaffolding assignments in City University) on learning as a cognitive process impacted on student teachers in and around the second teaching round and they began to consider the role teachers should play in promoting learning in students. A focus on scaffolding students' learning experiences and students' responses to their teaching in the second teaching round further enhanced their awareness of how students learnt. This awareness of learning as a cognitive process paved the way for their recognizing learning as complex activities involving an understanding of it as a process as well as a product. They began to appreciate the constructivist nature of knowledge building and learning for understanding in their final round of practice teaching.

The progression in the level of understanding symbolizes the three interrelated aspects of learning identified by Resnick (1989). In contrast to behaviourist psychologists, Resnick suggests that learning is a process of knowledge construction, not of knowledge recording or absorption. In addition, learning is

knowledge-dependent since people use prior or current knowledge to construct new knowledge and this view certainly fits well the development of the thinking about learning that the participants in this study portray. Finally, learning is highly tuned to the situation in which it takes place. Since learning to teach is so complicated, it involves many forms of learning on the part of the student teachers, again this model appears to encompass the complex nature of these participants' learning situations.

The foregoing discussion on student teachers' views of learning is designed to illustrate how their changes in thinking might be both identified and categorized at different stages of the initial teacher education program. These changes in views of learning are interwoven with changes in views of teaching and impact on how they plan their lessons. The next section will delve into factors attributing to conceptual changes in their views of teaching and learning.

9.6 Factors attributing to conceptual changes in teaching and learning

In view of the reflections made by the student teachers after the third teaching round, three groups of factors are identified as attributes to conceptual changes in teaching and learning. The first group of factor is associated with the course input and task demands on student teachers throughout the teacher education course. Teaching experiences accumulated in the three teaching rounds served as the second group of factors bringing cognitive dissonance and learning opportunities to student teachers and they were among the most recognizable attributes in promoting growth and development in the process of learning to teach. Reflections at the technical, practical and critical levels sparked off re-conceptualization of their pre-existing conceptions, resulting in knowledge construction in most of the student teachers.

In contrast to some studies (for example, Calderhead, 1991; Knowles, 1992) claiming that initial teacher education has minimal impact on student teaching, findings from the present study reveal that student teachers from Metro University considered the Post-Graduate Diploma course an important factor in the process of learning to teach, as illustrated by the following responses:

Well, changes really partly because of the course. We were introduced to different ideas about learning. Having to think about learning as the focus rather than teaching as the focus, which, I think is very good. I found that at the beginning of the course of more value to me than the second half of the course. The first semester I found more value in that aspect, the shaping of views about learning because there was more input, I think. [Clara: October]

Like Clara, Susan asserted that, "the course and all the inputs and PEEL [Project for the Enhancement of Effective Learning, Baird & Mitchell, 1986; Baird & Northfield, 1992. A project whereby students' learning about metacognition is the focus of the teaching conducted] makes a huge difference" [Susan: October]. Though Jenny identified a number of factors to account for these changes in teaching and learning, she shared the same view as Clara and Susan:

There are quite a number of factors. I don't know what the main one is. I mean certainly the course has a lot to do with that. The course is specifically designed to challenge our views of teaching. It certainly has shaken my confidence. In some way, the course is a little bit exclusive in that way it challenges you to the point where you don't feel like you can be yourself and be a good teacher. I think it will take an awfully long time for me to discover what sort of teacher I am. And, yes, I don't think there is any definition of a what teacher is and the course [Diploma in Education] has sort of taught me that. [Jenny: October]

Since reflective activities were an integral part of the two programs, student teachers from both Universities accounted for the role it played in their change in conceptions. For example, Clara said that:

And also the way they taught it to us by getting us to be proactive, by getting us to think and to be more reflective. There is a lot of reflective thinking and analysis of your own thoughts. That really helps me to turn my brain over. [Clara: October]

Reflecting on the teaching and learning issues, Eliza believed that:

When you think over it in a number of ways, in a bigger picture, your own thought about education dictates what you do in the classroom. Well, just has an influence on what you are going to do. The more time you think about it, or the more you do think about it, it just changes the way you teach. [Eliza: November]

Susan also believed in the importance of self-assessment. But she also thought that peer sharing and critique at University would bring about higher levels of reflection. In her opinion, "The teaching round has developed me quite a lot. And the reflective activities back at University. So I think it was good that we were only out there for a couple of weeks. And then you come back here and challenge the ways you did things" [Susan: October].

Reflection on teaching practice was common among student teachers and nearly all student teachers who responded to the question on change factors took into account the impact of teaching experiences brought to them over the transformation cycles corresponding to the teaching rounds. Michael reflected on his experiences encountered in different schools and it brought to light the issue of school ecology as one of the factors:

> *I personally have changed. There is time when I really become a teacher I think I have to work through the experiences of my life and know who I am. Yes, I have changed. And just trying to experience. So going from an ideal and memories of schools and experiences of the school. I think that is important. It brings reality. There are also changes because the first school I went to was very much do this, do that and do the other. The second school I went to was a little bit more liberal but with boundaries because I had students of Jewish population and Jewish characteristics. And in the third school, to an all girl school with middle class girls characteristics. You can really let go and let them experience. You got far less boundaries and I really, through these changes in environment, I learn too. [Michael: October]*

His counterpart from City University, Tommy, also experienced a change in their view on teaching, "by watching other teachers work far and away and by getting into the actual teaching rounds and debriefing yourself with your supervisor. Yes, that reflection time after teaching" [Tommy: October].

When responding to the interview question: what do you think is the most important factor that influences your view on learning and teaching over the course, Tony responded:

> *Only experience. Experience has the most effect. Those comments you are talking about learning are simply idealistic. And perhaps not realistic. I think I have a more realistic notion of what is achievable. My aims are still the same but I have a greater appreciation of what must be achieved. [Tony: October]*

As indicated in the above excerpts, teaching experiences and reflections in various contexts and at different levels were important triggers for changes in the conceptions of teaching and learning among the two groups of student teachers. However, course input as an important variable was expressed only by student teachers from Metro University. The evidence presented in the above section suggests that since pre-service courses are not homogenous, they need to be viewed as a variable rather than as a constant. Clearly, how a program is both constructed and taught, the experiences within it and those developed through school experience are important and different institutions construct their programs in different ways adding to the complex nature of the learning to teach environment and the possibilities that emerge through them. The impact of the course variations on the learning to teacher process will be discussed in Chapter 13.

9.7 Summary

This chapter has documented and traced the changes in student teachers' conceptions of teaching and learning. Conceptual changes in participants' views of teaching portray a shift from transmissive teaching to more learner-centred teaching. Student teachers took on the role as a facilitator focusing on developing students' potential and creating space to encourage their ability to learn how to learn. The change pathway that emerged through the data illustrates a movement from procedural through to structural and finally to a conceptual level. Corresponding changes were identified in participants' conception of learning over the initial teacher education course. Student teachers came to appreciate the complexities of learning and attempted to help their students construct meaning in the learning process, though the learning product was still recognized as an integral part of their teaching. How these conceptual changes on their view impact on their views and practice in lesson planning will be dealt with in the next chapter.

CHAPTER 10
PLANNING TASKS RE-VISITED
- CONCEPTUAL CHANGES IN LESSON PLANNING

Introduction

In an attempt to assess student teachers' lesson planning practices at the end of the Post-graduate Diploma course, a simulated planning task was administered to them after their third teaching round. For comparison purposes, the task was modeled on the first simulated planning task administered to student teachers at the beginning of their initial teacher education course. The prime purpose of the simulation exercise was to examine how student teachers went about planning for a lesson and to compare their planning practices with their first attempt (see Section 6.4) in terms of elements identified and the planning process demonstrated. The simulation exercise was followed by an interview in which student teachers were prompted to reflect on their general conceptions of lesson planning, as well as their concerns, sources of knowledge for lesson planning and the role of lesson planning in the process of learning to teach. It is envisaged that the comparison might highlight some of the conceptual changes in lesson planning that have occurred for these participants at this final stage of their teacher education course.

10.1 The planning tasks revisited

To find out how student teachers performed in lesson planning at the end of their Post-graduate Diploma course, planning tasks modeled on their first simulated planning exercise (as described in Section 6.4) were administered to participants from the two Universities. Student teachers were asked to plan and explain a lesson that he or she would teach to a junior secondary class. In contrast with their first attempt when student teachers from the City University did the planning tasks in three groups, the Science group of three did a group planning task while the remaining four respondents chose to complete the task individually in four separate meetings because of difficulty in arranging meeting time. For those participants from the Metro University, four out of the five participants did the same tasks as in

their first attempt while one student teacher selected another topic for her lesson. Topics for the simulated planning tasks are summarized as follows:

Table 10.1 **Distribution of lesson topics in the second simulated planning tasks**

Student	*Institution*	*Level*	*Subject*	*Topic*
Ada	City University	Year 8	Mathematics	Percentage
Eliza	City University	Year 9	Science	Molecules and ions
Frank	City University	Year 8	Mathematics	Percentage
Saran	City University	Year 9	Science	Molecules and ions
Tommy	City University	Year 8	Mathematics	Percentage
Tony	City University	Year 8	Mathematics	Percentage
Valerie	City University	Year 9	Science	Molecules and ions
Clara	Metro University	Year 8	Music	Recorder
Jenny	Metro University	Year 8	History	The Crusades
Michael	Metro University	Year 8	Science	Fossils
Rachel	Metro University	Year 8	Mathematics	Percentage
Susan	Metro University	Year 8	Geography	Introduced Species - Pets*

** A different topic from the first simulated task*

Written instructions and the textbook were given to the student teachers and they were asked to explain the lesson to the researcher on completion of the tasks. The simulated planning tasks took approximately one hour, followed by the semi-structured interviews. The first part of the interview focused on the following questions:

1. Could you please tell me how you went about planning for this lesson?
2. What did you consider (and include) in your lesson plan? Why did you include these elements in your lesson plan?
3. Why did you plan the lesson in the way that you did? What was the rationale behind your lesson planning practice?
4. Do you follow any procedures, models, or conceptual framework when planning for teaching? Have you developed for yourself any conceptual framework in lesson planning? If so, please describe briefly your conceptual framework.

In view of the almost eight month time lapse between the two attempts in the planning tasks, student teachers studied the textbook materials in order to gain a good grasp of the content before planning for the lessons. The majority of the student teachers spent about ten minutes examining the text materials and then began work on the lesson plans. In general, student teachers spent half an hour to forty-five minutes completing their lesson plans, which are presented in Appendix 12. The lesson plans are analyzed and contrasted with the first tasks attempted at the beginning of the post-graduate course mainly in terms of the lesson plan elements and the planning process undertaken in the simulation exercise.

10.1.1 Analysis of the simulated lesson plans

In order to compare and contrast lesson plan elements identified in the two simulated tasks, the main components identified in the two sets of lesson plans are summarized in Table 10.1. As in the first lesson plans, content as well as the teaching and learning activities are identified in all lesson plans written by student teachers in their second attempt. Teaching and learning activities were still central to all the lessons, though there was more emphasis on involving students in learning activities such as group work, individual work and experiments. Seven out of twelve student teachers included objectives in their lesson. Except for one student teacher who described his objectives in general terms, the other seven respondents wrote their lesson objectives in behavioural terms. This indicates a slight increase from seven to eight participants who encompassed objectives in their lessons. Resources in various forms of teaching and learning materials were also evident in lesson plans for over half of the student teachers. As was the case in the first attempt, student teachers from the City University again noted notional timing for their activities. On the contrary, only two of the respondents from the Metro University estimated their timing for the activities, as compared with four student teachers putting down timing for different parts of the lesson in their first attempt. Seven student teachers chose to record their lesson plans in running scripts, five wrote in columns divided into timing, content or key questions, and methods or procedures. As a whole, the lesson plans completed in the second attempt were more substantial with more elements (an average of seven as opposed to five in the first attempt) being considered in the

planning process. The inclusion of the element of evaluation in the lesson plan by a total of ten student teachers indicated a shift of emphasis in the teaching-learning-assessment cycle. Student teachers were more aware of the importance of evaluating the effectiveness of learning. Michael from Metro University was the only respondent who proposed to provide alternate plans for different responses from students in his class. The implications pertaining to these changes in their lesson planning practice were reflected upon and explained in the follow-up interviews. This is discussed in the next section.

Table 10.2 **A comparison of elements identified in the lesson plans on completion of the second simulated planning tasks**

Elements & Format / Tasks	Students: Ada I	Ada II	Frank I	Frank II	Tommy I	Tommy II	Tony I	Tony II	Eliza I	Eliza II	Saran I	Saran II	Valerie I	Valerie II	Clara I	Clara II	Jenny I	Jenny II	Michael I	Michael II	Rachel I	Rachel II	Susan I	Susan II
Assumption	✓														✓	✪					✓			
Objectives	✓	✪	✓	✪	✓		✓	✪				✪		✪	✓	✪	✓	✪				✪	✓	✪
Content	✓	✪	✓	✪	✓	✪	✓	✪			✓	✪	✓	✪	✓	✪	✓	✪	✓	✪	✓		✓	✪
Key questions											✓		✓		✓		✓		✓		✓		✓	✪
Activity	✓	✪	✓	✪	✓	✪	✓	✪			✓	✪	✓	✪	✓	✪	✓	✪	✓	✪	✓	✪	✓	✪
Resources	✓		✓	✪	✓		✓				✓	✪	✓	✪	✓	✪	✓	✪	✓	✪	✓	✪	✓	✪
Diagram			✓		✓	✪	✓				✓	✪	✓	✪	✓	✪	✓	✪	✓	✪	✓	✪	✓	✪
Board work																								
Worksheet																								
Evaluation	✓	✪			✪		✪	✪	✓	✪				✪		✪		✪				✪		✪
Logistics																								
Time	✓														✓									
In column form	✓	✪																						
In script form				✪		✪		✪																
In point form			✓		✓		✓																	
Alternate plan																								

Notes: *Lesson plan elements identified in the first attempt represented by* ✓ *under column I*
Lesson plan elements identified in the second attempt represented by ✪ *under column II*

10.1.2 Elements considered for the lesson plans

A reference to Table 10.2 reveals that objectives, content, activities, and evaluation are still important components of the lesson plans identified in the second simulated tasks. When the participants were asked to summarize the elements they would take into consideration in lesson planning, student teachers from Metro University gave varied responses. The key elements, as described by Susan, covered "all the class details at the top [of the lesson plan]. And then the unit, and the lesson aims, and then the learning outcomes, resources, evaluation, learning activities, including timing and key questions." [Susan: October]. Other elements mentioned by her counterparts included content, classroom setting, mental images of the teaching and learning activities, group dynamics, learning styles, prior knowledge of students and their behaviours.

Student teachers from City University described the elements for the planning process succinctly. Although Tony did not write down objectives in his simulated lesson plan, he considered that objectives were important elements for a good lesson:

> *What is the objective for this lesson? What am I trying to teach them in this fifty-minute period? How much can they possibly assimilate in that fifty minutes? Time must be made available for them to practice. There is no point for me to talk to them if they do not get any practice themselves. So, time management is also part of my lesson plan. [Tony: October]*

Like Tony, objectives for the lesson were not explicitly written down in Tommy's simulated lesson plan. However, he thought that trying to work out what he could accomplish and what the kids "needed to get" at the end of the lesson would be important. In his planning practice, he first worked out some aims to the lesson. Then he tended to quite consciously structure things so that there was "hear, say and do" in the lesson. He also included the ways to develop the ideas and include the practice. On the other hand, Ada took objectives for a lesson as a point of departure in her lesson planning. She thought that:

> *Basically, I think about all these things I want the kids to achieve by the end of the lesson. I first write down these objectives and I base my lesson plan on those. So I go back and think about what I want the kids to do, and how I am going to get them do it. [Ada: November]*

This conception of having a purpose for the lesson was considered by Eliza, a student teacher from the City University science group, as conducive to student learning since, "one of the most important things is that students know why they are learning. I think that is linked to motivation. This gives them interest and gets them involved in what they are doing and lets them know why it is important to them" [Eliza: November].

However, lesson objectives student teachers formulated for their lessons reflected, to a great extent, how they were prepared in their subject methods. For example, Jenny took on board the practice of developing knowledge, skills and attitude objectives in her history lessons. Such a practice was derived from the lesson plan formats prescribed in her subject methods at University. Jenny explained clearly in the interview her intended objectives for the lesson on Crusades:

> *In this lesson, the main thing I will be trying to achieve would be to get the students to try to think about the motivation the medieval people might have had to become Crusaders. I think it is difficult for kids today to understand the motivation. Even academics have been debating about whether they were mercenaries going up for money, or they were genuinely religious. So, I would like to bring up those things in the unit. I also want to develop their skills. Like skills in reasoning and their being able to articulate their values and to be able to empathize values from other cultures and places. But that is not as important as trying to raise for them some of the anticipated motivation of the Crusades. [Jenny: October]*

She admitted that the inclusion of three types of objectives was initiated by the subject method. But she still thought that it was very valuable. She noticed a shift of emphasis in her choice of objectives:

> *In some ways, planning lessons is more difficult because I was thinking of things outside the knowledge objectives. At the start of the year, I was really concentrating on knowledge objectives and now it is almost incidental what you are actually teaching, the skills and trying to get the kids to bring their own values back to the class. Over the year, I begin to ask myself which of those three areas is the most important. I mean, if you look at really early on, you have got all this knowledge stuff to get through*

and skills you have to get through because you have to get through the knowledge one. And value is something you throw in at the end [of the planning]. [Jenny: October]

In summary, the key elements as identified in the planning tasks coincided with the key components as prescribed in the lesson plan formats of the subject departments described in Sections 5.4.1 and 5.4.2. Student teachers addressed in their planning the four fundamental questions as depicted in Tyler's (1950) rational curriculum planning model, including objectives, content, learning activities and evaluation. In addition, student teachers saw the importance of having an understanding of the contextual factors at schools, particularly knowledge of the students in such aspects as their prior knowledge, learning styles, behavioural patterns, group dynamics, and physical and emotional state. All these hinge on a variety of teaching and learning approaches, which were considered as important elements for a good lesson plan. Tony summarized very succinctly the knowledge base he thought he needed to possess in order to produce a good lesson plan. He said:

You need to understand what the student outcomes are. You need to understand the entering characteristics of the students. You have to tailor what you are going to teach to the time frame. It is best not to introduce a new topic in the last period on Friday. You have to know what sort of lesson it is, what time of the week it is. Is it a double or a single? What is the context of the lesson? You have to anticipate students' difficulties. Even smart kids have trouble with simple concepts. If you anticipate certain areas of generic learning difficulties, then you can target those. [Tony: October]

One distinct difference in the plans identified in this round of simulation task is the inclusion of some form of evaluation in the lesson plans. This implies a shift from teaching to learning and evaluation is then a means of finding out if learning has taken place. Clara pointed out:

Because, there is no point just to teach the lesson for the sake of teaching it. When you get to the end of lesson, you have to find out if students have achieved something. You need to consider their performance, on going evaluation as you go. So that you know they have achieved something and they are getting something out of it, they are learning something, they are not going to forget the minute they walk out of the door, [you don't want it] going over their heads. I think on going evaluation is absolutely necessary. [Clara: October]

The notion of on-going evaluation is embedded in many of the student teachers' activities. For the mathematics group, the class exercises after the worked examples presented by the teachers and the homework assigned after the lesson generally served as indicators for the student teachers to justify student learning. Such a practice was adopted by Frank, Tommy, Tony, and Ada from the City University. In an attempt to find out if her students had mastered the concept of percentage, Ada contended that:

In the introductory exercise, it is sort of very hand-on things. They will have some concepts of the connection between fractions and percentage by the end of it. I will then discuss with them the concept. Give them some notes and explain them on the board in terms of diagrams. Do an example and then set them exercises to find out if they have got it. If I find out that all kids have the same question, I will go back to it and review with them what I have done. [Ada: November]

Ada was the only student teacher who included some form of evaluation in her first simulated lesson plan. Her response suggests that she began to see evaluation as a tool to help her establish the relation between teaching and learning. Tony, who did the same mathematics topic as Ada in the planning task, also mentioned that he would check for understanding before proceeding from one concept to another. He gave a brief account of how he monitored students' performance in the class work after his presentation:

I move around and look at their state of work, monitor their questions or their lack of questions. Monitor how quickly the class finishes practice from the book. Make a subjective judgement on that basis. If they got all the right answers and they haven't asked any questions, that would be fine. But if they have not made very much progress and do not give much response, then I have to start probing them myself. [Tony: October]

This coincided with Susan who "was already thinking about evaluation as a planned thing." She would go back to her lesson plan to make sure that the "evaluation bits" would be in place. Evaluation as a built-in feature of ten out of twelve lesson plans indicates that conceptual changes in teaching and learning as described in Sections 9.3 and 9.4. have impacted on student teachers' lesson planning practices. The inclusion of evaluation in their lesson plans demonstrates a shift of focus from the simple transmission of information to attention (in some way)

to students' learning. And evaluation is one means to find out if learning has occurred in students.

Although common elements were identified in students' lesson plans, student teachers constructed personal meaning out of these components and these were exemplified in their personalized formats of written scripts for the lesson plans. Logistical arrangements and timing are prominent features in the second tasks. This reflects again students' general mastery of the lesson routines. Since these procedural arrangements are integral parts of learning activities, it points clearly to the fact that the 'what' and 'how' of teaching are still central to their lesson plans. With the statement of objectives and the inclusion of evaluation in student teachers' lesson plans, it is evident that the four key elements in lesson planning as purported by Tyler (1950), namely, objectives, content, activities and evaluation, become student teachers' planning repertoire. In the next section, their thought process in the simulated lesson planning tasks will be examined in details.

10.1.3 Examining the lesson planning process

In spite of the relatively simple written plans produced in the simulated lesson planning tasks, the lesson planning process was elaborated in the follow-up interviews. Indeed, the written plans as a record of the mental planning processes illustrated only a small amount of the mental pictures the student teachers held. The planning procedure student teachers adopted for their plans differed. While some started from considering the objectives, others worked their way through resource materials. Tommy began his planning from content. He said:

> *Yes, in theory, what do you need to teach? What information exactly do you want to get through? What other sources of information and activities to use and what activities do you have? Have a look at what is there in the textbook and modify that where necessary. And if you've got some good ideas in the meantime, drop [them] down on the paper. Combine them together into something that works. [Tommy: November]*

The practice of referring to a textbook for teaching points is not unique to Tommy. Rachel also started her planning by going through the textbook materials. She described how she went about planning for the lesson:

> *I went through the textbook first. Then, I write down the overall aim. What this lesson is supposed to do, which is to introduce the topic of percentage. Then, I write down a list of teaching points that will come out from that. I have actually written down the concept of percentages. I make sure that I will cover what a percentage is. How it is used? Where to find percentages? Who uses them and how we can estimate percentages. I have to make sure these concepts are covered if I am to do that percentage teaching. By that stage, I should have done some reading. So I just start writing down my method and all that in this lesson plan. Once I finish writing up my method and I look through the overall content format, I finally write down the overall headings for the plan for my reference. [Rachel: October]*

Similarly, Michael went over the chapter to identify the key teaching points and thought of why people loved the topic. He would also like to know what children's background knowledge was. He then went into resource materials like drawings and designed his group tasks. On the other hand, Susan took on a different approach in her planning process. In her words:

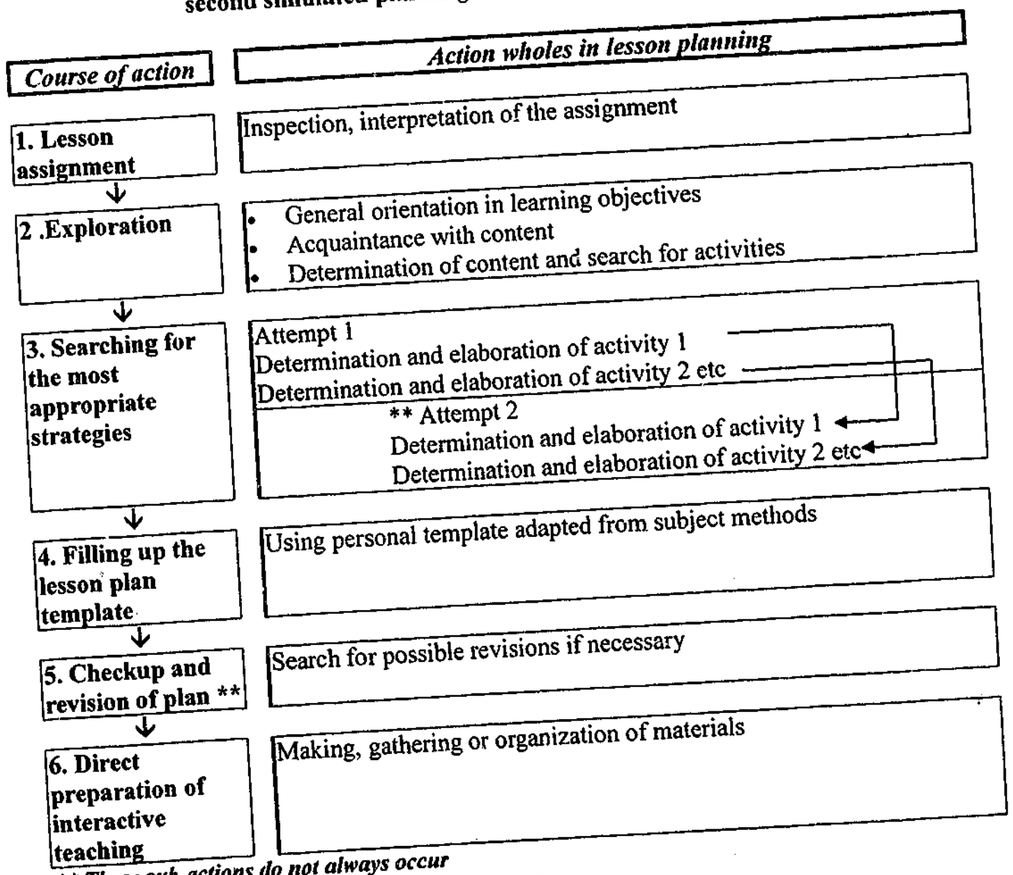
> *I just have a quick flip through the content that was available to me. I picked out the suitable one but I didn't spend too long doing it. Then I worked out my aims for the lesson. I came back to the resources after I planned the activities. I didn't do that straight away. But I planned the activities for some of the outcomes and I thought of ways to check for understanding at the end. [Susan: October]*

The planning process resembles some sort of mental scaffolding with frames of lesson images revolving inside their mind. For instance, Clara could vividly describe step by step how an ensemble for a recorder lesson was set up; and Tony portrayed how a Mathematics lesson was conducted in a set sequence. Though student teachers took on different starting points in their planning process, it was generally organized in courses of action starting with an inspection or interpretation of the planning assignment. Student teachers then engaged in exploring and formulating objectives, selecting content and teaching activities, and actual writing up of the plans.

The action-oriented planning process (see Section 2.6.1 for brief explanation of the action-oriented planning model) demonstrated the typical course of action taken by student teachers in the second simulated planning exercise. In this exercise, student teachers were given the lesson assignment. They then explored for the objectives, examined and determined content to be dispatched, and searched for

appropriate teaching and learning activities. Next, they focused on which learning activities most fitted the teaching and learning contexts, elaborated and refined if necessary. They then filled in their own personal lesson plan template and checked up for possible and necessary revisions before actually searching for teaching and learning materials to be used in the lesson. The typical course of action is illustrated in Figure 10.1 below.

Figure 10.1 **The typical course of action-oriented lesson planning in the second simulated planning tasks**



*** These sub-actions do not always occur***
Arrows indicate revision of attempts where necessary

The action-oriented planning procedures they adopted in the planning tasks helped clarify what student teachers did when planning a lesson, how they did it, and how these different actions were connected and built on each other. However, construction of these sub actions hinged on careful deliberation of their conceptions

of teaching and learning, which, in turn, might induce conceptual changes in students' views of lesson planning. This will be discussed in the next section.

10.2 Identifying conceptual changes in lesson planning

Student teachers' views of lesson planning underwent major changes after the two teaching rounds. Indeed, these changes indicated continued growth and development throughout the Post-graduate Diploma course. These qualitative conceptual changes include: a shift of orientation in lesson planning; changes in focus from teaching to learning; development of mental images and routines of lessons; allowing for flexibility and accommodating alternate plans; lesson planning as process; as well as developing personal framework. The following section traces and contrasts these conceptual changes in student teachers in the last round of interviews.

Table 10.3 **Table illustrating conceptual changes in lesson planning after three teaching rounds**

Students / *Conceptual changes in lesson planning after the third teaching round*	*Clara*	*Jenny*	*Michael*	*Rachel*	*Susan*	*Ada*	*Eliza*	*Frank*	*Saran*	*Tommy*	*Tony*	*Valerie*
Orientations in lesson planning	✓	✓	✓	✓	✓	✓	✓		✓			✓
Mental images of lesson routines	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Flexibility		✓	✓		✓		✓	✓			✓	
Focus on student learning	✓	✓	✓	✓	✓		✓			✓	✓	
Mental processes and procedures	✓	✓	✓	✓	✓	✓	✓				✓	
Understanding the intent of lesson planning	✓	✓	✓	✓	✓		✓				✓	✓
Personal framework in lesson planning	✓	✓	✓	✓	✓	✓	✓				✓	✓

✓ ***indicates changes identified in students***

10.2.1 Orientations in lesson planning

The shift in orientation from planning single lessons to unit planning started in the second teaching round (see Section 8.3). For planning to be more effective, student teachers began to see the importance of having an overall view of where they were and where they were heading. It was not just, "an immediate sense of one lesson but it is the overall plan of your week, your unit, or how your unit fits in with your year" [Clara: October]. For individual lessons, Clara thought that she could do it in her head but she needed more of a scheme for an overall unit. In association with more global planning, Clara needed more time since:

> *You need time not only immediately prior to [a] lesson but you need a general time, the beginning of year or the beginning of the term to work out your overall plan for what was going to happen. And then, your general plan for each unit and then the general plan for each lesson. [Clara: October]*

While student teachers spent a considerable amount of time planning for one single lesson in their first teaching round, their focus changed over the course and they all expressed the view that they planned more globally rather than lesson by lesson. They considered that they needed to plan globally so as to fit in the individual plans into the unit of work or the year plan and to give them a better conception of the curriculum they were going to teach. They claimed that they needed time to plan not only immediately before each lesson. They also believed they needed time to work out their general plan for each unit and then the general plan for the year. In view of the need to identify the overall view of the curriculum, Ada asserted that:

> *...it is definitely more global now than at the start. I need an idea of where this sort of plan is going to fit into the unit. Apart from the fact that I used to plan singly and now I planned globally. I have a direction of what I am heading at. How I am going to test at the end. How I am going to assess? What practical I am going to give them relevant to next week's lesson. I am planning ahead. I am not planning day to day. I've got a much better conception of where I am going. [Ada: November]*

It was identified in student teachers' responses that they became aware of the nature and uses of different types of lesson plans in accord with that identified by Yinger (1979). Such a shift from planning individual lessons to planning for a longer period was common among these student teachers. They found more value in planning globally over a longer period since it helped them to organize their teaching and gave them a stronger sense of a more thorough preparation. According to Rachel:

> *I found much more value in planning more globally. It is harder but it is important to link up what I was doing before. Now, I can almost do the unit overview with just aims, objectives and then just some short notes for each lesson. And I would feel prepared for that. I feel much more prepared in that than doing lesson by lesson. [Rachel: October]*

They came to realise that learning spanned more than one lesson and more global planning would be necessary if they needed to evaluate student learning on completion of their teaching. And planning globally as a continual process could give them an edge in predicting what they were going to achieve by the end of the year. This view was closely linked to their conception of teaching and learning. Jenny recalled that she was not so conscious of performance in one lesson because she thought that:

> *It does help my planning because all of that [the lesson routines] is just there. A lot of your planning becomes second nature because of the continuity of teaching. At the start of the year, you think of the lesson. You think of getting through that fifty-minute period. All the things you like to do are crammed into that fifty-minute period. Once the lesson is over, you think of the next lesson. As you go on, you realize that it is a continual process. Now, it is a real shift to think, well, whatever comes up in the lesson comes up in the lesson. If it doesn't come up, we will do something else. There is always stuff outside this [what is planned for the lesson]. [Jenny: October]*

With conceptual changes in teaching and learning emerging in student teachers after the teaching rounds, lesson planning was being seen as more than just getting through information. Student teachers took on board the view that lesson plans could serve various purposes. Contrary to his earlier view of lesson planning at the beginning of the Post-Graduate Diploma course, Tony recalled that:

I thought it was a burden and an annoyance to start with. I see it as a valuable preparation for teaching now, I really do. I think it forces me to go through the lesson basically. It forces me to teach the lesson once before I go into the classroom. Maybe I am not teaching the lesson to the fullest extent of it. But I need to go through the process of what we are going to do and how we are going to do it. [Tony: October]

Planning became more interactive with student learning and evaluation of student learning was considered an integral part in lesson planning. More able student teachers like Ciara, Jenny, Michael, Susan, Eliza and Tony, who took initiatives to cater for individual differences, they chose learning activities that were conducive to accommodating students' learning styles. They were more flexible with the time frame for lessons inasmuch as they became less conscious of performance in one lesson and lesson planning was considered to be a continual process. Most student teachers felt more comfortable planning for a lesson and yet they thought planning globally to be a more difficult and demanding task. This was reflected in Jenny's planning practice after the three teaching rounds. Though Jenny thought that a lot of her planning became second nature with the lesson routines already mastered, she found planning more difficult because she was thinking of things outside of the knowledge objectives she had determined. She perceived her lesson planning practice as reflection. She said:

In my own practice, I think my plans will be more of a reflective type thing so that I can work through on paper and understand what I want to achieve. You know, not so much as the practical stuff like for five minutes, we will do this and for the next five minutes you will do that. But more of theoretical things that I got this in my own mind. Why I am going into that classroom and what I want my students to get out of the class by the end of it. [Jenny: October]

Conceptual changes in orientations in lesson planning stem from student teachers' changes in their conceptions of teaching and learning. Equipped with a better understanding of teaching and learning, they were less conscious of their performance in individual lessons and planning assumed a more global stance. Teaching objectives diversified and they began to accommodate objectives other than knowledge. It is evident that student learning received more attention and these student teachers planned to address different learning styles through incorporating more learner-centred activities to enhance active student participation. Lesson plans

served as organizers and tools for reflection.

10.2.2 Mental images of lesson routines

As revealed in Chapter 7, experiences accumulated in the three teaching rounds equipped student teachers with the lesson routines that began to alleviate the previous perceived need for information loading through their actual teaching. Instead of scripting in great details what they would be saying and doing in the lessons, two thirds of the respondents claimed that they had some kind of lesson images embedded in their mind. Ada claimed that she had images of lessons going on inside her mind even before she went into the classroom to teach the lesson. Tony believed that he had a much better grasp of the classroom, "The rhythm of the class is sort of imprinted more. I have sort of instinctive feeling for how fast we are moving now. The lesson is more graceful than when I first started" [Tony: October].

Michael, Clara as well as Rachel thought that planning occurred mainly in their mind. This echoes Taylor's (1970) notion of mental planning in more experienced teachers. The more experiences these student teachers gained through their teaching rounds, the more established the lesson routines became. With mental images of lessons internalized and established as routines, mental planning became clearer. They did not need to write down such things as the time, objectives, when to call the roll, and when to end the lesson. They considered that these became second nature. Lesson plans were simplified and less time was used for writing down details. Student teachers considered scripting for written plans unrealistic and lesson plans became more like a written record of their thought process. They tended to use lesson notes, key words and key questions as reminders. This released time for student teachers to put more effort into organizing their teaching and learning activities.

10.2.3 Flexibility

When student teachers experienced a paradigm shift from teaching to learning, they relied less on the predetermined lesson plans they had prepared before

the lessons. They were ready to deviate from what they had originally planned. They had ideas of what to teach in the lessons but, when they came to a situation in which their students encountered difficulties in understanding the lesson or the task, they would not hesitate to 'scrap' their original plans and would re-plan 'on the spot'. Although Susan considered that flexibility was very important she still felt a need to plan beforehand:

> *I mean that happens especially in the second and third round. Probably fifty percent of the time I don't teach what is there in the plan. I will put things aside when I discover that the plan won't work because their [students'] needs should be catered for in the lesson. But still, I mean the lesson plan is very valuable to have. I need it as a written record of my thinking. And it doesn't mean that it is not worth doing beforehand. But it just means that I am getting more flexible with it. [Susan: October]*

A similar view was expressed by Tony who considered that re-planning in the lesson was becoming common in his last teaching round. He described the scenario when he needed to re-plan during his lesson.

> *When you are there, it may become evident that you may need to deviate from your plan. You see things you should have done. You should have included preparation for [unexpected circumstances] and you do it on the spot. Or you see the class has an unanticipated learning difficulty or misconception in some area and have to spend some more time trying to drive them in the correct direction. We have to be flexible otherwise if I stuck religiously to the lesson format and the plan, I had done that once or twice, insisting on hammering through it. It was not successful. [Tony: November]*

In view of the need to cater for the diversity of students' responses during lessons, planning was not perceived to be as prescriptive and narrow as it was in the beginning of the course. Student teachers were more ready to respond to circumstances as they arose during lessons. They took on a more flexible approach in the implementation. For example, Jenny declared that planning became a much broader idea for her in the third teaching round. She commented on her own planning practice:

> *It is more like what I want to do with this lesson is to develop whatever skills or understanding of whatever it is. And I have a broad set of goals. It*

> *is not just what I want to work for ten minutes on this particular piece of group work. I do consider those things. But if that is not working, and some kid has a great question, or suggest something else and it is still working towards the same goal, then my other goals may be brought into the next lesson. You go with the folks. [Jenny: October]*

As student teachers became more experienced and more confident in deciding on what was best for students, they developed alternative (contingency) plans for lessons. Making allowance for flexible planning was evidence of these participants' growth and development in knowledge and disposition in teaching, learning and lesson planning. Indeed, they all believed that lesson planning had a definite role to play in the process of learning to teach (this will be discussed in more detail in Chapter 13).

10.2.4 Focus on student learning

Responses from student teachers in this last round of interviews clearly indicated a change in focus from knowledge transmission to knowledge construction. Such a shift effected changes in planning orientations from individual lessons to more global planning progressing from units to semester to yearly plans and each component was interpreted as complimentary to the other. Student teachers began to learn to structure their planning in a logical progression such that their students would be able to find out what they were going to learn over the year. According to Clara, the reason for planning in this manner was because:

> *It is going to work the best for me and for good learning. It is not just for the sake of planning but also for the sake of good learning. You need to have an overall picture because if you don't have an overall picture, how are you going to make use of it [the overall planning] later in the year. It needs to relate to each other. So then, you get a logical progression of learning. Then you can break down into units. Then you can break down into lessons. So, it has to be through trying to think logically for the sake of student learning. [Clara: October]*

Lesson plans were more student-centred and student teachers were more assured of their role as facilitators in their teaching. Jenny was very adamant about her insistence in putting students at the centre of her planning in the third teaching round. She said, "I almost become uncomfortable getting up and just talking to the

class. I can if I have to. But I'd rather not. I rather give a stimulus and let them go and draw back together at the front. I become more comfortable as a facilitator than as a repository of knowledge to stand up in front" [Jenny: October].

Mike also reflected that his lesson became more task-oriented and his students had more choice about what they could do within the sort of boundaries that might lead them towards certain ideals. This orientation coincided with what Mike had described in his earlier interview that he wanted to create more space for students in their learning. He stated that those ideals on behaviours and balance of the child needed to be addressed in the planning.

Likewise, Susan's lesson planning became increasingly more student-centred in the last round of teaching practice. When prompted to identify the key focus of her lesson plans in the third teaching round, she said:

> *The students. I think that is the difference in my focus now. At the start of the year, I would have been more on content. Now I have changed to see the students as a lot more important when the lesson planning can be in my control as such. I mean, as a planned person, I would love to walk in and have the whole template acted out. But I know that it is impossible. And I am feeling more comfortable with that not being possible. Well, you know, I always have a plan but you expect to deviate from it. I guess what has changed is that I plan closer to the time I have to do it. But I often can't plan the next lesson until I have done the one before. I find the best way to deal with that is to make everything student-centred. [Susan: October]*

With planning orientation shifted more towards students, Jenny tried to address lots of different styles through incorporating various learning activities in the lesson. She considered that when she planned for the learning activities, she did not just plan them for fun but also for accommodating different learning styles:

> *Some kids learn by moving around. Those kids who have sort of kinesthetic intelligence, or they have visual intelligence, or they are comfortable with doing a concept map. So, they have the opportunity to use their skills. I think my plans will be more of a reflective type thing so that I can work through on paper and understand myself what I want to achieve at the end of it. [Jenny: October]*

Rachel had a similar view in terms of the relationship between learning styles and lesson planning. She thought that:

> *...because people do learn differently. Like some people learn through visuals, some people learn through writing, some people through music, logic. And you need to cover those different areas in different ways if people are going to learn. So, being aware of that has changed how I do my practice teaching in a variety of methods. [Rachel: October]*

Two student teachers from the City University also attended to students' learning styles while planing for their lessons. Eliza included more open and free questions in her lesson design. She contrasted her early lesson planning with latter lesson designs:

> *I planned to have my classroom a bit more flexible and a bit open and a bit more of an environment where the kids feel free to speak up. In the beginning, you just want to get through the lesson. Sometimes you don't want the kids to ask curious questions because you might be unable to deal with it. Whereas now, I think the curious questions are pretty good. They are interesting and that is how you really do find out what kids want to know about things. [Eliza: October]*

Similarly, Tommy also considered more thoroughly students' learning styles when planning for lessons in the last teaching round. He thought that:

> *The major change I am thinking about is the way students learn. Whether they are auditory, visual, and kinesthetic [learners]. Some students learn in each of these three modes. I specifically structure the lesson so that it covers all types of activities. I still don't cater very well for individual differences in learning. I think I am more conscious of sort of the three different learning styles. I purposefully build in more of each but it doesn't always happen. I think activities are good but knowing exactly why I use that activity is even more important. [Tommy: October]*

10.2.5 Mental planning processes and procedures

In the last teaching round, mental planning became the dominant practice among nearly all the respondents. It played a pivotal role in student teachers' planning practices. They still wrote down their plans as a record of their thoughts but they assumed that mental planning helped them frame and visualize the lesson

they were preparing to teach. Both Tony and Susan held a belief that going through the mental scaffolding could help them actually go through in their mind what they were going to do in the lesson. For them, the main purpose of having a lesson plan was to enable them to actually think through what they were actually going to do, how they would do it and identify problems they envisaged. Rachel thought that mental planning was good to draw ideas out and written plans helped her see things more clearly, "The ideas are formed in my head but they take shape on paper. It makes sense if you read it. But I need to see the visual part as well as the mental." Hence having a written plan, it could well be argued, helped them communicate their thoughts in their sharing with colleagues. Pragmatically they could also pick it up and use it again.

10.2.6 Understanding the intent of lesson planning

All student teachers agreed that the Post-Graduate Diploma course had equipped them with a knowledge base that provided them with confidence and the fundamental planning skills for teaching. However, constant self-reflection triggered by people around them lured them into thinking about the rationale that underpinned their planning practices. They personally translated the lesson plan format into something of value to them. Unlearning pre-existing experiences through addressing the cognitive dissonance they encountered in the teaching rounds helped them build up their own personal knowledge about lesson planning. The knowledge base they developed through interacting with students in various school contexts enabled them to plan with a purpose in mind. When prompted to define lesson planning, student teachers were ready to verbalize their thoughts. Rachel made the following response to the question on a definition for lesson planning:

> *Well, teacher planning is looking at your method, your method of learning as I mentioned. Finding a way that they can combine to create a lesson in which each student will have the ability to participate and achieve. So that requires setting goals, work through that and check outcomes as a result of your understanding of how people learn. [Rachel: October]*

As far as a knowledge base for lesson planing is concerned, student teachers thought that knowledge was important in planning lessons. But the knowledge was constructed through personal translation from their own experience

interacting regularly with students. However, student teachers might not be conscious of this knowledge base themselves. Rachel admitted that:

> *I could well have. I wouldn't know that I had, to be honest. I have no idea. It is entirely possible. But it would purely on an unconscious level. Something that is being developed may be through the year. So it is something there I would use for everything. But if it [the knowledge base] is there, I don't know. It is so internalized, I wouldn't be able to define it. [Rachel: October]*

However, student teachers like Susan and Tony could clearly identify their personal knowledge in lesson planning. Susan found that she could plan her lesson very quickly in the third teaching round. She said:

> *I would sit down there before the computer with my template open and fill in the necessary details. But as I said, that is what they [lecturers] have given me as the template. And I still use that because I think it is a good one. But my lesson planning has developed. I know, it is quicker, it is easier and it is more effective and it is more responsive to students. You know, what students are saying and where they are up to. But I am not conscious of an actual step-by-step process on planning. [Susan: October]*

Another example concerns time allocation for different parts of the lessons. In contrast to his worry over control of time for lessons in the first teaching round, Tony was delighted to declare that:

> *I can picture forty minutes without looking at my watch. I know what is going on in thirty minutes. When you first start teaching, it is an unnatural and in some ways frightening experience. Time has less relevance for you. Things might stretch out or go much more quickly than they would in a normal context. And so I had less perception of time and I had to keep monitoring my watch. I had no idea how long had passed from one activity to the next. But now the rhythm of the class is sort of imprinted more. I have sort of instinctive feeling for how fast we are moving now. The lesson is more graceful than when I first started. The teaching became more natural and I became more perceptive of how students find the work. [Tony: November]*

10.2.7 Personal framework in lesson planning

Seven out of the twelve student teachers were able to describe their personal framework for lesson planning and is clearly an extension on understandings about the value and purpose of lesson planning. They demonstrated an understanding of the whole to parts in their planning. Instead of planning the whole unit as individual lessons as they did in their earlier round, they claimed that they had made a shift to more holistic planning. Both Eliza and Tony from the City University claimed that this mental framework played a pivotal role in their planning. The mental images and routines they developed over the course helped them to better organize their lessons. Student teachers at this stage thought that they did not need to write down details. Eliza said:

> *I don't really tend to write lesson plans that much. I still write things down to organize myself. If I write anything for a lesson, which is usually the notes I will put on the board. So, they are flashing in my head. [Eliza: October]*

Tony stated that he would take on a minimalist approach where he had a very small amount of information on the page with a lot of time references to his resources and main points for each learning activity. Such a minimal approach could only be possible when the procedures were internalized. Tony believed that, "once it is internalized you don't have to explicitly use it all the time. It becomes part of your process of thinking." [Tony: October]

It appears as though the personal framework in lesson planning that these participants spoke about was derived from the format that they were given at the start of the year. From that format, they worked out what they needed to have in their lesson plan. For Ada, she first looked at the Curriculum Standards Framework (State-based curriculum documents). Next, she studied the problems presented in the textbook or she developed the problem herself and analyzed the content she needed to cover. She then summarized these elements into student objectives and teacher objectives. From there, she went about constructing her plan by writing down the format and references to timing.

However, Jenny had developed for herself a more personal framework in lesson planning. She described her framework as:

> *My framework is, like I said, has got a more abstract basis, a philosophical basis. My concept is more on broad educational objectives as discussed in TAL [Teaching and Learning]. I will think of how I can use that fifty minutes constructively towards these goals. I try to plan my lessons as a continuum. It is like a jigsaw, trying to fit these little pieces in. So, I can get a whole picture at the end. At the start of the year, I tried to work on fifty minutes and I built on that. And now, I try to work from the whole picture and break it down into small chunks. [Jenny: October]*

Nevertheless, student teachers might be using their own personal framework without consciously knowing they have one. As their planning becomes less explicit, only when they were asked to describe it that these personal heuristics surfaced and they realized their own development in this area. Interestingly though all student teachers believed that lesson planning had a definite role to play in the process of learning to teach (this is also discussed in Chapter 13).

When these themes are examined in concert with the conceptions of lesson planning student teachers expressed in their interviews after the second teaching round (see Section 8.4), their responses demonstrate a more sophisticated elaboration of the themes identified in the second round. Their reflection on their practice has helped them to clarify the understanding that underpins their changes in beliefs, knowledge and approach to lesson planning. In the next section, student teachers' lesson planning conceptions will be examined in terms of dimensions and magnitude of changes.

10.3 Dimensions of changes in lesson planning

Student teachers conceptions of planning have undergone various changes over their time in the Post-Graduate Diploma program. As reflected in student teachers' responses, these changes represented qualitative changes related to the procedural, structural and conceptual conceptions of teaching and the understanding of learning. For comparison purposes, themes of these qualitative changes in planning conceptions of individual student teachers are drawn up as dimensions of

change to identify for their similarities and differences. The magnitude of change is also defined to signify degree of qualitative changes in lesson planning of individuals. Except for three student teachers that were identified with two or less change dimensions, all others experienced multiple changes in their planning conceptions. Indeed, those students with high magnitude of changes experienced transformation in nearly all dimensions. Tables 10.4 and 10.5 present a summary of these changes in individual student teachers.

Table 10.4 **Summed indices: Dimensions of changes in lesson planning conceptions by individual student teachers from City University**

Student	*Dimensions of change*							*Magnitude of change*
	Orientations in lesson planning	*Mental images of lesson routines*	*Flexibility*	*Focus on student learning*	*Mental processes and procedures in lesson planning*	*Understanding the intent of lesson planning*	*Personal framework in lesson planning*	
Ada	⇨ More global ⇨ Attend to how individual lesson fits in unit	⇨ Lesson images established as running movie ⇨ Lesson routines internalized			⇨ Work out what to do mentally before writing down as record of thought		⇨ CSF as organizer ⇨ Personal framework built on university format	Moderate/ High
Eliza	⇨ Planning spreads across lessons	⇨ Flow of lesson established firmly	⇨ Classroom more open and flexible ⇨ Free environment and therefore flexible plan	⇨ Less authoritarian ⇨ More open to student responses	⇨ Procedures internalized and ideas flash inside mind while planning	⇨ Planning to reach most students ⇨ Trial an error to discover if lesson plans are effective	⇨ Shorter format in lesson notes form ⇨ Reflecting on own planning practice	High
Frank		⇨ Lesson routines become second nature	⇨ Less rigid and wider perspectives while planning					Low
Saran	⇨ Plan for longer period ⇨ Lesson plans as organizer							Low

Table 10.4 (continued) **Summed indices: Dimensions of changes in lesson planning conceptions by individual student teachers from City University**

Student	*Dimensions of change*							*Magnitude of change*
	Orientations in lesson planning	*Mental images of lesson routines*	*Flexibility*	*Focus on student learning*	*Mental processes and procedures*	*Understanding the intent of lesson planning*	*Personal framework in lesson planning*	
Tommy		⇨ Lesson images internalized ready for retrieval in classroom		⇨ Cater for student learning styles using varied learning activities				Low/ Moderate
Tony		⇨ Instinctive feeling and control of lesson rhythm	⇨ Prepared for unexpected circumstances ⇨ Alter plan on the spot	⇨ More responsive to students responses and performance during lessons	⇨ Mental scaffolding of lesson through rehearsal while writing lesson plans	⇨ Mapping relation between CSF and own lesson objectives	⇨ Using a minimal approach and a lot of cross referencing in own lesson plan format ⇨ Reflecting on own planning practice	High
Valerie	⇨ Longer plan across lessons with more key questions	⇨ Lesson routines established for science lessons				⇨ Lesson plan more than just give information	⇨ Lesson plans framework built on university format ⇨ Lesson plans become more detailed	Moderate

Table 10.5 **Summed indices: Dimensions of changes in lesson planning conceptions by individual student teachers from Metro University**

Student	*Dimensions of change*							*Magnitude of change*
	Orientations in lesson planning	*Mental images of lesson routines*	*Flexibility*	*Focus on student learning*	*Mental processes and procedures*	*Understanding the intent of lesson planning*	*Personal framework in lesson planning*	
Clara	⇨ Planning more global ⇨ Overall framework for the school year	⇨ Clear descriptions of lesson routines ⇨ Lesson images internalized		⇨ Logical progression in on learning ⇨ Lesson planning for the sake of student learning	⇨ Thinking a mental activity and writing a physical activity for recording thoughts	⇨ Should plan with a purpose on student learning	⇨ Shorter format developed from university model ⇨ Less scripting	Moderate/ High
Jenny	⇨ Much more global ⇨ Whole to part - a top down approach	⇨ Lesson images and routines imprinted in mind	⇨ More interactive and go with student needs ⇨ Ready to give up original plan	⇨ More student -centred ⇨ Facilitate learning in students with different learning styles	⇨ Planning procedures automatic as second nature	⇨ Grasp of lesson planning rationale coming from interacting with students	⇨ Conceptual framework more philosophical ⇨ Lesson plan as reflective tool	High
Michael	⇨ Planning more global in terms of unit of work	⇨ All sorts of steps and class management routines internalized	⇨ Prepared alternate plan when necessary	⇨ Cater for learning styles and plan from student perspectives	⇨ Mental planning becomes a common practice	⇨ Lesson planning is to facilitate student learning	⇨ Lesson plans more task-oriented to facilitate creating space for student learning ⇨ Lesson plan a reflective tool	High

Table 10.5 (continued) **Summed indices : Dimensions of changes in lesson planning conceptions by individual student teachers from Metro University**

Student	*Dimensions of change*							*Magnitude of change*
	Orientations in lesson planning	*Mental images of lesson routines*	*Flexibility*	*Focus on student learning*	*Mental processes and procedures*	*Understanding the intent of lesson planning*	*Personal framework in lesson planning*	
Rachel	⇨ Planning more global not in single lesson	⇨ Lesson routines internalized		⇨ Aware of learning styles and use varied learning activities to cater for	⇨ Procedures a lot clearer ⇨ Lesson plan process systematic and internalized	⇨ Purpose of lesson plan clarified as facilitating student learning	⇨ Shorter form developed from university lesson plan format	Moderate/ High
Susan	⇨ Planning more global with closer links across lessons ⇨ Plan more closely to lesson to assure student learning	⇨ Lesson routines internalized and mastered	⇨ Ready to scrap old plan and re-plan at the spot	⇨ See student a lot more important than implement plan ⇨ Varied learning activities to cater for different learning styles	⇨ Procedures so internalized that step by step process became subconscious efforts	⇨ Student-centred lesson as "good thinking planning" ⇨ Lesson planning is to facilitate student learning	⇨ Modified university template to fit own purpose ⇨ Lesson plan built on reflection from previous lesson ⇨ Lesson plan a reflective tool	High

10.3.1 Common themes in dimensions of change

From the Summed Indices Tables 10.4 and 10.5, common themes are drawn and described as follows:

1. With regard to orientations in lesson planning, nine student teachers claimed that they would opt for more global planning in future teaching. They would plan across lessons and attend to how individual lessons would fit with the whole curriculum. Such a shift in orientation from planning for individual lessons to larger units of study indicates a growth in student teachers' competency in mapping the content of each lesson to related knowledge and skills.

2. Except for one respondent, all other student teachers believed that they had a firm grip of the lesson routines in various mental forms. To some student teachers, these images were like a running movie. Mental images of these lesson routines were so firmly established and internalized that it helped release students from spending too much time scripting their lesson procedures in time frames. More time could be spared for issues related to student learning. Nevertheless, while internalization of lesson routines could free student teachers from information loading incured in the detailed scripting of the written plans, such routines might pose obstacles to innovative lesson planning that needed different organizational patterns.

3. Allowing for flexibility in lesson planning captured the least number of student responses. Of the six respondents, three of them stated that they would be more open and flexible with their planning. The other three student teachers mentioned that they were prepared to modify their plan on the spot in response to students' feedback during lessons. Since such an approach to interactive lesson planning is built on a high level of alertness and adaptability to the teaching and learning contexts in which the lesson is conducted, it is not surprising to find that not many students were ready to take on board an ecological orientation in lesson planning, which requires a clear understanding

of the teaching and learning context and instantaneous consideration of student responses while the lesson is in progress. As foundations to linking lesson planning to interactive teaching, student teachers might need to develop such teaching repertoire as "with-it-ness", overlappingness, smoothness, momentum and group alerting put forward by Kounin (1970) as effective measures in classroom management practices.

4. Eight student teachers were recognized as having a shift of focus from teacher-centred to student-centred planning. They were more responsive to such student characteristics as background and abilities, motivation, and responses in lessons. Three of them mentioned student learning as their prime focus of planning. Five student teachers considered that catering for individual learning styles would facilitate learning. Accordingly, they would use a variety of activities to engage students in learning.

5. Mental planning taking the form of visualizing the lesson processes and planning procedures was found to be common among eight respondents. As the procedures in lesson planning were internalized, they usually thought over the lesson before writing up the lesson plan as a record of their thinking. Mental planning usually comes along with well-established lesson images.

6. Responses from eight student teachers were found to be related to developing an understanding of the intent of lesson planning. Though interpreted differently, six of them associated lesson planning with student learning. They believed that planning with a purpose would facilitate student learning.

7. As far as a personal framework is concerned, nine respondents noted that they had adapted the university lesson plan formats to fit their own purposes. Three of them used a shorter format while others included necessary details where appropriate. Three student teachers used the lesson plan as a tool for reflection.

10.3.2 Magnitude of change

As indicated in the Summed Indices Tables (10.4 & 10.5), the magnitude of changes in student teachers from the two universities differed. Generally speaking, respondents from the City University had a comparatively lower magnitude of change than their counterparts from Metro University. Eliza and Tony from the City University had acquired a wider spread of dimensions of change and therefore they had a higher magnitude of changes than their colleagues. Ada and Valerie experienced medium change while Frank, Saran and Tommy experienced a low change magnitude. The common dimension of change falls on the mental images of lesson routines whereas changes in other dimensions were scattered. On the other hand, student teachers from the Metro University had a greater number of change dimensions and they displayed higher levels of conceptual changes at the end of the initial teacher education program. Except for Clara and Rachel who indicated changes in six dimensions, Jenny, Michael and Susan tallied with all seven.

Summary

This chapter has examined conceptual changes in the lesson planning of student teachers after the third teaching round. Themes identified include a change in planning orientations from planning single lessons to more global planning, internalizing of mental images and routines, greater flexibility, a shift of focus from teacher-directed to student-centred planning, establishing mental planning procedures and processes, understanding of the intent for lesson planning, and developing a personal framework for lesson planning.

In the next chapter, the cycles of transformation associated with these dimensions of change will be examined. A comparative framework incorporating the Teacher Planning Inventory, National Competency Framework for Beginning Teaching, and Yinger and Hendricks-Lee's (1995) Teacher Planning Conceptions will be used to examine student teachers' lesson planning orientations.

CHAPTER 11
CYCLES OF TRANSFORMATION IN LESSON PLANNING

Introduction

Student teachers underwent different degrees of procedural, structural and conceptual changes in their teaching conceptions and nine of them began to acknowledge the complexities of learning after the three teaching rounds. These conceptual changes in teaching and learning impacted their conceptions of lesson planning and changes were identified in their lesson plans, the second simulated planning task, and in the post-task interviews that followed. This chapter first maps out the correlation between dimensions of changes and Teacher Planning Conceptions as purported by Yinger and Hendricks-Lee (1995). Cycles of transformation associated with dimensions of changes will then be examined. Finally, these conceptual changes will be analyzed in terms of a comparative framework incorporating the Teacher Planning Inventory (TPI) (Branch, 1992), Teacher Planning Conceptions (TPC) (Yinger & Hendricks-Lee, 1995) and the National Competency Framework for Beginning Teaching (NCFBT) (Australian Teaching Council, 1996) – the comparative framework is fully explained in Section 11.3

11.1 Correlating the dimensions of changes to Teacher Planning Conceptions

To facilitate further examination of student teachers' conceptual orientations in lesson planning, the dimensions of change are correlated to Yinger and Hendricks-Lee's Teacher Planning Conceptions (1995) in Table 11.1. It is noted that the dimensions of changes involve multiple conceptual orientations including a technical conception embracing characteristics of rational decision-making planning model, a psychological conception focusing on mental processes in teacher planning, and an ecological conception connecting planning to classroom practices.

Table 11.1 **Correlation between dimensions of changes and Teacher Planning Conceptions**

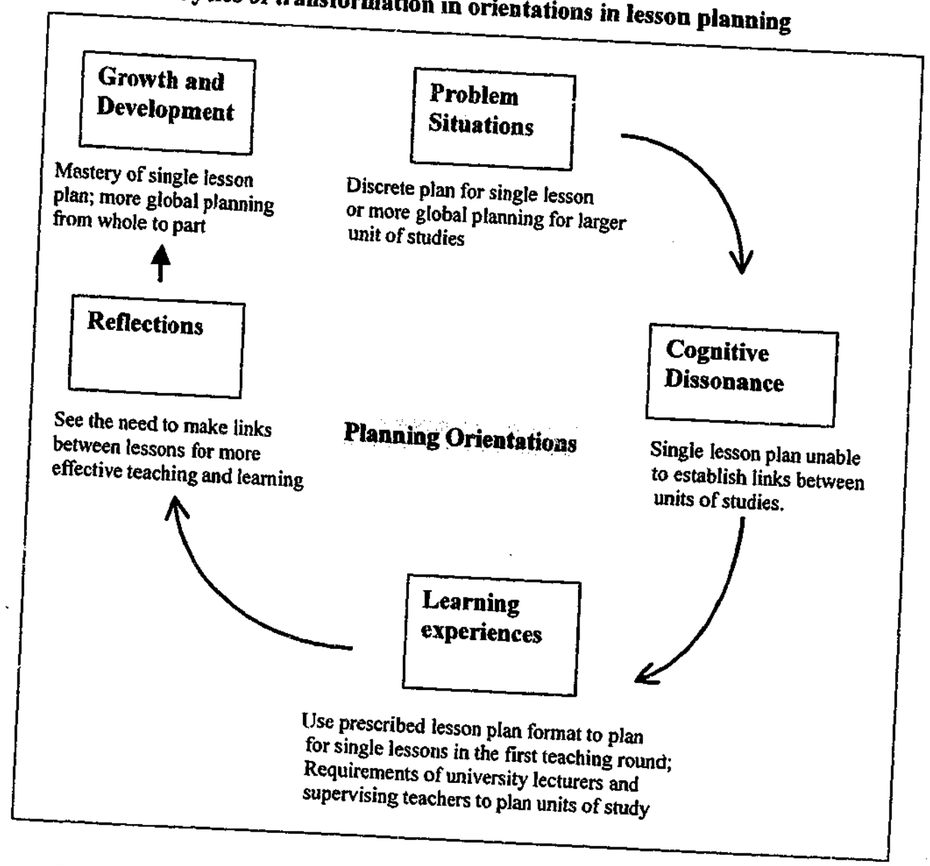
	Dimensions of changes	*Teacher Planning Conceptions*	*Number of students with Dimension of change*
1	Orientations in lesson planing	Technical	9
2	Mental images of lesson routines	Psychological and ecological	11
3	Flexibility	Ecological	6
4	Focus on student learning	Psychological	8
5	Mental process and procedures in lesson planning	Technical and psychological	8
6	Understanding the intent of lesson planning	Psychological	8
7	Personal framework in lesson planning	Technical and psychological	9

In general, there were noticeable conceptual changes in student teachers after the three teaching rounds. Technical aspects such as planning processes and procedures for single or multiple lessons were mastered by eight respondents. Nine out of the twelve student teachers began to plan more globally in terms of unit plans or year plans. Cognitive schema of lesson images and routines took root in eleven respondents and this released time for consideration of student learning. Eight student teachers moved out of the teacher-centred planning to student-centred planning. Such a move from teaching to learning indicated a shift from a technical conception to a psychological conception, thus triggering actions by student teachers to focus more on student learning in their planning. Eight of the students were similarly aware of the intent of lesson planning and this also hints at a shift from a technical to a psychological planning orientation. Six student teachers saw the need to allow for flexibility in planning and consequently related planning to ecological factors. The move from a technical orientation through to a psychological and then an ecological orientation was evident as a pathway taken by six student teachers. In the next section, cycles of transformation associated with these dimensions of change will be examined.

11.2 Cycles of transformation by dimensions of changes

11.2.1 Orientations in lesson planning

Figure 11.1 **Cycles of transformation in orientations in lesson planning**

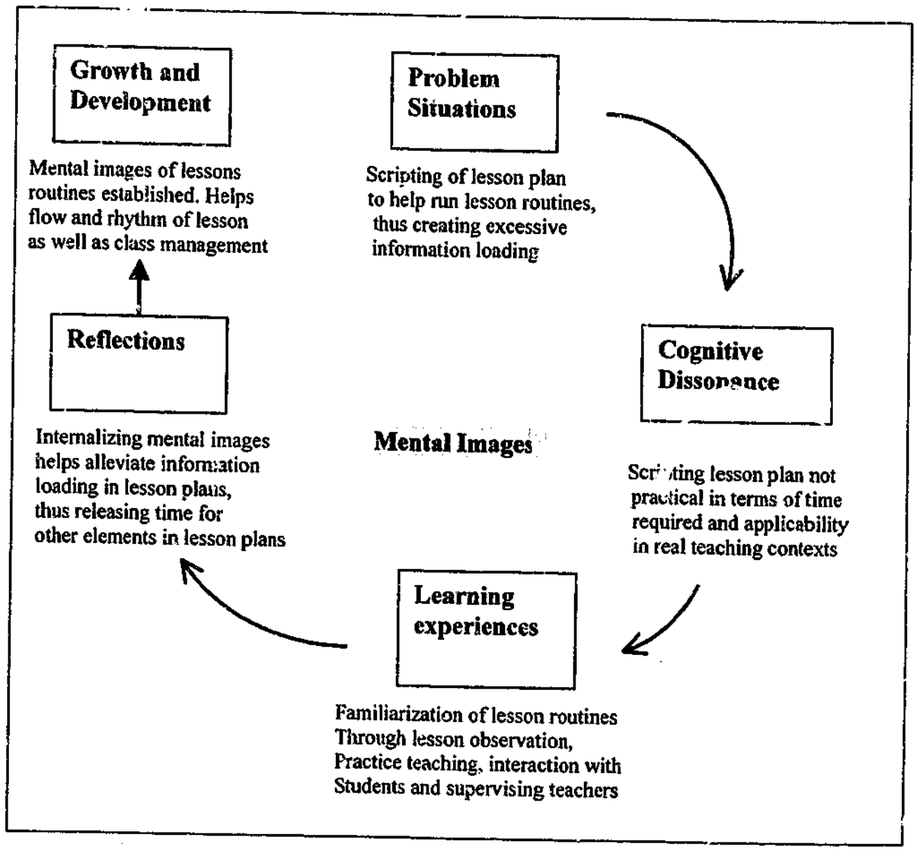


Growth and development in planning orientation stemmed from the need to decide on the use of the types of lesson plan most conducive to student learning. Student teachers were initiated into planning single lessons from the onset of their training. This is of course predictable as these student teachers were clearly occupied in struggling for survival in their first teaching round and detailed scripting was seen as one way of providing a crutch or safety net for them. Thus, detailed lesson planning was a common practice in the first teaching practice. As they began to mature and grow into the role of teacher in the second teaching round, they experienced difficulties establishing links between lessons and units of study.

Cognitive dissonance occurred. Student teachers began to question the feasibility and practicability of single lesson plans in providing an overview of student learning. Requirements by university lecturers and by supervising teachers to produce unit plans helped them to formalize their lesson planning across larger units of study. The shift from planning for teaching to planning for learning triggered student teachers to map links between series of lessons. Indeed, demand by supervising teachers for the need to administer tests and formal assessment papers usually at the end of the teaching round prompted student teachers to take on a more global stance in their lesson planning as they needed to 'figure out' what they had accomplished over their teaching rounds. On reflection, they saw the merits of more global planning in enhancing more effective and cohesive teaching and student learning over time. It was noted that most experienced teachers adopted such a whole to their planning practice. As a result, when single plans as parts of a larger unit were mastered, student teachers began to realize the relationships between the part and the whole and plan more globally.

11.2.2 Mental images of lesson routines

Figure 11.2 **Cycles of transformation in mental images of lesson routines**

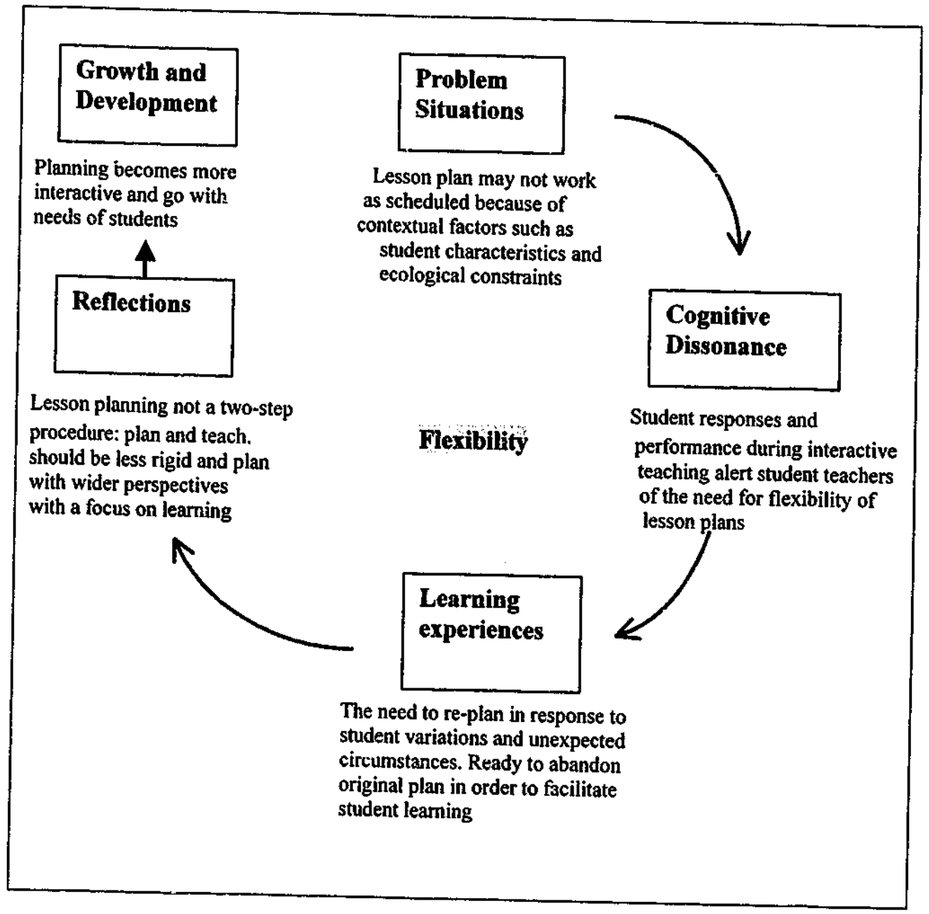


In the beginning of the Post-Graduate Diploma program, student teachers spent much time preparing and writing up a single lesson plan so as to ensure smooth running of lesson. The time they used for thinking through and writing up each lesson plan, in some instances, took some up to more than four hours (refer to Section 6.3.1). They needed to include such information as when to take the roll, when to check on students' assignments, how to note down their narratives and questions, and when and how to spell out arrangements such as practical work in science lessons or ensemble settings for music lessons. These detailed lesson scripts were helpful to student teachers since they did not have a sufficient teaching repertoire to support their initial teaching practice. As these student teachers

progressed through their course, they found that it less practical to write lesson scripts; especially because of the time required. Other aspects of lesson preparation work like familiarizing themselves with teaching content, searching for learning resources, and particularly, thinking of learning activities also competed for time. In the first teaching round, they ritually taught to the lesson plan without considering too much about their students' responses (refer to Section 6.2.1). As they gathered hands-on experience of lesson routines over the teaching rounds through their own practice teaching, observations of supervising teachers, and interactions with students and peers, mental images of lesson routines became part of their cognitive schema and it helped them to release time for other elements of lesson planning. A shift in focus to student learning occurred. These factors then contributed to student teachers' competence in establishing smoother flows and rhythms in their lessons as well as in their class management techniques.

11.2.3 Flexibility

Figure 11.3 **Cycles of transformation in flexibility in lesson planning**

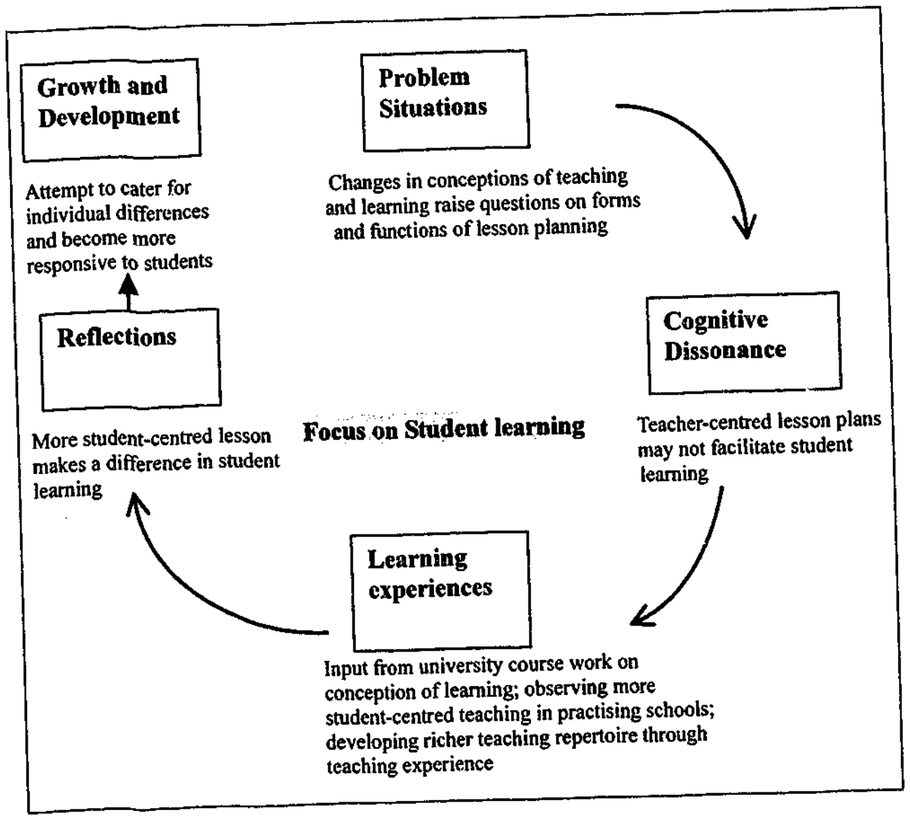


Bearing an initial conception of teaching as transmission of subject knowledge, lesson planning at the beginning of the Post-Graduate Diploma course was generally simple. Student teachers planned meticulously in the hope that they could complete the delivery of content as scheduled. However, the lesson plan did not always work as scheduled because of contextual factors like student characteristics concerning their ability level, socio-economic background, interest, motivation and even their mood of the day. As student teachers became more aware

of the need to cater for student variations in their teaching, they recognized the need for flexibility in lesson planning. On reflection, they soon realized that lesson planning was not a two-step process: "plan and teach". With a gradual change in conception of teaching from knowledge transmission to knowledge construction, student teachers began to accommodate more variations in their learning activities such that teaching became more interactive. They were ready to relinquish their lesson plan and even re-plan on the spot. They planned with a wider perspective and their planning began to adjust along with the needs and learning styles of students; they became less rigid.

11.2.4 Focus on student learning

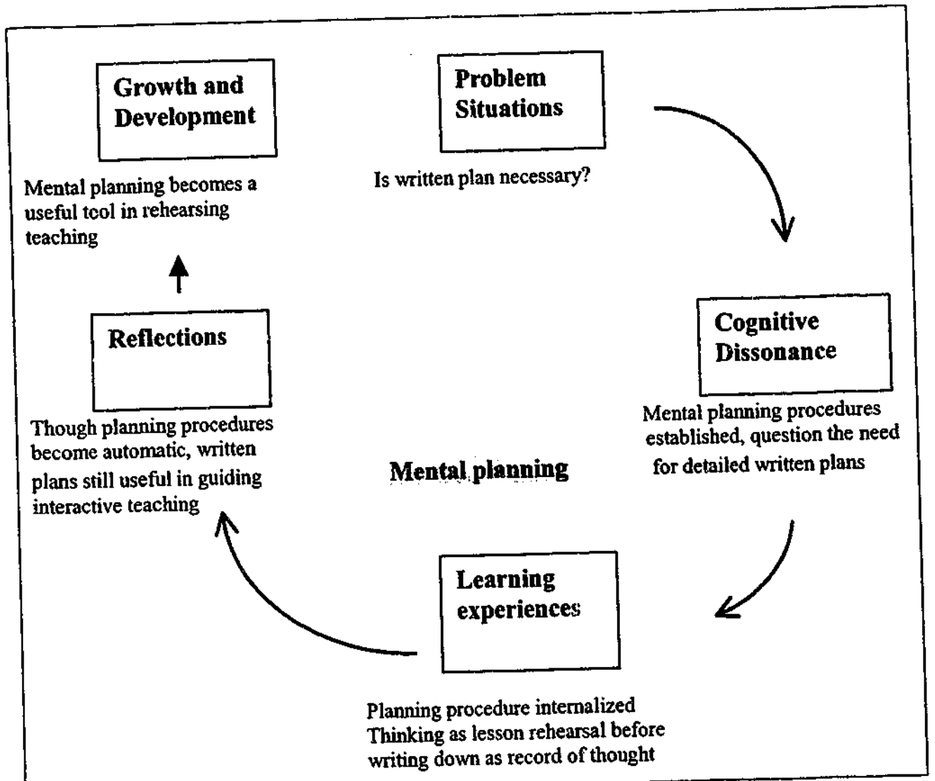
Figure 11.4 **Cycles of transformation in changes of focus**



Changes in conceptions of teaching and learning triggered student teachers' changes in the form and focus of lesson planning. They gradually discovered that teacher-centred lessons were less effective in catering for individual differences in learning. They began to raise questions about the practicability and feasibility of the prescribed lesson plan formats (refer to Section 7.1.2). Instead of dwelling on lesson plans as their record of thoughts and reminders for processes and procedures, they began to appreciate lesson plans as a useful instrument to facilitate student learning. Input from their university programs on conceptions of learning, course work such as representation of the conception of learning in terms of posters and scaffolding assignments, and also observing student-centred teaching at work in schools, all contributed to student teachers' growth and development in their teaching repertoire. The more they were exposed to interactive teaching and more student-centred lessons, the more they came to recognize that student-centred lesson planning contributed to student learning. Student teachers attempted to generate lesson plans capable of addressing auditory, visual and kinesthetic learning styles through structuring more group activities and hands-on experiences. Their lesson planning grew to be more responsive to their students.

11.2.5 Mental processes and procedures

Figure 11.5 **Cycles of transformation in mental processes and procedures**

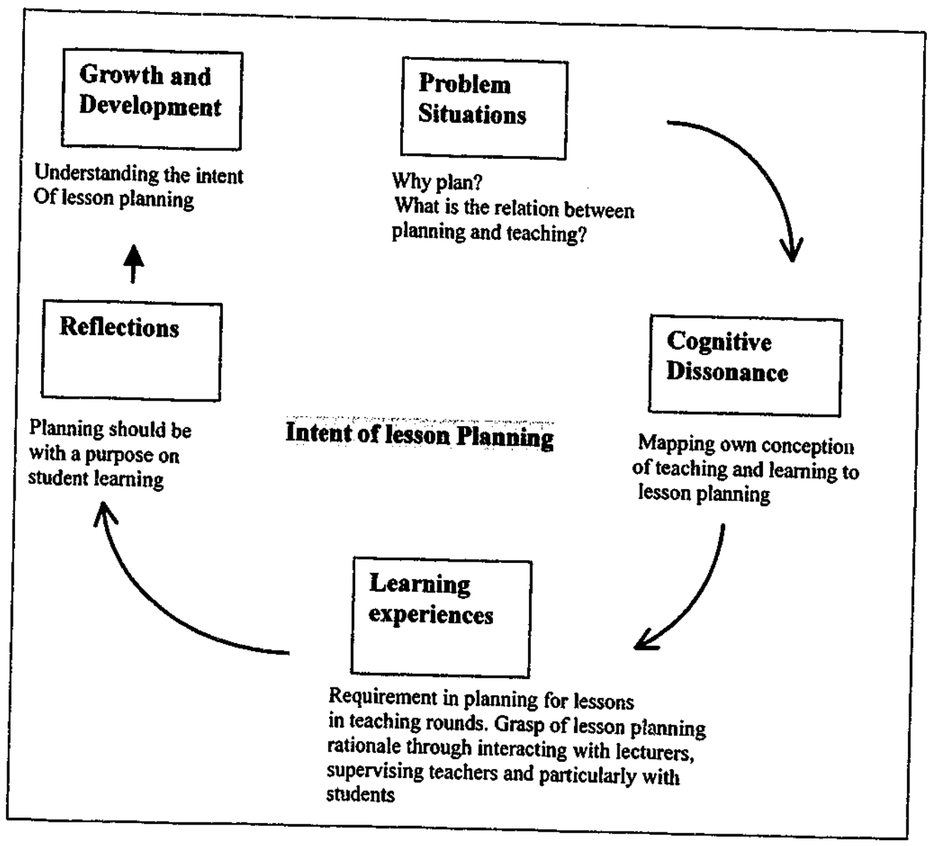


When student teachers grew more in their capacity as teachers after the second teaching round, they began to question the usefulness and function of written lesson plans. With mental images of lesson routines and lesson planning procedures established, student teachers thought that detailed written plans were no longer a necessity. The planning procedures were imprinted in their mind and became second nature for these student teachers. Instead of writing lesson plans in the form of script-like running sheets these student teachers began to write less detailed lesson notes as reminders. This more closely resembled the practice of experienced teachers. However, lesson planning as a university requirement for the teaching round still served the purpose of formalizing their planning needs and processes, whereby student teachers could rehearse the lesson mentally before interactive teaching.

Written lesson plans as reminders added to their confidence and skillfulness in the classroom. Being more at ease with the planning procedures, they did not plan just to fill their 'time slot' but they began to focus more on contextual factors pertinent to more effective learning. Mental planning became a predominant practice in these student teachers and this growth in teacher cognition released more time for consideration for designing more interactive teaching through incorporating a richer array of learning activities into their lessons. Mental planning provided student teachers with a frame of mind in the preactive stage of teaching.

11.2.6 Understanding the intent of lesson planning

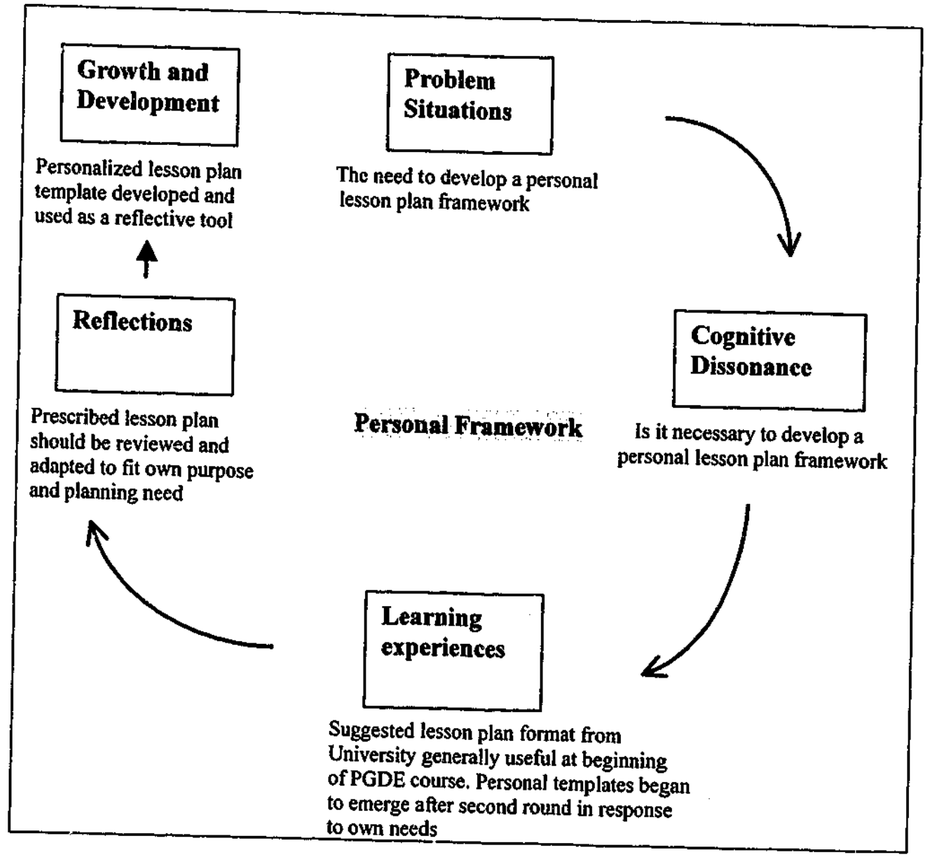
Figure 11.6 **Cycles of transformation in understanding the intent of lesson planning**



Student teachers were required to write lesson plans in their teaching rounds. The need to write lesson plans was formalized as a university requirement. As planning was emphasized as a prerequisite of good teaching, student teachers construed lesson planning as an important function in the preactive stage of teaching. In the early stages of the Post-Graduate Diploma program, the purpose of lesson planning was to write down subject knowledge to be systematically transmitted in lessons. As their conceptions of teaching and learning grew more sophisticated in the later stage of their initial teacher education program, they developed a 'better grasp of the rationale of lesson planning' and they saw the need to plan with a purpose. The move from a transmissive to a constructivist stance engaged many in attempts to realize their own conceptions of teaching in their lesson planning. Coupled with a better understanding of learning through exposure to university course work, discussion and interacting with lecturers and peers, and continual reflection on practice at schools and in university, student teachers began to hold a better understanding of their rationale for lesson planning. The prime purpose was to facilitate student learning. This understanding of the intent of lesson planning indicated a shift to a constructivist approach to teaching for genuine student learning.

11.2.7 Personal framework in lesson planning

Figure 11.7 **Cycles of transformation in personal framework in lesson planning**



Building on the lesson plan templates prescribed by university lecturers, student teachers felt the need to modify the templates to suit their own planning orientations and teaching styles. Such a personalized lesson plan template began to emerge after the second teaching round when they reviewed and adapted the prescribed format to fit their own purposes and planning needs. Input from supervising teachers and reflection on own practice gave rise to a re-conceptualization of the prescribed formats. However, it was noted that such a personal framework was conceived and put into practice after repeated trialing. This reflected, to a certain extent, their conceptions of teaching and learning. The personal framework came along with an understanding of the intent of lesson planning and knowledge of 'lesson routines'. To some students, the personal framework served

either as a mental scaffolding instrument in the preactive stage of teaching or as a reflective tool helping student teachers to review their own teaching. It is interesting to note that student teachers might not be aware of the existence of the framework themselves (this will be further discussed in Chapter 13).

These cycles of transformation associated with change dimensions illustrated qualitative changes in student teachers' conceptions of lesson planning. They encountered problem situations revolving around the when, where, who, what, why, and how of lesson planning, which created cognitive dissonance that challenged their prior beliefs and conceptions of teaching, learning and lesson planning. Their learning experiences then spread across the technical, psychological and ecological orientations. Students were first introduced to what form a good lesson plan should take and they were required to use sample lesson plan formats in their first teaching round. They were then prompted to experience planning as a thought process and gradually took into account the teaching and learning contexts in their planning. Contrived or self- reflections on practice in different situations with different agents contributed to growth and development in the beliefs, knowledge, skills and dispositions in lesson planning, which was an important developmental process in learning to teach in the initial teacher education program. In the next section, a framework for comparison of conceptions is considered.

11.3 Understanding conceptual changes in lesson planning - A framework for comparison

Branch (1992) conducted a content analysis based on an aggregate of recommended design and development competencies extracted from over 60 instructional design models. Together with a research team, Branch conceptualized a "Teacher Planning Inventory" (TPI) and compared the Inventory with practices considered fundamental to the systematic approach to design for teaching. For comparison purposes, the Teacher Planning Inventory is adapted for use in this study to establish a reference point for mapping the relationships between teacher planning practices, selected generic areas in the National Competency Framework for Beginning Teaching (NCFBT) (Australian Teaching Council, 1996), and Yinger and Hendricks-Lee's (1995) Teacher Planning Conceptions (TPC). The comparative framework is tabulated in Table 11.2 as follows.

Table 11.2 **A framework for comparison of competency and teacher planning conceptions**

Teacher Planning Inventory (TPI)	*National Competency Framework for Beginning Teaching (NCFBT)*	*Yinger and Hendricks-Lee's Teacher Planning Conceptions (TPC)*
1. Determine goals based on the curriculum	3.1	Technical
2. Break down goals into learning tasks	3.1; 3.2	Technical
3. Specify what the students should be able to do at the end of each lesson	3.1; 3.6	Technical
4. Select and sequence objectives that would be taught during a single lesson	3.4	Technical
5. Match teaching methods to lesson objectives	3.4	Technical
6. Organize the content of each lesson around related themes of knowledge and skills	1.2, 3.4	Technical
7. Select appropriate materials for each lesson	3.4	Technical
8. Make sure lessons relate to each other	3.1; 3.4	Technical
9. Make sure that lessons fit the entire curriculum	3.1	Technical
10. Map out a guide to serve as a plan throughout the entire school term	3.1, 5.3	Technical
11. Make assessment during the lesson as a way to check student learning	4.2	Technical
12. Measure students' performance for each lesson	4.3	Technical
13. Find out the background, abilities, needs and attitudes of students	2.3	Psychological
14. Determine minimum skills that are required of the students in order to complete the lesson	3.2	Psychological
15. Ensure the planned lesson will be appealing from the students' perspective	3.2; 3.3; 3.5	Psychological
16. Use teaching methods that are conducive to student learning	1.2, 1.3	Psychological
17. Make sure that teaching accommodates individual differences	2.3; 3.5; 3.7	Psychological
18. Include motivating activities to grab and maintain attention	3.7; 3.8	Psychological
19. Discuss lesson plans with supervising teachers and/or department leaders	2.5; 2.6	Ecological
20. Organize efforts with other teachers in planning lessons	2.6	Ecological
21. Discuss lesson plan with resource centre personnel	2.6	Ecological
22. Consider contextual factors in relation to school, class and group characteristics	2.5, 5.1	Ecological

In view of the focus of the present study, the themes related to lesson planning are mapped out from the National competency Framework for Beginning Teaching. The Framework comprises five areas of competency, including: (1) using and developing professionai knowledge and values; (2) communicating, interacting and working with students and others; (3) planning and managing the teaching and learning process; (4) monitoring and assessing student progress and learning outcomes; and, (5) reflecting, evaluating and planning for continuous improvement. Competency Areas 2, 3 and 4 are closely tied to different stages in planning (refer to Appendix 1). As indicated in the multiple representations of these competencies against the Teacher Planning Inventory items, these competencies are inter-dependent and form a web of abilities intertwined with conceptions of teaching and learning.

The Teacher Planning Inventory is then correlated to Yinger and Hendricks-Lee's Planning Conceptions in terms of technical, psychological and ecological attributes (refer to Section 3.4 for brief descriptions of conceptions). The Teacher Planning Conceptions are not intended to be linear in progression moving along a technical, psychological and ecological hierarchy. However, it is evident in this study that student teachers progress from technical to psychological and finally to ecological conceptions. As reported in Table 6.3 in Section 6.3.2, student teachers mainly ascribed to the technical conception in lesson planning. They relied mainly on using the template provided by their university lecturers for individual lessons and they planned to teach the subject content assigned by their supervising teachers in the first teaching round. At this stage, the level of technicality of lesson planning was confined to designing a single lesson and not much attention was paid to fitting the individual lesson into the unit or module - not to mention the entire curriculum. This correlated with their initial conception of teaching whereby delivering the subject content was their main task.

As structural changes in their conception of teaching surfaced after the second teaching round, they became less apprehensive and more confident with their own teaching. Their teaching became more interactive and they began to pay more attention to students' responses in lessons. The generally linear lesson planning procedures introduced in their subject methods were challenged and student teachers

began to question the practicability and feasibility of lesson plan formats. With a growing understanding of learning as a cognitive process and student teachers themselves maturing more in the role of teacher, they became more sensitive to their students' backgrounds, attitudes, needs, abilities and responses in their lessons. This was reflected in their lesson plan designs in the second teaching round. Six of the twelve student teachers in the study shifted to a psychological conception in lesson planning.

On completion of the third teaching round, student teachers became more mature in their teaching. With the exception of Tommy who did not ascribe to the lesson plan format suggested by the university lecturer, all other eleven student teachers handled with ease the lesson plan templates prescribed by university lecturers. Eight respondents developed personalized frameworks derived from the original university lesson plan formats or from lesson plan templates suggested by supervising teachers. Interacting with conceptual changes in conceptions of teaching and learning, five out of the twelve student teachers began to recognize the complexities of learning and began to investigate the connections between planning and classroom interactions. Jenny, Susan and Tony discovered the complex ways in which planning deliberations were embedded in a particular teaching context. Table 11.3 summarizes the conceptual orientations student teachers elicited as a result of scrutinizing their lesson plans written for the three teaching rounds, their simulated planning tasks, and post-task interviews conducted at the end of the Post-Graduate Diploma in Education program.

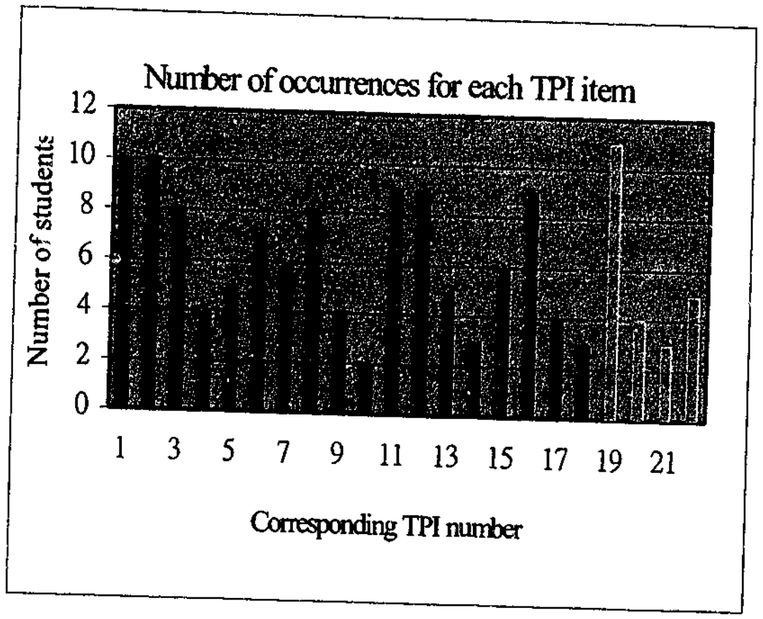
Table 11.3 **Item distribution in Teacher Planning Inventory by individual student**

Student	Technical													Psychological							Ecological			Number of items			Total No. of TPI items
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	T	P	E	
Ada	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓	✓			✓				10	3	1	14
Eliza	✓		✓		✓	✓	✓	✓			✓		✓		✓	✓			✓			✓	7	4	2	13
Frank	✓		✓			✓	✓												✓				5	0	1	6
Saran	✓	✓		✓				✓				✓							✓				5	0	1	6
Tommy	✓	✓			✓						✓				✓	✓	✓						4	3	0	7
Tony	✓	✓	✓			✓		✓			✓	✓		✓	✓	✓			✓			✓	7	3	2	12
Valerie	✓	✓		✓				✓				✓		✓					✓				5	1	1	7
Clara	✓	✓					✓			✓		✓		✓		✓			✓		✓		6	2	2	10
Jenny	✓	✓	✓		✓	✓			✓			✓	✓			✓	✓	✓	✓	✓		✓	8	4	3	13
Michael		✓	✓		✓		✓	✓			✓		✓			✓	✓	✓	✓	✓	✓	✓	7	4	4	15
Rachel		✓	✓	✓		✓		✓	✓		✓	✓			✓	✓			✓	✓	✓		7	2	2	11
Susan	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	10	4	4	18

T = Technical items
P = Psychological items
E = Ecological items
✓ TPI items identified in lesson plans, simulated planning tasks or in interview responses

11.3.1 Overall distribution of themes in teacher planning conceptions

Figure 11.8 **Number of occurrences for each TPI item**



From Figure 11.8, the most popular items in the technical conception are "determining goals based on the curriculum" and "breaking down goals into learning tasks". Ten students chose to formulate objectives for lessons. Eight student teachers chose to specify what the student should be able to do at the end of each lesson. Such a practice is different from the planning practice of experienced teachers who usually take learning activities as their point of departure when planning for their teaching (Taylor, 1970). Yet, the practice of ten student teachers in attempting to break down goals into learning tasks or learning activities resembles that of the planning practices of more experienced teachers. It appears that learning activities played a central role in their plans and seven out of the twelve students organized the content of each lesson around related themes of knowledge and skills and these lessons were extended into units of study. Eight student teachers noted that they would try to relate individual lessons to one another and fit them into larger units of study. Planning more globally became a common practice of students and they no longer confined themselves to planning for a single lesson. However, the very low

occurrence of 'fitting the lesson into the entire curriculum' and 'mapping out an overview for the whole school term' might be a result of a lack of context for developing this competency in student teaching. Yet, nine student teachers expressed the view that they would consider long term planning in their future teaching. Their views have already been reported in Section 10.2.1. The number of occurrences in objectives and activities reveals that student teachers paid due emphasis to learning product (student outcomes) as well as the learning process. This is in accord with the shift from a transmissive to a constructivist conception in teaching and learning. However, the comparatively low occurrences in matching teaching methods to lesson objectives and selecting appropriate teaching and learning materials suggests that student teachers' teaching repertoires will develop more in the future.

In relation to the shift from learning product to learning process, students' growing awareness of the complexities of learning also brought about changes in their planning practices. On-going assessment and end of lesson evaluation are included to serve either as checks of student understanding or as indicators of student learning performance during or on completion of the lesson. A total of ten student teachers mentioned that they would design some form of assessment for purposes of evaluating student learning. The shift from teaching to learning was prominent in these findings.

As far as the psychological conception is concerned, finding out about the background, abilities, needs and attitudes of students were evident in nine student teachers' responses, which was further complemented by their inclination to use teaching methods that were conducive to student learning. Such a shift of focus to student learning was only possible when student teachers moved on from information loading through observing lesson routines and the ongoing attention to classroom management issues. Six student teachers were prepared to use different learning activities to cater for different learning styles and four of them were ready to design lessons to accommodate individual differences. Although lesson planning was claimed to be more student-centred, only four student teachers ascribed to motivational concerns that were integral to effective teaching and learning. Students were considered important informants on the effectiveness of their teaching and

three student teachers used their lesson plans as reflective tools for improvement on teaching.

In aspects of the ecological conception, the most popular item identified was discussing lesson plans with supervising teachers and with subject department heads. This indicates that student teachers were aware of the importance of pre-lesson discussions with supervising teachers for teaching content, teaching approaches and other necessary information. In particular, student teachers were cognizant of the importance of such ecological factors as school, student and group characteristics. Supervising teachers were important sources of information. They took into consideration advice from supervising teachers or department heads since these supervising teachers played a role in evaluating student teachers' performance during the teaching round. Planning with other teachers in the teaching rounds occurred only when two or more student teachers with the same subject method were assigned to the same school. This was not common but where circumstances allowed, four student teachers made full use of the opportunity by joining with their colleagues. Five student teachers considered contextual factors (school, class and group) as part of their planning. They mentioned that they would consider such things as the expectations of the school, class characteristics, time of day, and mood of students before they planned for the lessons.

11.3.2 Conceptual orientations of lesson planning in general

Based on the findings from the documentary study of lesson plans, simulated planning tasks, and interviews after the third teaching round, individual student teacher's conceptual understanding and orientation in lesson planning was compared with their conceptions during different time frames (as outlined in Chapters 6, 7 and 8). The following analysis serves to pull together these findings over time. Table 11.3 displays the conceptual orientations of student teachers in lesson planning in relation to the Teacher Planning Inventory and the National Competency Framework for Beginning Teaching. Conceptual orientations proposed by Yinger and Hendricks-Lee (1995) are not linear as they represent different approaches to planning for teaching. Nevertheless, it is evident that student teachers

in this study acquired technical competency described in the Teacher Planning Inventory before they considered more of the cognitive aspects of lesson planning in the realm of the psychological conception. In the first teaching round, they played the role of "apprentice" to their supervising teachers and literally taught what they were asked to teach. Yet, when they grew more in the role of teacher in the second teaching round, they started to explore issues related to student learning. In the third teaching round, student teachers were more aware of the contextual factors embedded in the schools where they were placed for teaching practice. Except for Tommy, all other eleven student teachers consulted their supervising teachers in their lesson planning. Nevertheless, the conception that lesson planning and classroom interaction were responsive and contextualized became discernible to only five students who experienced a high magnitude of change in conceptions of lesson planning at the end of their initial teacher education course. In general, growth and development of student teachers in lesson planning conceptions could be described as a transformative progression in that the mastery of the technicality of lesson planning preceded the understanding of the cognitive process involved in student learning and subsequent consideration of contextual factors in the school. Analysis of individual student's conceptual orientations in lesson planning is summarised in Table 11.4 and will be discussed in the next section.

11.4 Conceptual orientations of lesson planning by individual teachers

Growth and development of student teachers' knowledge, skills and disposition in lesson planning extended over the whole initial teacher education course. Analysis of the distribution of the Teacher Planning Inventory items reveals that the total number of items obtained by individual teachers ranged from 5 to 19. Student teachers from City University had an average of 9.2 items while student teachers from Metro University had an average of 13.6 items. The number of items may reflect magnitude of quantitative changes in terms of mastery of corresponding competency exemplified in the National Competency Framework for Beginning Teaching. For qualitative changes in lesson planning, it may be deduced from responses in the interviews and reflected in dimensions of changes. Distribution of student teachers' conceptual orientations in lesson planning is reported in the following table.

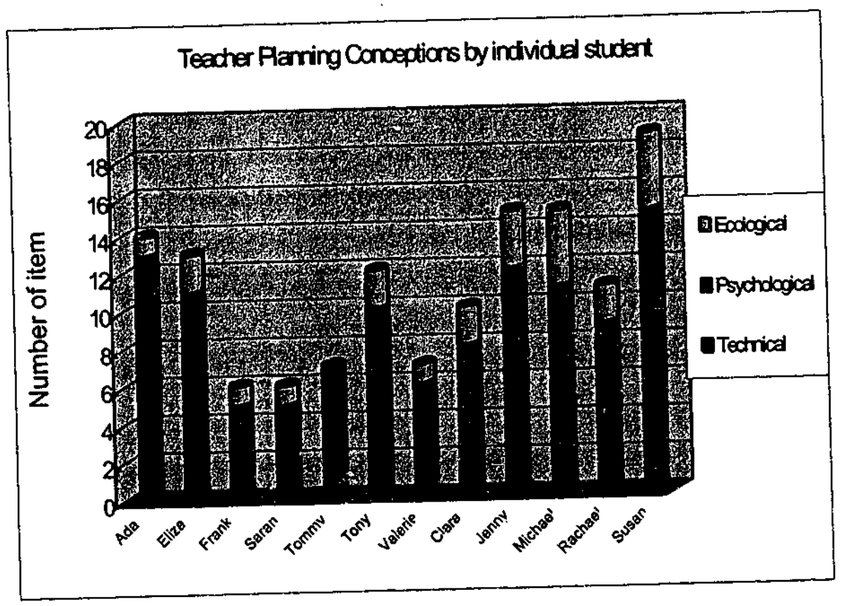
Table 11.4 **Conceptual orientations of student teachers in lesson planning at the end of Post-Graduate Diploma in Education Course**

Student	*Number of TPI items*	*Corresponding NCFBT items*	*Number of Corresponding TPC items*			*Continuation of use of lesson plans in future teaching*
			T	*P*	*E*	
Ada	14	1.2, 1.3, 2.3, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 4.2, 4.3	10	3	1	Yes, in modified lesson plan format
Eliza	13	1.2, 1.3, 2.3, 2.5, 2.6, 3.1, 3.2. 3.3, 3.4, 3.5, 3.6, 4.2, 5.1	7	4	2	Yes, in lesson notes form
Frank	6	1.2, 2.5, 2.6, 3.1, 3.4, 3.6, 4.2	5	0	1	Not indicated
Saran	6	2.5, 2.6, 3.1, 3.2, 3.4, 4.3	5	0	1	Not indicated
Tommy	7	1.2, 1.3, 2.3, 3.1, 3.2, 3.3, 3.4, 3.5, 3.7	4	3	0	Not indicated
Tony	12	1.2, 1.3, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 4.2, 4.3, 5.1	7	3	2	Yes, in own personal framework
Valerie	7	2.5, 2.6, 3.1, 3.2, 3.4, 4.3	5	1	1	Yes, in short form
Clara	10	1.2, 1.3, 2.5, 2.6, 3.1, 3.2, 3.4, 4.3, 5.3	6	2	2	Yes, in brief lesson notes form
Jenny	13	1.2, 1.3, 2.3, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.2, 4.3, 5.1	8	4	3	Yes, in own personal framework
Michael	15	1.2, 1.3, 2.3, 2.5, 2.6, 3.1, 3.2, 3.4, 3.5, 3.6, 3.7, 3.8, 4.2, 4.3, 5.1	7	4	4	Yes, in own personal framework
Rachel	11	1.2, 1.3, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 4.2, 4.3,	7	2	2	Yes, in own personal framework
Susan	19	1.2, 1.3, 2.3, 2.5, 2.6, 3.1, 3.2, 3.4, 3.5, 3.6, 3.7, 3.8, 4.2, 4.3, 5.1, 5.3	11	4	4	Yes, in own personal framework

Findings from the Table 11.4 indicate that all student teachers were engaged in different planning conceptions. Nine were associated with all three conceptions while the remaining three student teachers were identified with only two. All student teachers were identified with the technical conception associated mainly with the procedures in planning and managing the teaching and learning process. Two student teachers did not illustrate a response to the psychological conception while one made

no explicit connection to the ecological conception. Table 11.4 is represented graphically in Figure 11.9 to facilitate comparison between student teachers.

Figure 11.9 **Teacher planning conceptions by individual students**



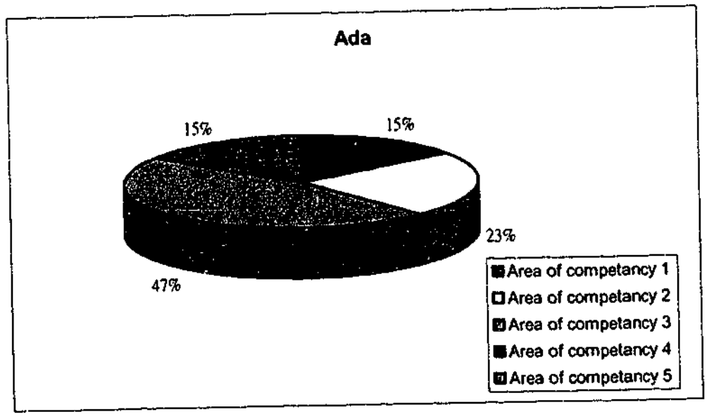
In the following sections, the analyses will focus on individual student teachers' conceptual orientations in lesson planning. The orientations are further interpreted against their relations with the National Competency Framework for Beginning Teaching (Australian Teaching Council, 1996). Although the Framework of Competency was not mandated as a national requirement for use by professions or in relation to university-based professional education, both universities had used the competency framework as a tool to help teachers reflect on and talk about their practice. Indeed, the teaching practice evaluation proforma developed by the Metro University for use by supervising teachers drew heavily on the Competency Framework for scope and criteria of assessment for student teachers. The Key Competency statements and performance indicators offer a lens for viewing the development of preactive teaching skills in the learning to teach processes. Distribution of competencies in relation to items in the Teacher Planning Inventory is therefore considered a valuable reference point, or lens, from which the growth and development of student teachers in aspects of lesson planning might be considered.

The graphical representation of the NCFBT by individual teachers is intended to illustrate the degree of growth and development in relation to congruous areas of competency pertinent to successful preparation for teaching. The percentage distribution corresponds to the five areas of competency and carries relevancy connoting the technical (mainly areas three and four), psychological (areas one, two and five), and ecological (mainly area two and also area five) orientations. Competency areas three and four focus more on the planning and managing the teach-learn-assess cycles in the preactive stage of teaching. Competency area one emphasizes student teachers' subject knowledge, professional knowledge, values and also the ability to reflect on practice, while competency area two is concerned more with knowledge of students and the workplace.

11.4.1 Ada

From Figure 11.9, it is notable that by the third teaching round, Ada's planning had a strong association with the technical conception. Her focus on writing objectives was maintained in her lesson plans throughout the three teaching rounds. She also took into consideration student characteristics and employed teaching methods that suited students. Since she had once been a demonstrator in University while studying her undergraduate degree, she was well prepared for teaching science experiments. She also included assessment for measuring students' performance during and after the lessons. In regard to ecological elements, she discussed her ideas with supervising teachers and responded well to their advice. She mentioned in her interview that she would plan more globally when she started teaching full-time. Figure 11.10 displays the distribution of National Competency Framework for Beginning Teaching (NCFBT) items in her planning.

Figure 11.10 **Ada - Proportion of corresponding NCFBT items**

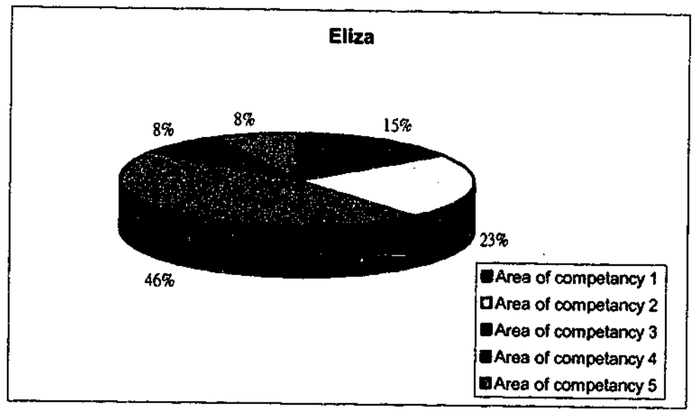


Total number of TPI items: 14

11.4.2 Eliza

Eliza focused on developing students' potential from the second teaching round. She planned with goals and objectives derived from the curriculum. She chose a variety of learning activities to match with her lesson objectives and she attended to students' motivation in her lesson plans. As she focused on student learning, she devised activity-based lessons aimed at motivating students' interest in learning. She had a total of seven items in the technical conception. There were four items in the psychological conception and two in the ecological conception. She had a mixture of planning conceptions. Distribution of NCFBT items is reported in Figure 11.11.

Figure 11.11 **Eliza - Proportion of corresponding NCFBT items**

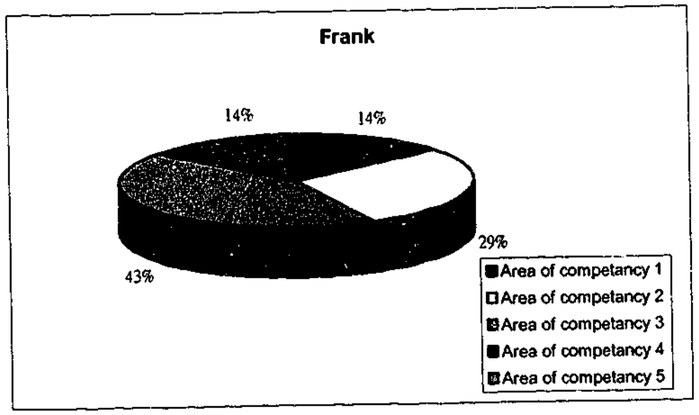


Total number of TPI items: 13

11.4.3 Frank

Frank had five items in the technical conception. He wrote general lesson objectives for his lesson plan and he also stated that which he expected his students to perform at the end of a lesson. His lesson plans emphasized the subject content to get through and he selected materials mainly from textbooks. He consulted his supervising teachers for topics to cover in the teaching round and followed their advice closely. In fact, he did not express any concern towards students as learners. On the whole, his lessons were rather teacher-centred. He had a predominant technical conception in his lesson planning practice. Distribution of the NCFBT items is recorded in Figure 11.12

Figure 11.12 **Frank - Proportion of corresponding NCFBT items**

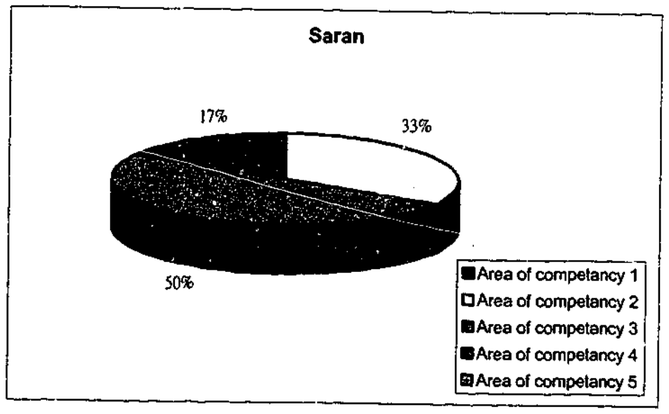


Total number of TPI items: 6

11.4.4 Saran

Saran had the same number of technical items in the Teacher Planning Inventory as Frank. She focused very much on teaching objectives and she stated what she expected her students to be able to do at the end of the lesson. She included performance checks in her lesson plans. She thought that she would plan longer lessons when she became a full-time teacher. However, she showed little concern toward student learning in her lesson plans, which were on the whole very didactic in nature. Like Frank, she had a strong technical conception in her lesson planning. Distribution of the NCFBT items falls mainly in Area three of the Framework, as presented in Figure 11.13.

Figure 11.13 **Saran - Proportion of corresponding NCFBT items**

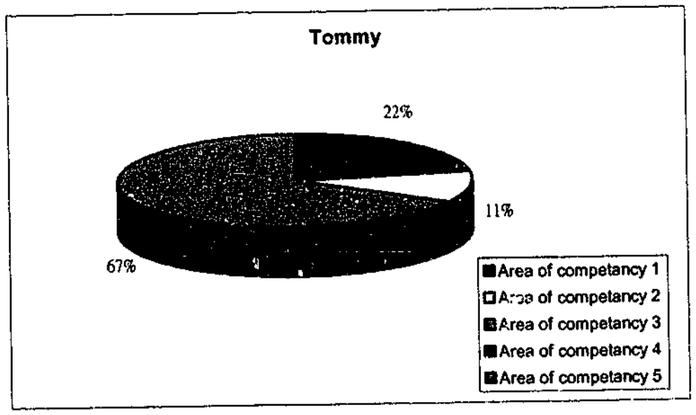


Total number of TPI items: 6

11.4.5 Tommy

Tommy believed that his teaching should help students develop their potential and he attempted to cater for individual differences in his lesson plans. However, he did not consider, to any great extent, student characteristics before matching his teaching methods to learning objectives. His lesson plans were rather brief and sketchy stating simply what he expected of students at the end of the lesson. Indeed, it appeared as though he did not count too much on consulting supervising teachers for advice on teaching content and methods in his lesson planning. His planning conception was found to be a mix of technical and psychological. The distribution of NCFBT items is presented in Figure 11.14.

Figure 11.14 **Tommy - Proportion of corresponding NCFBT items**

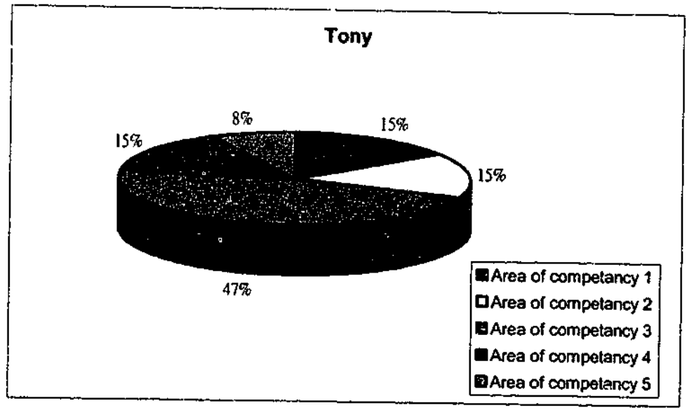


Total number of TPI items: 7

11.4.6 Tony

Tony demonstrated a good grasp of planning procedures and routines. His lesson plans were well written in a personalized format. He wrote clear learning objectives and broke them down into learning tasks to facilitate student participation. His teaching methods matched students' background and he monitored student progress and responded to unpredicted circumstances. He evaluated students' entry behaviour and adjusted his plan to suit their level. He also considered contextual factors present in the school ecology in order to maximize learning in students. His had a mixed planning conception. The distribution of NCFBT items spreads across the five areas presented in Figure 11.15.

Figure 11.15 **Tony - Proportion of corresponding NCFBT items**

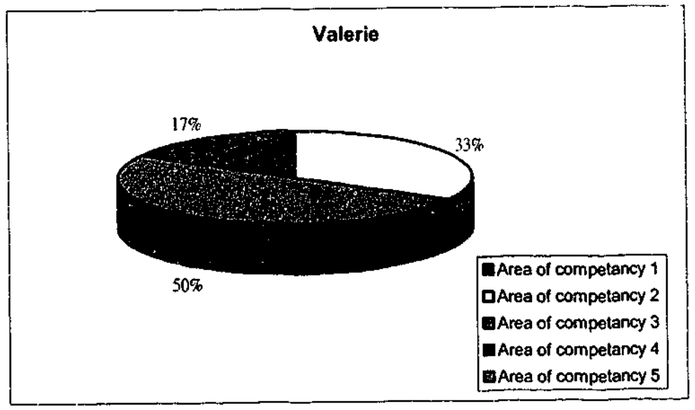


Total number of TPI items: 12

11.4.7 Valerie

Valerie paid good attention to selection and sequencing of learning objectives in her lessons. She made an effort to make sure that the series of lessons were related. Her lesson plans were more detailed in the third teaching round than in the previous teaching round. She included performance measures in the form of learning activities students had to complete in her class. She followed instructions from her supervising teachers. In general, her lesson planning was more inclined to the technical conception. Distribution of the NCFBT items is displayed in Figure 11.16.

Figure 11.16 **Valerie - Proportion of corresponding NCFBT items**

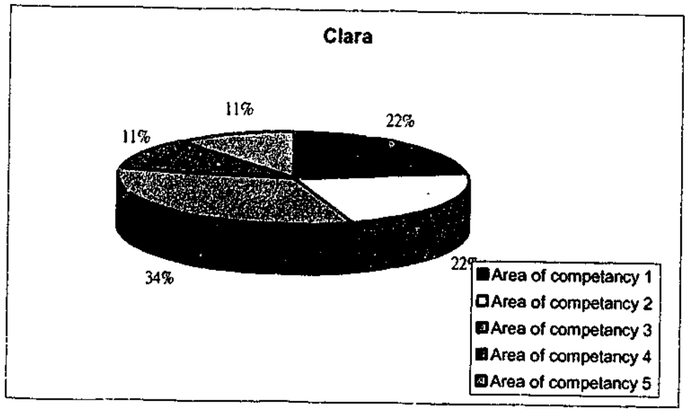


Total number of TPI items: 7

11.4.8 Clara

Clara asserted that there should always be a purpose for teaching. This was reflected in her emphasis on the need to map single lessons onto the larger unit of study in a school term when she started regular teaching. She also focused on selecting the appropriate learning materials for her music lessons such that students could be involved in more active learning. To measure student performance, she included some form of assessment in her lesson plans. She would consult her supervising teachers for advice on her choice of teaching content and other materials. In general, Clara had a mixed planning conception. The NCFBT items spread across five areas. It is represented in Figure 11.17.

Figure 11.17 **Clara - Proportion of corresponding NCFBT items**

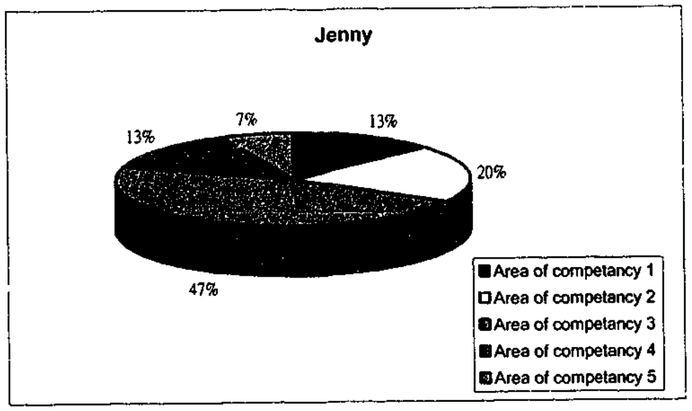


Total number of TPI items: 10

11.4.9 Jenny

Jenny wrote detailed knowledge, skills and value objectives for her lesson plans. These goals were spelled out in various learning tasks designed to appeal to students' interest, learning and motivation. She also attempted to accommodate individual differences in students through matching teaching methods to different objectives. On-going and end of lesson assessments were included in her lessons to check students' learning performance. She worked quite well with her supervising teachers and other staff. She took into account students' characteristics and she also considered contextual factors present in school when planning for her lessons. Her planning conception was basically a mixture of the three. Her NCFBT items extended over five areas of competency. It is presented in Figure 11.18.

Figure 11.18 **Jenny - Proportion of corresponding NCFBT items**

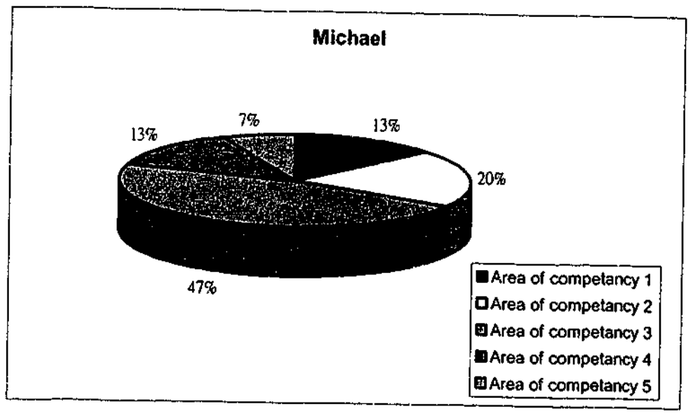


Total number of TPI items: 13

11.4.10 Michael

Michael wrote explicit expectations of student outcomes in his lesson plans. He had a firm belief that students could learn if they were motivated. Accordingly, he put a lot of effort into using learning activities to engage students in actively constructing their own meaning. He tried to structure learning tasks in order to cater for individual differences. Through incorporating assessments at different stages of his lessons, he monitored the progress of his students' learning. Michael paid very good attention to ecological factors in his lesson planning. He consulted his supervising teachers for teaching ideas and followed their instructions where appropriate. He worked well with resource persons like laboratory technicians for setting up experiments. He had a mixed planning conception. The distribution of NCFBT items extended over the five areas of competency and is represented in Figure 11.19.

Figure 11.19 **Michael - Proportion of corresponding NCFBT items**

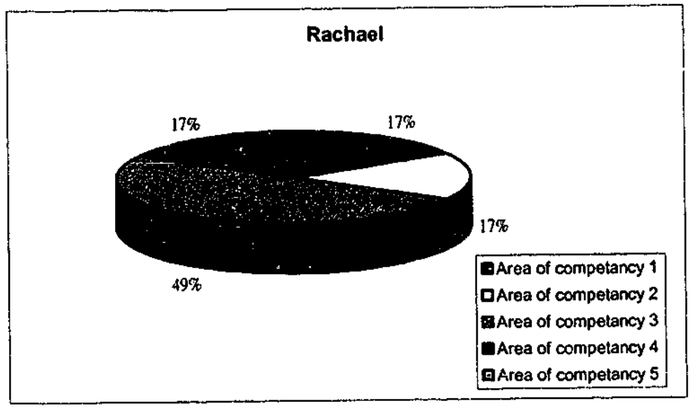


Total number of TPI items: 15

11.4.11 Rachel

By the end of the initial teacher education program, Rachel had clear ideas of her lesson objectives in the form of the type of performance she expected of students at the end of the lesson. She used a shorter format adapted from the template prescribed by subject lecturers when planning for her lessons and she tended to incorporate lessons into larger units of study. She was concerned with student learning and she employed different teaching methods. Though she experienced some difficulty with critical supervising teachers in the second teaching round, she still sought and followed advice from her mentors in the last teaching round. She chose to work with other teachers where necessary. On the whole, her planning conception was mixed. The distribution of NCFBT items covered four areas of competency and is reported in Figure 11.20.

Figure 11.20 **Rachel - Proportion of corresponding NCFBT items**

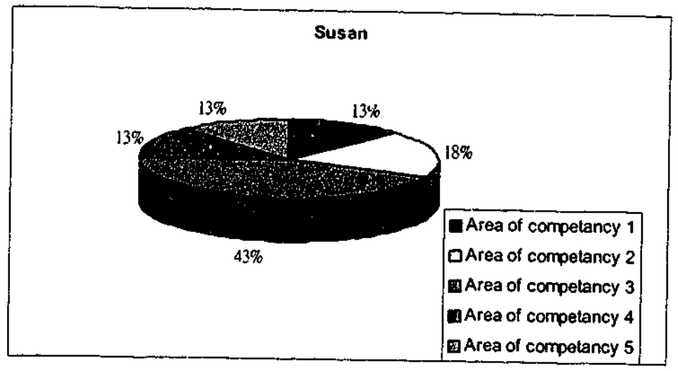


Total number of TPI items: 11

11.4.12 Susan

Susan had 19 TPI items in her responses, the highest of all student teachers. She demonstrated mastery of the technical aspects of lesson planning. Modifying the lesson plan templates from her subject methods, she wrote in ways that illustrated detailed knowledge, skills and value objectives for her lessons that were congruent with the curriculum. She tried to map out the whole curriculum for which she was responsible in the third teaching round before breaking the ideas down into lessons. Her focus on student learning attracted her efforts in designing a wide variety of teaching and learning activities in engaging students in active learning. She matched these activities with assessment to check student performance throughout the lesson. She considered contextual factors carefully for implications to her planning and teaching. She was commended by her supervising teachers and subject lecturers for her meticulous and systematic planning and her very good performance in teaching. She had a mixed and balanced planning conception. The distribution of NCFBT items is presented in Figure 11.21.

Figure 11.21 **Susan - Proportion of corresponding NCFBT items**



Total number of TPI items: 19

From the foregoing analysis, it is evident that planning conceptions of student teachers generally covered the three domains across the five areas of competency. Rational lesson planning appeared to lay the groundwork for subsequent progression into the psychological and ecological conception. Generally, attention to cognitive aspects of lesson planning could only be realized when student teachers were able to establish lesson routines and manage the lesson planning procedures. Student teachers need to develop a higher level of ability and alertness to ecological concerns before they could cater for these contextual factors in their lesson plans.

As far as distribution of Key Competencies is concerned, the highest percentage of distribution (approximate to 50% of the total items) falls within Key Competency area three "Planning and managing the teaching and learning process". Key Competency area two "Communicating, interacting and working with students and others" ranks second highest among both cohorts of student teachers. Area four "Monitoring and assessing student progress and outcomes" took the third position among student teachers. Area one "Using and developing professional knowledge and values" captured about 20% of the distribution of the TPI items identified in ten student teachers. For area five "Reflecting, evaluating and planning continuous improvement", four out of five of the Metro University respondents and two out of seven of the City University respondents had a distribution ranging from seven to thirteen percent.

11.5 Summary

As a sequel to analyses of the dimensions of changes in chapter 10, this chapter has examined the correlation of these dimensions with the technical, psychological and ecological planning orientations. Cycles of transformation associated with the conceptual themes identified in the last round of interviews have been explicated. Student teachers experienced cognitive dissonance arising out of problem situations encountered in different teaching and learning contexts in universities and at practising schools. Learning experiences and reflection enabled student teachers to move along the pathway from mastery of single lesson plans,

establishing cognitive scheme of lesson routines, through to accommodating more global planning and flexibility in planning procedures, and a shift in focus from teacher-centered to comparatively more student-centred lesson planning. A better understanding of the intent of lesson planning led to the development of personal frameworks. There is a clear indication that participants underwent different degrees of conceptual transformation though their initial teacher education course. In the next chapter, a comparison between two concept-mapping exercises administered on two separate occasions will be examined and explored for cognitive changes associated with lesson planning over the Post-Graduate Diploma program.

CHAPTER 12
CONCPETUAL UNDERSTANDING OF LESSON PLANNING: CONCEPT MAP ANALYSIS

Introduction

Concept mapping has been used as a procedure to trace conceptual changes of respondents in a given topic. According to White and Gunstone (1992), such a procedure can reveal how students see the structure of a topic. The way students compose the structure of a topic tells much about the quality of their learning. In the present study, student teachers from the two universities were requested to construct concept maps for the topic, lesson planning, at the beginning and at the end of their Post-graduate Diploma in Education program. In this chapter, hierarchical concept maps were analyzed for their quantitative scores and content analysis were conducted for all concept maps for the major categories and sample cases in order to track changes associated with student teachers' conceptions of lesson planning over the initial teacher education course.

12.1 A brief overview of concept mapping

Concept mapping techniques can be traced back more than two decades as a process to attempt to gain some insight into the knowledge structures of students (see for example, Shavelson & Stanton, 1975). Champagne, Klopfer, Desena and Squires (1981) developed a procedure called the concept of structure analysis designed to compare students' concepts of content with the content as presented in a textbook. A key assumption underlying the study is that a concept map represents a conceptual schema – the structure of knowledge as it resides in a student's long-term memory. In accord with this tradition of concept mapping analysis, Neveh-Benjamin, McKeachie, Lin and Tucker (1986) developed the "ordered semantic tree", a formal procedure for using and evaluating concept maps to assess teacher cognition.

On the basis of their findings from studies on comparisons between novices and experts' conception on teaching reading, Roehler, Herrmann and Reinken (1989)

developed two quantitative indices, elaborateness and coherence, for evaluating semantic trees. The coherence index shows logical relationships between concepts that appear in a tree. The elaborateness index represents the grand total of chunks, average concepts per chunk, as well as the number of horizontal levels in a tree.

Studies (for example, Beyerbach, 1988; Strahan, 1989) have used semantic trees to trace changes in the knowledge structures of preservice teachers. In these studies, semantic trees were drawn to describe a specific pedagogical skill or concept taught in a university course. Morine-Dershimer (1989) used concept maps to track changes in the knowledge structures in lesson planning of preservice teachers. The novices supplied their own key terms and were free to use any spatial designs they desired. Additional data were obtained and used to interpret the pre- and post-maps. The data included lesson plans prepared for the peer teaching assignment, stimulated recall interviews and written self-evaluation. Subjects were also asked to compare their own pre-maps and post-maps and to draw inferences regarding the changes. Findings indicated a substantial increase in the number of main categories depicted in the maps and a slight increase in the number of subordinating levels. Morine-Dershimer (1989) inferred that this reflected an increase in conceptual understanding of the topic on lesson planning. She concluded that concept maps could provide useful information about how novices began to develop a knowledge base for teaching. Maps could also function as feedback, informing novices of changes in their understanding.

Lesson planning, it can well be argued, is one of the key processes in teaching, and how one thinks about planning will shape classroom interactions and learning outcomes. Concept mapping as a technique of graphically representing concepts and their hierarchical interrelationships along different dimensions is one approach to examining changes in content and organization of student teachers' thinking. According to Novak and Gowin (1984), concept mapping requires students to structure concepts and identify their relationships from their cognitive schema or from their own perspectives. In constructing a concept map, students generate terms they associate with the topic, thereby revealing the terms contained in their cognitive schema as their key concepts, or technical vocabulary, in the area of study. Since

student teachers need to understand the relationships among these key concepts represented graphically in the concept map, they may become aware of, and be able to reflect on, their "tacit frames" (Schön, 1983).

In a study using concept mapping as an approach to assess student teachers' representation of structural knowledge, Beyerback (1988) reported that student teachers found concept mapping useful in helping them examine changes in their thinking about a particular topic. She asserted that the process of concept mapping might serve an instructional role in helping students reflect on their teaching. Concept maps were helpful to student teachers as well as teacher educators because it could reveal student teachers' thoughts in terms of the technical vocabulary of the area of study.

For assessment of concept maps, several writers described methods of scoring concept maps. Novak and Gowin (1984), for example, suggested a number of scoring criteria for hierarchical concept maps: meaningful relationships and links between two concepts; extent of hierarchy and cross links among the concepts; the provisions of appropriate examples; and, a criterion concept map on which comparison can be made. For non-hierarchical concept maps, White and Gunstone (1992) consider that this kind of concept map is more difficult to score because of the diversity of patterns it admits. For assessment purposes, good concept maps of this kind could be characterized as having considerable detail, a variety of types of relation, rich patterns of cross-relation rather than simple chains, and clear structure.

Since concept map scoring is only applicable to hierarchical concept maps, there is no intention to use it in this study as the only analysis criterion for concept maps constructed in formats like cycle diagrams, predicability trees, and flow charts (Novak & Gowin, 1984). Analysis of non-hierarchical concept maps will be modeled on White and Gunstone's criteria (1992) and will focus on key concept categories identified in the two concept maps constructed by the student teachers in this study. The findings from analysis of concept maps constructed on these two occasions are intended only to supplement and shed further light on conceptions of lesson planning as explained and discussed in chapters 10 and 11.

In the present study on the development of preservice teachers' planning over their initial teacher education course, student teachers were asked to construct concept maps on the topic "lesson planning" on two separate occasions. The concept mapping exercises were implemented with the intention of tracking changes in the conception of lesson planning over the preservice teacher education course. The pre-map was drawn at the beginning of the Diploma course while the post-map was drawn after the last teaching round. On these two occasions, student teachers were requested to construct a concept map in half an hour without consulting any reference materials. They were then interviewed in order to explore their understanding and rationale behind the concept map they completed. The two concept maps constructed by student teachers on these two different occasions are described and analyzed in the following sections.

12.2 Analysis of the "Pre" concept maps

Of the eleven concept maps constructed, five were designed in a hierarchical webbed form. The rest were in flow chart, cycle diagrams, and predicability tree formats. Categories and sample responses are drawn from all the concept maps to depict the conceptual understanding of the lesson planning of the participating student teachers. Samples of the concept maps are displayed in Figures 12.1 through to 12.4 and summaries of findings for the first concept maps are reported in Tables 12.1 and 12.2.

Figure 12.1 **Hierarchical concept map constructed by Michael from Metro University in March**

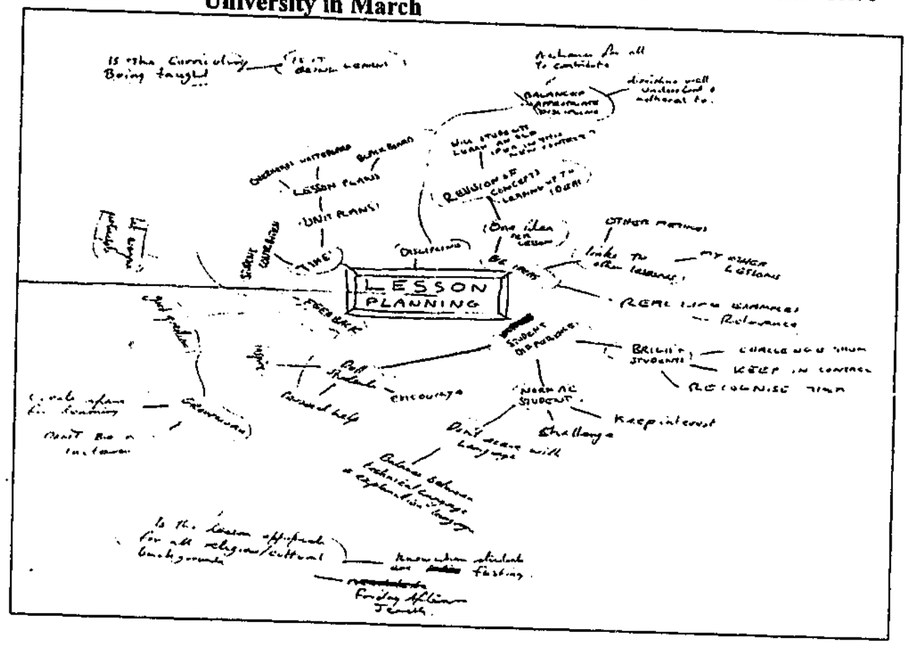


Figure 12.2 **Concept map in the form of Flow Chart constructed by Tony From City University in May**

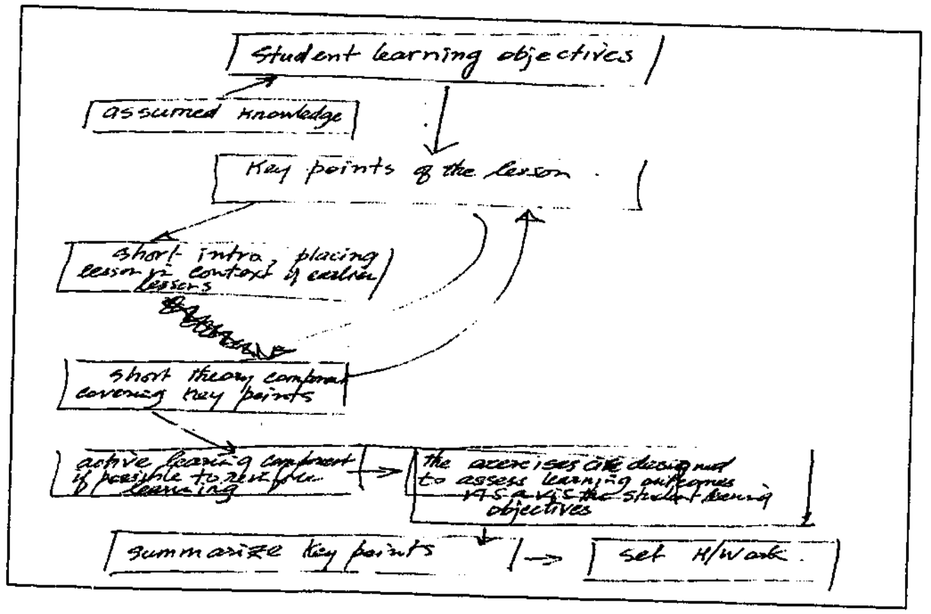


Table 12.1 **Scoring of the hierarchical concept maps constructed by respondents from City and Metro University at the beginning of the Post Graduate Diploma in Education course**

Student	*Theme*	*Main category*	*2nd level category*	*3rd level category/ elements*	*4th level category/ elements*	*Area (in cells) = no. of main cat. × no. of levels*	*Density = total no. of items ÷ no. of cells*	*Remarks*
Clara	Lesson preparation	5	8	2	0	15	15 ÷ 15 = 1	Parallel: key elements arranged in sequence
Jenny	Lesson plan	4	3	0	0	8	7 ÷ 8 = 0.875	Cyclic web: brief descriptions of concepts, 2 concepts linked
Michael	Lesson planning	5	12	20	5	20	42 ÷20 = 2.1	Webbed: key concepts identified in clearly defined levels
Susan	Lesson planning	4	20	0	0	8	24 ÷ 8 = 3	Parallel: Key elements arranged in sequence
Tommy	Lesson planning	5	4	0	0	10	10 ÷9 = 1.1	Webbed: brief descriptions of relationship between concepts, 2 concepts are linked
Valerie	Today's lesson	5	8	12	0	15	25 ÷ 15 = 1.66	Webbed: key concepts expressed in questions

Figure 12.3 **Concept map in the form of Cycle Diagram constructed by Jenny in February**

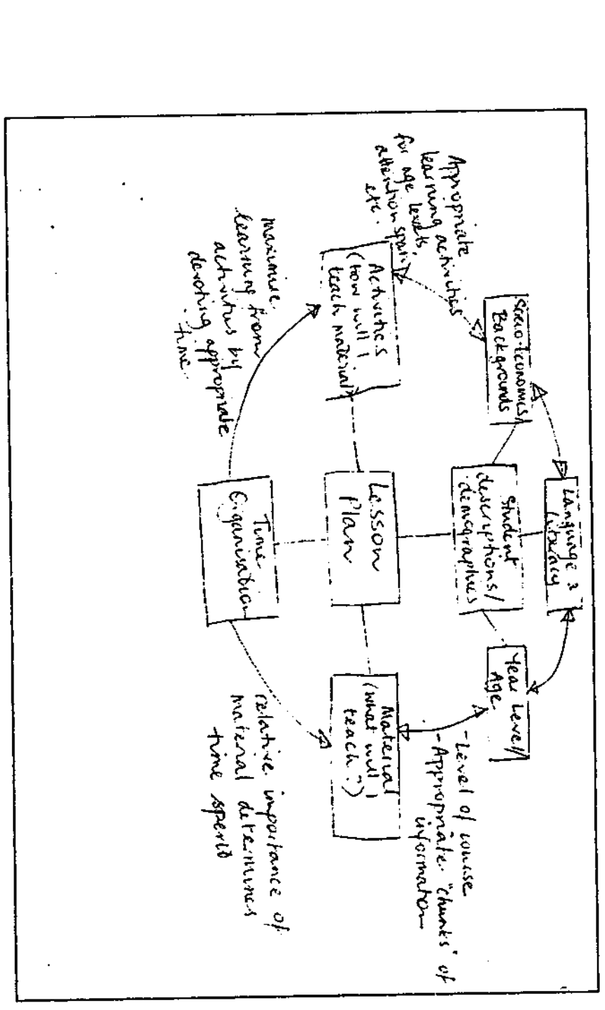


Figure 12.4 **Concept map in the form of Predicability Tree constructed by Tommy in May**

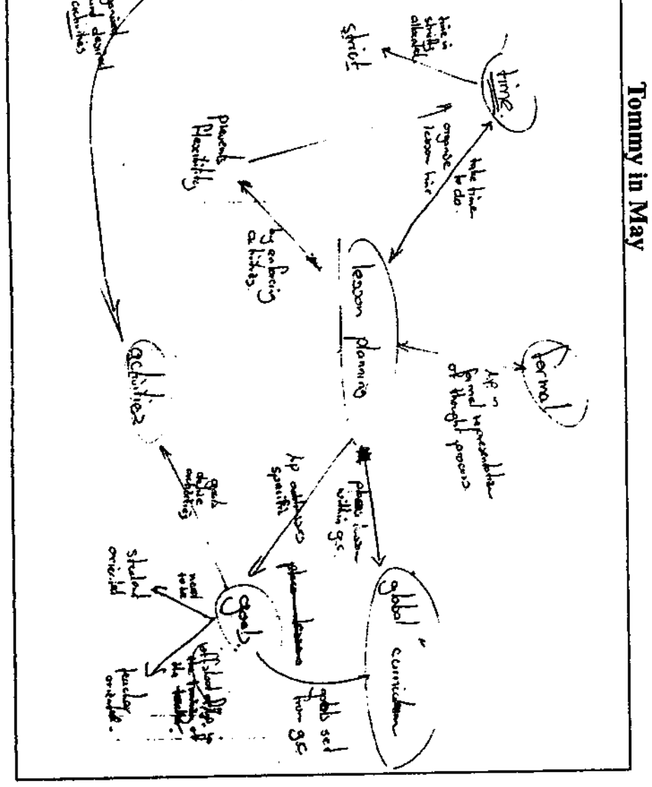


Table 12.2 **An overview of the non-hierarchical concept maps constructed by respondents from City and Metro University at the beginning of the Post Graduate Diploma in Education course**

Student	*Theme*	*Format*	*Characteristics*	**Remarks**
Rachel	Lesson planning	Diagram	4 key elements including discussion, writing decide topic, and research	Elements arranged in radial form with lesson planning as the central concept and lesson plan as the product
Eliza	Concept map for lesson planning	Flow chart	3 clusters of elements describing goals/ objectives, teaching methods, and balance between teaching styles and student needs	Clusters broken down into key words with arrows showing flow sequence
Frank	Lesson	Flow chart	3 key elements focusing on teachers' objectives, students' objectives, and lesson structure	Elements described in key words arranged in semantic tree form
Saran	Lesson plan	Flow chart	6 key elements including topic for previous lesson, main topic divided into 4 sub-topics , explanation/general pattern, what has been found out, summary/student words, and connect next lesson	Elements arranged in flow sequence linked up with brief descriptions
Tony	Lesson planning	Flow chart	8 key elements stating student learning objectives, key contents, lesson introduction, theory component, active learning component, exercise for assessment, lesson summary, and homework	Elements expressed in key phrases arranged in flow sequence of set induction, lesson development, and closure

12.2.1 Analysis of the "Pre" concept maps

The hierarchical concept maps are analysed using the model proposed by Morine-Dershimer (1989). The first level key words or statements generated from the theme are identified as the main categories. Second level categories are derived from the main categories and third level categories from the second and so forth. Quantitative indices are computed for each hierarchical concept map (area and density, which are roughly equivalent to the elaborateness index of the semantic tree). Areas in cells are used to express the number of main and subordinate categories used in the concept maps. It is noted that the higher the cell numbers the higher the level of elaborateness of the concept map. The concept maps of Clara, Michael and Valerie reached the third level or beyond, while the concept maps of Jenny, Susan and Tommy stayed at the second level. Not surprisingly, this indicates that the conceptual understanding of lesson planning of student teachers varies.

Those student teachers that could generate more key terms in their concept map might signify a comparatively richer cognitive schema in lesson planning. The cell areas are further supplemented by the density, which denotes the average number of key terms displayed in the concept map. Higher numerical value represents higher density and therefore a higher level of sophistication in the concept map. Concept density ranges from 0.875 to 3, characterizing different levels of sophistication in conceptual understanding of lesson planning among student teachers. Clara, Jenny, Tommy and Valerie had concept maps of comparatively lower density than Susan and Michael, who appeared to have a better understanding of the conception of lesson planning.

Eliza, Frank, Rachel, Saran and Tony expressed their conception of lesson planing mainly in the form of flow charts and cycle diagrams. Key elements were displayed either as key words or short statements. A general characteristic of these charts is the sequential arrangement of the key elements. Some charts are simplistic in form and content while some charts are more complicated with brief descriptions linking up different key concepts. Nevertheless, these non-hierarchical concept maps did not display too much detail or cross-links among concepts, and were constructed in simple chain forms. Concepts of lesson planning were not well elaborated in these concept maps and this indicated that student teachers' conception of lesson planning

at this early stage of the Post-graduate Diploma course was still in its infancy.

12.2.2 Analysis of the categories and sample responses of the "Pre" concept maps

To elicit conceptual understanding of lesson planning of student teachers, content analysis was conducted for the main categories and sample responses in the first concept maps. Findings are tabulated in Table 12.3, as follows:

Table 12.3 **Categories and sample responses of the first concept maps**

Categories	*Sample response*	*Students (N = total no.)*
Curriculum goals and objectives	List goals and objectives; My objectives for the lesson; What will students learn from this lesson; Teacher objectives; Student objectives	Michael, Susan; Tony, Tommy, Eliza, Frank, Valerie (N = 7)
Content	Key points of the lesson, Short introduction placing lesson in contexts; Main topics; Big ideas	Jenny, Michael, Rachel, Susan; Tony, Frank, Saran (N = 7)
Instructional materials	What resources are there; Identify resources; How to use resources & variety	Clara, Susan; Eliza, Valerie (N = 4)
Instructional methods	Choose activities suitable to class: Chalk & talk; Explanation; Demo; Practicals, Questioning, Group work, Discussion; learning experiences	Clara, Jenny, Michael, Susan; Eliza, Tommy, Valerie (N = 7)
Classroom management	Classroom control; Balanced appropriate discipline	Michael; Eliza (N = 2)
Timing	Record how long each activity will take; Is it a double lesson; How much time for each activity	Clara, Jenny, Michael, Susan; Eliza, Tommy, Valerie (N = 7)
Lesson planning procedure	Decide on lesson topic; Prepare for lesson plan; Write intended learning outcomes; Plan learning experiences; Feedback & evaluation; Links to other lessons;	Susan; Frank, Tony (N = 3)
Links to other lessons	Links to other lesson; Placing lesson in context of earlier lessons; connect last and next lesson	Michael; Saran, Tony, Valerie (N = 4)
Student characteristics	Find balance between styles of teaching and student needs; Demographics; Normal students; Dull students; Bright students;	Clara, Jenny, Michael; Eliza, Valerie (N = 5)
Professional knowledge	Short theory component to reinforce learning; Research lesson topic; Refer to notes, resources and research	Susan, Rachel; Tony (N = 3)
Ecological concern	Create good learning environment	Eliza (N = 1)

Since quantitative concept map scoring is not applicable to all concept maps, analysis of the concept maps is also based on the categories of key concepts

identified. The categories with a high number of occurrences (seven out of eleven respondents) in the concept maps were associated mainly with curriculum goals and objectives, content, instructional methods, and timing. All these elements connected mainly to the technological aspects of lesson planning and they indicated a clear focus on the major elements identified with the rational planning models. Nonetheless, evaluation and assessment was not included in any of these concept maps. Instructional materials in terms of resources, links to other lessons, and lesson planning procedures also appeared in three to four of the concept maps. Management as a planning focus also appeared in Michael and Eliza's concept maps.

Five student teachers were cognizant of student characteristics in their concept mapping. They included such key words as teaching styles and learning needs, the concepts of demographic information of students, and differentiation between students of different ability levels. For three students, they included such key words as theory and practice, and research. This association with the psychological aspects of lesson planning was not too common among student teachers at this stage. When compared with a total of forty-one occurrences in the technological aspects of lesson planning, the category associated with psychological aspects of lesson planning recorded only eight occurrences. As far as ecological context was concerned, only one student teacher exhibited a key concept associated with the learning environment. They did not consider other key concepts such as supervising teachers and school contextual factors in their concept maps. This is a clear indication of their comparatively technological orientation in lesson planning at this stage of their initial teacher education program.

12.3 Analysis of the "Post" concept maps

In an attempt to compare and contrast student teachers' conceptual schema in lesson planning at the close of the initial teacher education program, they completed a second concept map after the third teaching round. Because of time constraints, Clara and Rachel from the Metro University did not produce a second concept map. A total of ten concept maps were therefore received. Three of them were in hierarchical form while others took on various formats including cycle

diagrams, dialogue boxes, flow charts, and predicability trees.

For comparison purposes, analysis of the second concept maps correlates with the approach adopted for the first concept maps. Quantitative scores were calculated using Morine-Dershimer's (1989) method of scoring while content analysis was conducted for all concept maps. Samples of web diagram, dialogue box, flow charts and predictability tree and summaries of the findings and analysis are tabulated in Tables 12.4 and 12.5, as follows.

Figure 12.5 **Hierarchical concept map constructed by Michael in November**

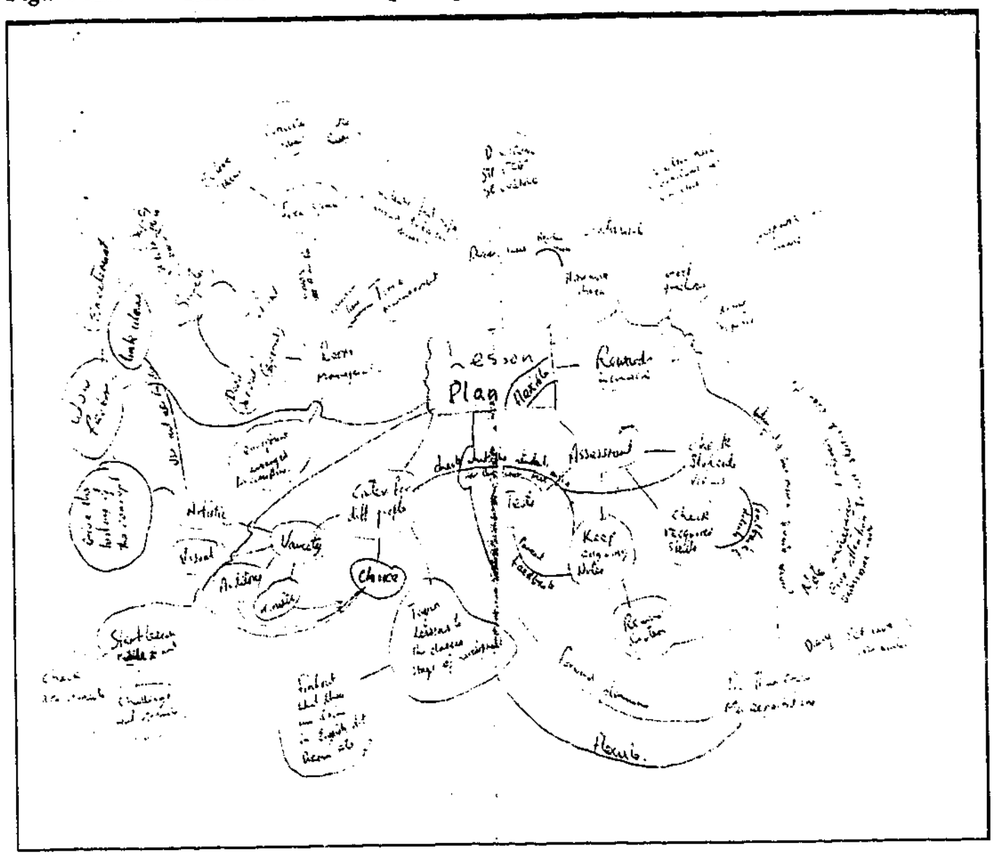


Figure 12.6 **Concept map constructed in the form of Cycle Diagram by Jenny in October**

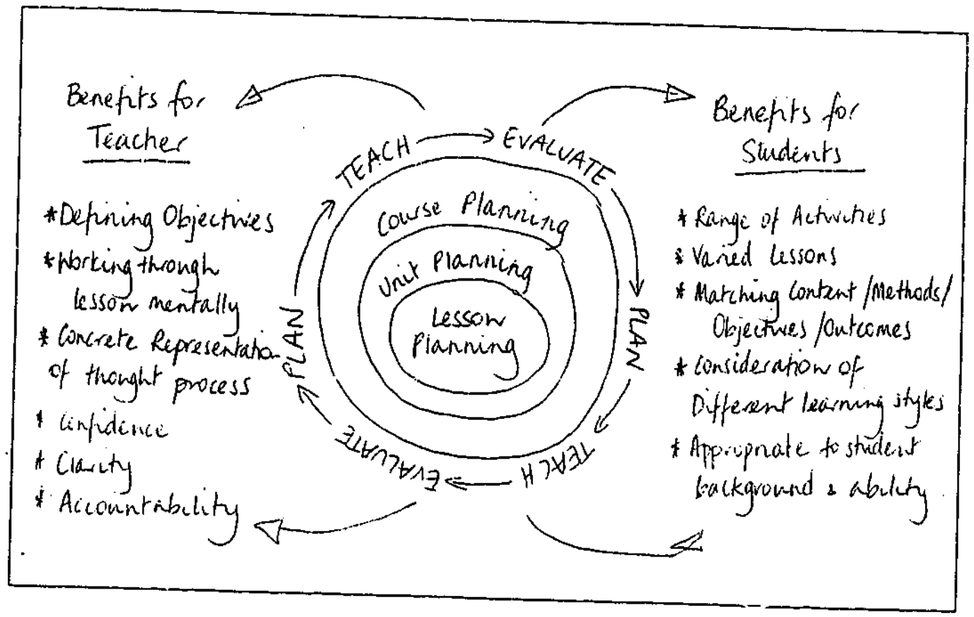


Figure 12.7 **Concept map in the form of Flow chart constructed by Tony in October**

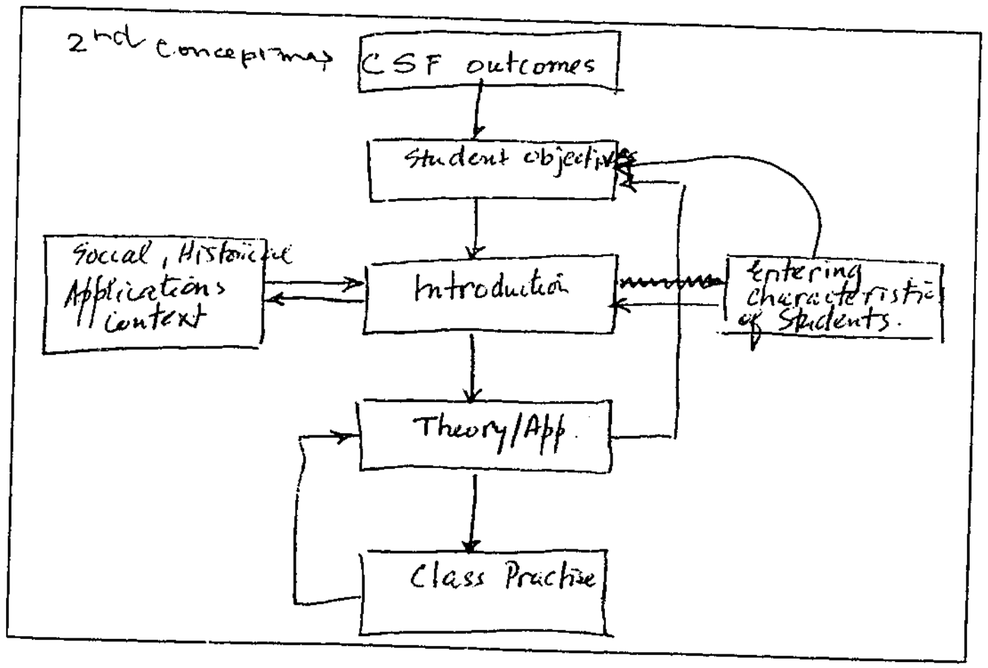


Figure 12.8 **Concept map in the form of predicability tree constructed by Tommy in November**

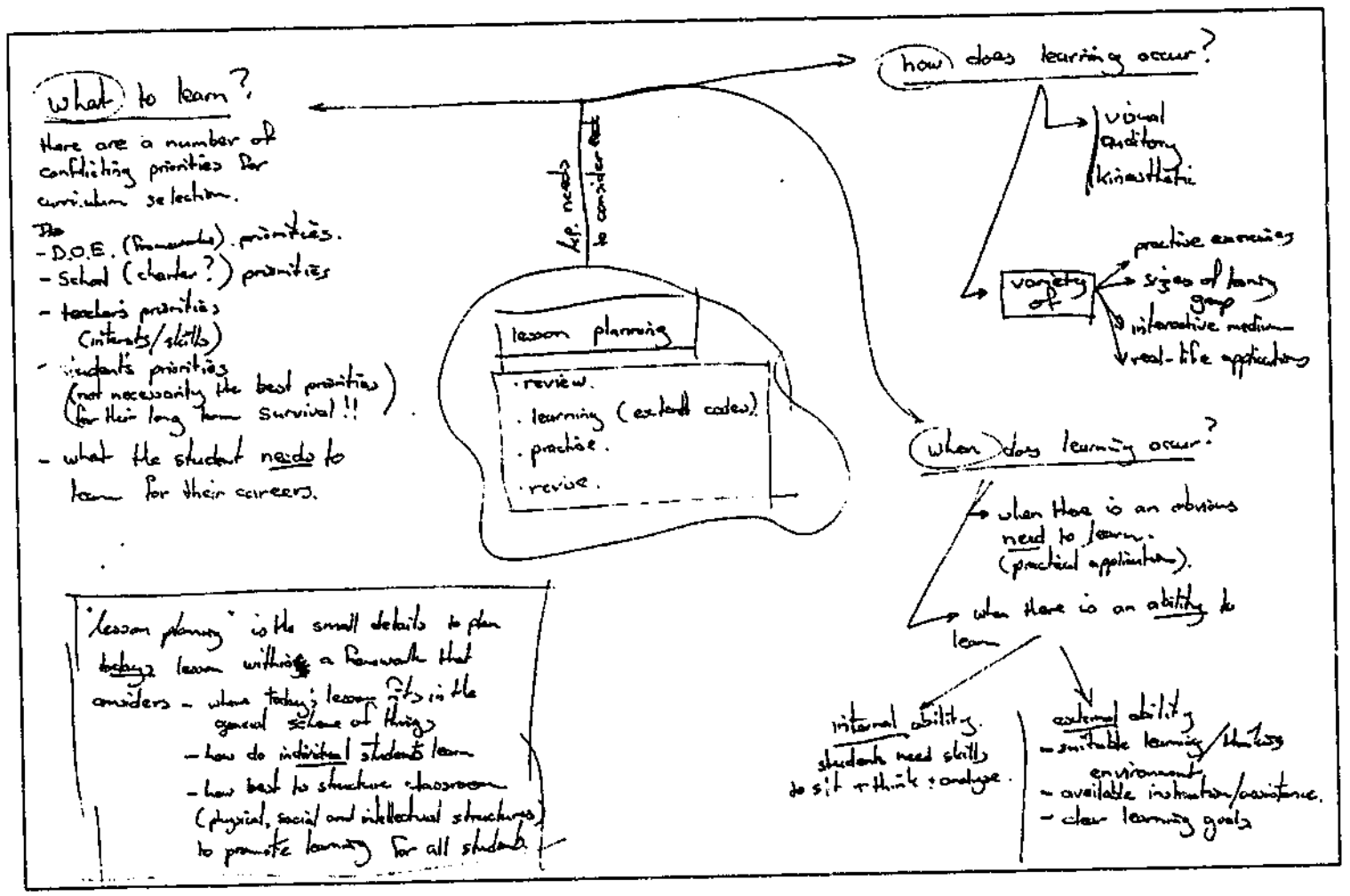


Table 12.4 **Scoring of the hierarchical concept maps constructed by respondents from City and Metro University at the end of the Post Graduate Diploma in Education course**

Student	*Theme*	*Main category*	*2nd level category*	*3rd level category/ elements*	*4th level category/ elements*	*Area (in cells) = no. of main cat. × no. of levels*	*Density = total no. of items ÷ no. of cells*	*Remarks*
Michael	Lesson Plan	9	23	11	1	36	45 ÷ 36 = 1.25	Webbed diagram: 13 cross links between different levels of categories: 2 between main categories, 7 between main and 2nd level categories, 2 between 2nd level categories, 1 between 2nd and 3rd level categories, and 1 between 3rd and 4th level categories
Ada	Lesson plan	5	8	5	1	20	19 ÷20 = 0.95	Tree web: brief descriptions of key concepts as key questions, linking words/phrases identified in 6 concepts
Eliza	Topic of Lesson	4	8	3	0	12	15 ÷12 = 1.25	Webbed diagram: key concept expressed as brief descriptions

Table 12.5 **An overview of the non-hierarchical concept map constructed by respondents from City and Metro University constructed at the end of the PGDE course**

Student	*Theme*	*Format*	*Characteristics*	Remarks
Jenny	Lesson Planing	Cycle diagram	Diagrammatic representation of the conception of global planning in concentric circles moving from single to unit and course lesson plans, encircled by the teach, evaluate and plan cycle	Benefits of lesson planning are defined for teachers and students
Susan	Lesson Planing	Dialogue box	3 key elements focusing on question to ask at the start of lesson planning, aims and learning activities	Elements described key questions focusing on student characteristics, logistics, various types of objectives, links between lessons, learning activities, and evaluation
Frank	Lesson Plan	Flow chart	4 key elements focusing on lesson objective, student objective, resource and lesson structure	Elements expressed in key words arranged in simple flow sequence
Saran	Lesson plan	Flow chart	3 key elements including CSF as the start point, core knowledge to be gained, and present learning	Elements arranged in flow sequence incorporating alternative routing in planning
Tommy	Lesson planning	Predicability tree	3 key elements stated in key questions: what to learn, how does learning occur and when does learning occur.	Elements expressed in key phrases/ questions including descriptions of sources of curriculum selection, learning styles and selection of learning activities, students' need and ability as pointer to optimum time for learning
Tony	Lesson plan	Flow chart	5 key elements including CSF at the start point in content selection, student objectives, contextual factors, theory/applications, and lesson sequence	Elements arranged in flow sequence with feedback loop between some key concepts
Valerie	Today's lesson	Predicability trees	2 key elements organized in key questions illustrated with probing questions and examples	Elements arranged in flow sequence with interlinks, questions illustrated with concrete suggestions on what and how to do

12.3.1 Analysis of the "Post" concept maps

Michael, Ada and Eliza constructed three hierarchical concept maps. Since Ada and Eliza had not constructed any hierarchical concept maps before, no direct comparison could be made between their concept maps. Both maps were displayed in tree form with key concepts expressed either as key descriptors or as key questions. Michael and Ada's concept maps reached the fourth level of categorization while Eliza's got to the third level. Density of concepts ranged from 0.95 to 1.25. When compared with his first concept map where only five major categories were identified, Michael displayed a substantial growth in the major categories in his second concept map where nine categories were discerned. There was also a considerable growth in the number of cross-links between various levels of categories. This was commensurate with the high magnitude of change in his conception of lesson planning as depicted in Section 10.3.

Seven respondents manifested their conceptions in various forms. In general, key elements were comparatively more substantial than their previous concept maps. Jenny, Susan and Tony, student teachers that exhibited a high magnitude of conceptual change in lesson planning produced a wider range of key concepts described with a higher level of sophistication in their concept maps. Jenny used a diagram to highlight the planning process emphasizing the plan-teach-evaluate cycle. She also quoted examples of benefits of lesson planning defined for both teacher and students. Susan raised fundamental questions in her lesson planning focusing first on the technological aspects of lesson planning at the onset through to psychological consideration as well as contextual factors involved in the process. Tony described his cognitive schema in the form of a flow chart with feedback loop linking up contextual factors and theory and applications.

For other student teachers, Tommy raised a number of key questions relating to such elements as the why, what, when, and how of lesson planning. These key questions revolved around student learning and matched with his focus on psychological dimensions of lesson planning depicted in Section 10.3. Like Tommy, Valerie constructed her concept map in the form of a predicability tree. Elements

were arranged in a flow sequence with a number of interlinks illustrated with concrete suggestions on how and what to do. A slight degree of change in the complexity and elaborateness was identified in Saran and Frank's concept maps. Both of their concept maps still concentrated on what content to get across to students. Yet, Saran arranged her lesson plans in sequence and she suggested an alternate routing to cater for contingency measures when students could not catch up with her teaching. Frank had the least change in his concept map where he described the basic lesson procedures in a simple flow sequence. Both Saran and Frank illustrated a low magnitude of conceptual change in lesson planning in the previous analysis for dimensions of changes in Section 10.3.

12.3.2 Analysis of the categories and sample responses of the "Post" concept maps

For comparison purposes, the categories and sample cases of key elements recognized in the second set of concept maps are modeled on the first analysis and reported in Table 12.6, as follows.

Table 12.6 **Categories and sample responses of the second concept maps**

Categories	*Sample response*	*No. of Students (N = 10)*
Curriculum goals and objectives	Knowledge objectives; Skills objectives; Value objectives; Justifications of goals; CSF outcomes;	Jenny, Michael, Susan; Ada, Eliza, Frank, Tony (N = 7)
Content	Core knowledge to be gained, What knowledge do I want my student to have; Key points of he lesson	Jenny, Susan; Ada, Frank, Saran, Tommy, Tony (N = 6)
Instructional materials	What resources to use; what resources do I have access to	Susan; Ada, Eliza, Frank (N = 4)
Instructional methods	Learning experiences; How can it be made interesting; Encourage questions; varieties of learning activities; the "Wow factor"	Jenny, Michael, Susan; Ada, Eliza, Saran, Valerie (N = 7)
Classroom management	Room management, Discipline strategy sequence; How is the class behaving; Create safe environment; Create space for learning	Michael, Valerie (N = 2)
Timing	Time requisites; Time management; Finish activities within set time; When does learning occur; How much is possible in one lesson	Michael, Susan, Ada, Saran, Tommy (N = 5)
Feedback and Assessment	Check student views, skills etc., Exercises to assess student outcomes, Can I be sure I've achieved these aims	Jenny, Michael, Susan, Saran, Tony (N = 5)
Lesson planning procedure	Logistics; Work through lesson mentally; Questions I ask at the start; Concrete representation of thought process	Jenny, Susan; Frank, Saran, Tony (N = 5)
Links between lessons	Lesson plan, unit plan, course plan; How lessons are related to previous and future lessons, Alternate plan	Jenny, Susan, Saran, Valerie (N = 4)
Student characteristics	Consideration of learning styles; Cater for different people; Allow for individual difference; Entering characteristics; Visual, auditory, kinesthetic styles	Jenny, Michael, Susan; Ada, Saran, Tommy, Tony, Valerie (N = 8)
Professional knowledge	Theory/Application; Social Historical Applications Contexts; Theory; Research	Eliza, Tony (N = 2)
Reflective concepts/key questions	Teach - Learn - Evaluate cycle; Will they have problems with concepts; What to learn; How does learning occur; When does learning occur; Why should students learn this; What do I know works well	Jenny, Susan; Eliza, Tommy, Valerie (N = 5)
Ecological concerns	Room management, equipment, safety; What to consider in classroom operations, Create space for learning; Create safe learning environment; What time of day; Social, historical applications context	Michael, Susan, Eliza, Tony, Valerie (N = 5)

When compared with the first set of concept maps, there were increases in both the categories and sample responses in the concept maps. There was a slight increase in the number of occurrences from forty-one to a total of forty-five

occurrences in the technological aspects of lesson planning. One new category emerged. Five students included feedback and assessment in their concept maps. This was commensurate with conceptual changes identified in their post-task interview wherein ten student teachers acknowledged evaluation and assessment as an integral part of lesson planning. They usually incorporated one form of assessment strategy at the end of the lesson to assess or verify the performance of students at the end of the lesson or a unit.

Curriculum goals and objectives still attracted seven respondents' attention. Similarly, content instructional materials, instructional methods, classroom management, and links to other lessons were among the more stable key concepts in the concept maps. The number of occurrences of these items was about the same as the first concept maps. In contrast, there was a slight decrease in "timing", an indication showing that, with the internalization of lesson routines, student teachers were not so concerned as before in terms of time allocation for different parts of the lessons. One noticeable change in instructional method as one key concept was that student teachers began to use "learning experiences" instead of names of learning activities in this concept category.

In respect of psychological aspect of lesson planning, it is noted that a new category, "reflective concept and key questions", emerged in five concept maps. Student teachers described a "teach-learn-evaluate" cycle and put emphasis on the "what, when, why and how" of learning in the concept maps. There was a notable increase from five to eight student teachers in addressing student characteristics in their concept maps. They usually considered the learning styles, individual differences and entering characteristics of students when planning for their lessons. Indeed, the theory into practice principle was addressed in Eliza and Tony's concept maps. The most substantial growth in key concepts associated with lesson planning was found in ecological concerns. The number of occurrences increased five-fold. Student teachers began to realize how social, historical and classroom context could impact on lesson planning and subsequent teaching. They began to pay more attention to the physical and emotional learning environment as being critical to successful lesson planning.

All in all, analysis of the second concept maps reveals a close correlation between the graphical representation of the cognitive schema in lesson planning and student teachers' dimensions of changes elicited in the post-task interviews conducted after the third teaching round. When these concept maps were correlated to dimensions of changes and planning orientations (as discussed in chapters 10 and 11), it was found that the concept maps of Jenny, Michael and Susan, who exhibited a high degree of change dimensions, grew more complex and displayed more detail than their first concept maps. The key concepts had good cross-links illuminating more coherent relations among concepts that were presented in comparatively clear structure.

Growth in the degree of elaborateness and coherence were also recognized in the concept maps of Eliza and Tommy. For maps constructed by Tony and Valerie, they also featured clearer and better organization of key concepts. Nevertheless, Frank and Saran's concept maps did not reveal too much change in either degree of elaborateness or of coherence. In general, the graphical representation of the conceptual framework of lesson planning through student teachers' concept maps matched their degree of conceptual change as discussed in chapters 10 and 11.

12.4 Summary

In this chapter, moderate changes in the concept maps of student teachers constructed on two separate occasions were identified. Concept maps were displayed in different spatial formats and they illustrated changes in conceptual understanding in lesson planning over the initial teacher education course. Key concepts identified could be linked to technological, psychological and ecological orientations in lesson planning. Key concepts associated with the technological aspects included objectives, content, learning experiences, and evaluation. This comprised the four key elements of the rational planning model.

It was also evident that student teachers became more aware of student characteristics as an important area of consideration in their lesson planning. Ecological concerns were taken into consideration in the second concept mapping exercise by five student teachers, indicating that they began to plan their lesson from

a more contextual perspective.

All these findings supplement and help to validate what has been examined and discussed in chapters 10 and 11 in terms of conceptual changes in student teachers understanding of lesson planning. In the next chapter, findings on the development in knowledge, beliefs and disposition in lesson planning by student teachers over the Post-Graduate Diploma in Education course will be examined and discussed for its implications on the process of learning to teach.

CHAPTER 13
DISCUSSION AND IMPLICATIONS

Introduction

This chapter focuses on the impact of the Post Graduate Diploma of Education on student teachers' learning to teach. The chapter specifically, but succinctly, revisits aspects of the findings from the research conducted in order to draw out important issues for teacher education generally. The purpose of the chapter is to distil from the range of findings some of the fundamental aspects of learning to teach through a reconsideration of the influence of teacher planning.

13.1 Impact of teacher education on learning to teach

There is a legitimate concern regarding the education of pre-service teachers for a command of professional knowledge and skill, strong content preparation, substantial field-based coaching, and attention to the realities of the process of learning to teach. The university teacher education programs described in this study clearly ascribed to a reflective stance aiming at nurturing 'reflective practitioners'. Both programs considered development of professional knowledge in student teachers as important and adopted a group structure when organizing their coursework - giving opportunities for student teachers to reflect on their practice in university at regular intervals. While a social constructivist orientation was central to the City University initial teacher education program (see Section 5.1.1), a reflective stance was manifested explicitly in the Metro University program (see Section 5.1.2). As reflected in findings from the study, the philosophy espoused, and approaches adhered to, by lecturers from both universities contributed to shaping the development of student teachers' knowledge, skills and disposition in teaching, learning and lesson planning.

The teacher education programs in this study typically comprised three components: foundations of schooling and learning; subject methods; and, practice teaching. Variations in course structures of the two programs in this study produced

differential impact on student learning. The dimensions and magnitude of change reported in Chapters 8 through 10 in student teachers from Metro University was found to be bigger than that of their counterpart from City University. Findings indicated that student teachers from Metro University reflected a greater understanding of teaching, learning and lesson planning from a constructivist philosophy than student teachers from City University. (It could well be argued that the explicit constructivist perspective that runs through their learning experiences throughout the Post Graduate Diploma in Education contributed to such a difference). It is noted that their growth and development are commensurate with the philosophy of the course as stipulated in Section 5.1.2. In contrast, the clinical approach adopted in City University whereby students were exposed to a number of school-based learning experiences through which they made meaning of the pedagogy and education foundations produced differentiated impact on students. The conversation groups aiming at maximizing social discourse in a way that encouraged student teachers to construct meaning of teaching and learning from their school experiences fell short of creating links between theory and practice, as reflected by student teachers' response in Section 5.6.1.

13.2 Knowledge growth and development in learning to teach

Pre-service teachers bring many beliefs about teaching, learning and schooling with them as they enter the teacher education program. The prior beliefs and knowledge of entering pre-service teachers act as a filter through which information presented in teacher education is either accepted or rejected. There is ample evidence to suggest that pre-service teachers' prior beliefs and knowledge influence what they think, what they learn in teacher education, and subsequently how they behave in the classrooms. Beliefs developed from life experiences as students affect how student teachers learn from experiences as beginning teachers. Richardson (1996) says that the relationship between beliefs and actions is interactive in nature.

Student teaching may serve as a platform on which pre-service teachers test principles and arguments in relation to their own teaching. Respondents in this study

viewed their field experiences as an important factor attributing to conceptual changes in teaching and learning, and subsequently in lesson planning. [see Section 9.6] As reported in Chapters 6 through 11, changes in the perceptions of teaching, learning and lesson planning were identified after each teaching round.

There appears to be a commonly held perception that a simple relationship exists between the quantity of field experience and the amount of the learning: the more experience one has in classrooms, the more one will learn about teaching. Russell (1991) asserts that while we know that those learning to teach must have experiences in schools, we have no shared conceptualization of how the experiences contribute to learning to teach. This study has illustrated that the practicum certainly influences students' learning about teaching but conceptualizing the nature of such growth is indeed difficult.

One way into this issue is perhaps through Van Hiele's theory of Mathematics education that distinguishes several levels of mathematics thinking. From this model, Korthagen and Lagerwerf (2001) developed a model of levels in professional learning that attempts to offer explanations to a variety of concepts and principles in the field of learning to teach. In their realistic teacher education model, they distinguish three levels of learning that include gestalt formation, schematization, and theory building.

It is evident that student teachers in the present study entered the initial teacher education program with prior beliefs, conceptions, feelings, experiences, needs and concerns. This collection of knowledge, skills and disposition formed their gestalt through which they acted and reacted to certain situations, such as lesson planning and student teaching. Only after they were exposed to new problem situations such as university course work, challenges from supervising teachers and students in student teaching and professional dialogue that they might run into cognitive dissonance. Attempts in resolving the cognitive dissonance through various learning experiences might lead to creation of new schema.

It is through schematization that student teachers developed new concepts

and the relations between concepts, as demonstrated in the cycles of transformation conceptualized for this study. The schematization process could often be enhanced by talking about what one saw, did and by looking at what was self-evident. A discussion within the groups after a lesson by student teachers might be helpful in developing a new schema about teaching and learning. Indeed, the group structure espoused by the two universities provided students with the environment facilitating schema development.

As time went by, the schematized knowledge related to an area could often become self-evident and the new schema could be used in a less conscious and intuitive way. The more experiences and reflections they gathered and underwent, the higher the level of automation in using the newly acquired schema the students developed (Korthagen & Lagerwerf, 2001) Alternate gestalt might then be constructed. Through reflections on such new gestalt, student teachers could develop their own conscious and alternate conceptions of teaching and learning.

Internalization of lesson planning routine experienced by student teachers in this study was facilitated by the phenomenon of level reduction, wherein the new schema developed through reflecting on experiences became 'second nature'. This was evident in the case of internalization of lesson routines by nearly all student teachers. It is also through this level reduction that internalization of lesson planning routines occurred, thus releasing student teachers' time and energy for other focus, such as student learning. As more elements were distinguished and named, and the relations between these elements identified, retrieval time for alternate schema in response to a certain situation was much shortened. That explains why student teachers spent much less time writing their plan in the second and third teaching round than when they first started doing it in the first teaching round. As such, the result of the schematization process is a richer schema offering more possibilities for conscious action than their original gestalt. This newly developed schema may accommodate previous subschema and may itself be part of a larger schema. Throughout the course of the study, student teachers were prompted to reflect on their practice in the search for clarity to their conception in teaching, learning and teacher planning. University coursework, interviews conducted by the researcher,

and reflection opportunities in school and university setting were all triggers and prompts for schematization.

It is evident that student teachers from both programs began to experience succession of cognitive dissonance about teaching and learning as they experimented with new ways of teaching in the field ever since their first teaching round in March. As they progressed through the programs, they began to recognize teaching as a process of facilitating learning and learning as a process of change and growth. Such conceptual changes also impacted on their conception of lesson planning. Indeed, the personal conceptual framework in lesson planning expressed in interviews after the third teaching round show more of phronesis than epistemic type of knowledge.

The knowledge developed through student teachers reflecting on their own practice may not be on par with any grand theory (episteme to coin Korthagen's term). Yet, it is the process in developing the 'knowledge' that matters since student teachers are doing the learning and constructing the meaning themselves. In this respect, student teacher research could be one approach through which student teachers are initiated into the role of reflective practitioners (see for example, Loughran, 2002, 2004)

13.3 Role of reflection in student teacher learning

Learning in student teaching can be seen as a form of experiential learning (Jarnieson, 1994). It can be described as a cyclical process of concrete experience, reflective observation, abstract conceptualization and action experimentation. According to Loughran (1997), teaching is inextricably linked to learning, student teaches should be extended to views of teaching and learning in the course of their development. Such extension is dependent upon reflection on both the teaching and learning that occurs. It follows that when reconsidering one's action or identifying the issues to address, reframing (Schön, 1983) problematic situations, thinking over suggestions, and reasoning through the implications of alternative views and testing hypothesis are the cornerstones of reflection. These elements are integral to the cycles of transformation conceptualized for this study. In some way, the cycles of

transformation experienced by student teachers in this study resembles the action research cycles represented elsewhere in action research literature (see for example, Elliot, 1991; Kemmis & Grundy 1997). The cycles of actions from problem situations through to cognitive dissonance initiate the first loop of learning and the new understanding acquired through reflecting on learning experiences may well launch the second, the third and continuous loops of learning.

Participants in this study demonstrated reflection at different time frames in the context of lesson planning: anticipatory reflection during planning activities, some signs of contemporaneous reflection while putting the plan into action, and finally retrospective reflection with facilitators like supervising teachers, university lecturers, peers, and the researcher. The framing and reframing that occurred before, during and after the planning and teaching were generally recognized by these student teachers.

Lesson planning may be described as an anticipatory activity reflecting on student teachers' understanding of the content and contexts of the class of students they are about to teach. Problems and issues identified in the previous lessons could well be considered and re-considered when student teachers planned for a new lesson. As student teachers became more familiar with the routines and developed a better grasp of the school ecological contexts, characteristics of the students and a better command of pedagogy over the course, they were able to prepare "better lessons" conducive to student learning. Initially, lesson planning was independent of student learning and student teachers' main concern was to get through the content in the time frame assigned for the topic. However, as student teachers gained experience and became more familiar with lesson routines and planning frameworks, their attention to the most suitable pedagogy surfaced in the second and third teaching round.

Contemporaneous reflection is perhaps the most difficult to capture from observation. Though student teachers were not prompted for evidence of 'thinking on the feet' in interviews in this study, evidence of contemporaneous reflection could be traced in responses from Tony, Susan and Jenny, who claimed to produce alternate

lesson plans on the spot during lessons when students did not respond to their prepared lesson plans.

Retrospective reflection begins to recapture students responses and performance from previous lessons can help student teachers make informed decisions about what content to teach or re-teach, learning activities to adopt or refine, and what measures to take to affirm student learning. For example, Tony streamlined his lesson for easier content after he discovered that students did not think the way he did. Reflections on why students behaved restlessly at a particular time of the day and day of week helped student teachers resolve a number of management problems. As mentioned earlier, opportunities for reflection on action were created for student teachers in both the school and university settings

Throughout the research period, the cycles of transformation model introduced in Section 3.5.4 and elaborated in Section 4.6 have been drawn on to recognize or identify changes in student teachers' knowledge, skills, and dispositions in teaching, learning and lesson planning. The cycles of transformation is, by nature, recurring and it bears resemblance to the cycles of learning in an action research.

The cycles of transformation as a conceptual framework in the present study contributes to a notion of development of professional knowledge of student teachers. Through creating opportunities to reflect on learning experiences at various points throughout the year, student teachers were prompted for issues, experiences, feelings, and views and awareness of essential aspects in the act of teaching and learning process. Ponte (2002) argues that teachers develop professional knowledge through a process of defining and solving problems, which is a form of theorizing. Teachers start to theorize when they experience a discrepancy between what they want to do and what they are actually doing. Only when teachers experience this discrepancy will they see the need for change. The cognitive dissonance inlaid in the cycle of transformation echoes this view.

Participants in this study had different opportunities to reflect on their teaching and learning experiences. The small groups enhanced peer interaction and

promoted retrospective group reflection. Naturally, levels of reflection among participants differed. It was found that most student teachers initially focused in a simple, one-sided approach to desired change (the technological area of knowledge), without asking why those changes were desirable (the ideological areas of knowledge) and how those changes actually produce the desired effect (the empirical area of knowledge). Hence, in one sense, reflection remained at a fairly superficial technical level.

This adds evidence to John's (1991a) previous study on British student teacher planning perspectives. It was only after they were exposed to education foundation studies on teaching and learning that they began to realize the empirical knowledge behind the pedagogical reasoning and decisions. The reading and research-based literature introduced to student teachers helped to stimulate a re-conceptualization of their schema.

Student teachers' background and prior experiences also play an important role in shaping their reflective capabilities. Students with richer life experiences and exposure (for example, Susan and Jenny from Metro University; Tony and Eliza from City University) were more capable of moving through the technical, practical and critical level of reflection. Ponte (2002) argues that student teachers do not always manage to engage in critical reflection on their own, they have to be challenged to do so by the facilitators.

When reflection is grounded on empirical evidence and theoretical underpinnings, the knowledge in action could be re-conceptualized to produce new cognitive schema through the process of schematization described in the previous section. The new knowledge could be subsumed into a larger and richer schema that student teachers could use readily as an alternate gestalt in new situations. This knowledge growth in student teachers could be subconscious or could be made explicit through overt reflective activities. This study confirms these student teachers' development and ability in knowledge generation.

13.4 Growth and development in lesson planning in preservice teachers

Based on data collected from the study, findings on the growth and development in pre-service teachers' planning indicate qualitative changes in student teachers' knowledge, beliefs and disposition in this aspect of their professional education. This kind of qualitative shift in planning focus has also been reported by John (1991a) and Morine-Dershimer (1993). In retrospect, lesson plans prepared by student teachers in the simulated planning task administered at the beginning of the course were generally sketchy and focused very much on the transmission of the content. Changes to the planning format and procedures occurred in the first teaching round. Apparently, student teachers were influenced by the course input on lesson planning. Lesson plans were meticulously written according to the prescribed format and it was extremely time consuming. Plans were script-like running sheets detailing such things as what to say, what questions to ask, and what steps to take. In particular, teaching content was well spelt out in the plan. At this stage, the plan appeared mainly as a discrete unit of a single lesson.

Drawn from the experiences student teachers gained from the first teaching round, a number of lesson routines became established as mental images. This helped lessen students' information processing loading while planning and the plans became less script like. With familiar content, novices became more at ease with their planning procedures. At this stage, they planned not just to fill a time slot, but they began to find new directions in planning. It appeared that their focus shifted from course requirements to concerns more based on practical considerations, such as student abilities and managerial task.

In the final teaching round, personal templates in lesson planning were generally well established. Most participants regarded planning more as a thinking process and written plans as records of thoughts. While some students wrote lesson notes rather than detailed plans, some students chose to construct more thorough written plans for their teaching. As students gained more experienced over time, they became more flexible and did not rigidly follow their written plans. Planning was more global in orientation and they preferred linking lessons into a unit of work.

Their concerns extended from being highly concentrated on teaching content through activities to expressing concerns over student learning. Some students even took into account individual differences and learning styles in their planning. Instead of seeing planning as a safety net or crutch to lean on, student teachers looked at planning as some form of framework to guide their thinking process.

In terms of process of planning, all student teachers appeared to go through a similar staged process. The first stage involved the consideration of the lesson content and the possible activities, resources and strategies that could be best employed to teach it successfully. The first planning step of student teachers was related to the inspection and interpretation of the lesson assignment. Early in the year, student teachers spent a considerable amount of time searching for appropriate resources and approaches. This consideration stage gave way to a second, more formal planning stage wherein planning came much closer to the actual teaching time of the topic (within 24 hours compared with often over a week spent on stage one). Finally, for most, there was a third stage involving the production of a usable classroom version of the plan, which often served as an aide de memoir during interactive teaching.

13.5 Perceptions of the role of teacher planning in the process of learning to teach

In terms of the role teacher planning plays in the process of learning to teach, all lecturers in this study offered a positive view. The course coordinator at Metro University commented that student teachers who did not plan would fall into trouble because they might not see the complexity of teaching. He argued that planning could help student teachers see a strong relationship between teaching and learning, rather than see teaching only as the transmission of subject knowledge. A colleague from the Humanities Department echoed his view. She thought that planning played a really vital role. She illustrated this with an example of one of her students in her tutorial group:

> *At the beginning of the year, she just couldn't plan. She found it very difficult to actually think through what she wanted to achieve with her students, why and how. When I said to her, you've got to go through those steps otherwise, you are going to walk in and you are not going to know what you are going to do. She struggled with it enormously. So she had to have more examples of what others have done and more help with modeling, more help in defining her aims and structuring it. At the end of the year, she is able to do it. There is a huge improvement. She has developed enormously well and she succeeded and she is now able to define what she wants to do and separates it out.... So, she succeeded. I know that at times there was a great deal of anxiety during the year even on her subject expertise. If she hadn't had to (1) plan it in her head and think it through, (2) put it down on paper and be able to let people comment on it, I don't think she would have succeeded in the process of learning to teach. [Laurie: October]*

Indeed, Laurie place a strong emphasis on demonstrating how to plan in her subject method and her students were led through the planning process systematically. She was convinced of the importance lesson planning played in the process of learning to teach because of her personal experience from being a meticulous planner as a teacher and as a teacher educator, and the success of transforming her students into competent planners. Her view was shared by a colleague who considered lesson planning as critical in the process of learning to teach because, "(a) they (student teachers) are inexperienced, and (b) you (teacher educator) want to see the process, the thinking process behind it."

These perceptions were interpreted and operationalized in the teacher education program since the lecturers required formal written lesson plans from student teachers in their teaching rounds. Students' responses to this requirement varied. But they could all see the value of lesson planning in that it helped their teaching. It was considered a way to formalize the thought process involved in pre-active teaching. "It [planning] contributes because when it is down on paper, you have already thought about it in such a way that the lesson is already very clear. You can really see exactly what you have planned to do. And you can really critically have a look what you plan to do. And see whether it is going to achieve those sorts of ideals that you have as a teacher" [Michael: October].

Student teachers found lesson planning particularly useful in their training year because "by having to do it, we will have to think about things we might have not been aware of before" [Rachel: October]. The role of lesson planning in the

process of learning to teach was imperative and was perceived as the central framework of teaching because "it provides a framework for considering all the way the student learns, all the ways you teach, and all the way you learn as well. What needs to be taught and combined together, thinking about all issues surrounding the learning process for the students" [Tommy: November].

Viewed from the responses elicited from lecturers and student teachers, the role of lesson planning in the process of learning to teach is overwhelmingly supported.

13.6 Implications of the study

Drawing on the findings and discussion identified in this study, implications arising from this study are briefly discussed as follows:

On teacher education courses:

- It is important that learning to teach is embedded in student teachers' experiences of learning and teaching. If teacher education programs genuinely focus on student teachers as learners, then it is their ability to analyze and make meaning from experience that matters most, as opposed to when the teacher educators filter, develop and share the knowledge with the student teachers.

On student teachers as learners:

- If the student teacher is considered a learner who actively constructs views of teaching and learning based on personal experiences and who is shaped by previously constructed conceptions, perceptions, attributes, and skills, an explicit constructivist perspective should run through their learning experiences. The three areas in which conceptual change is significant for student teachers are: beliefs about teaching and learning and roles appropriate for teachers and learners; beliefs about the discipline content and skills students will teach; and student teachers' beliefs about themselves.
- Learning by students needs to take into account their existing knowledge, experiences, opinions and values. This will include their prior conceptions of

teaching and learning. Such conceptions should be pondered, challenged in natural teaching environments and appropriate learning contexts. Students can reconstruct their knowledge through reflective cycles such as the cycles of transformation illustrated in this study.

On student's reflection:

- Student teacher development can be viewed as reflective and critical inquiry within the social contexts of teaching and education. The provision of concrete experience in a school context is a prerequisite to genuine reflection on one's own teaching and learning. In view of this, field-based experience is necessary and helpful if student teachers are to learn to reflect on their experiences both as teachers and as learners. Authentic pedagogical experiences provide frames of reference for reflection.
- If reflection on experience is an important factor in helping student teachers rethink their beliefs about teaching and learning, then the time to develop these reflective skills should be a consideration in teacher education programs. A lack of time may hinder building up of trust and a non-threatening atmosphere conducive to genuine reflection. It may also restrict the level of reflection to a technical level since practical and critical reflection needs more time for deliberate thoughtful articulation. An extended school-based teaching practice could help establish a trust relationship between student teachers and their mentors, allowing more in-depth anticipatory, contemporaneous, and retrospective reflections at different times.
- Conditions for promoting reflective practice should be considered. Teaching context, time, reflective opportunities, rapport and support, and social interaction are all important factors to explore. If student teachers are to benefit most from reflection, perhaps engaging them in teacher research would be a good initiative.

On student teachers' lesson planning:

- Clearly, models of planning reflect conceptions of teaching and learning. Given this, it may be the case that teachers educators begin working to re-conceptualize approaches to planning. A step in the direction of building such models would be for teacher educators to begin considering teacher planning developmentally

since the nature of the pedagogical problems faced by teachers changes over time. Traditional lesson plan formats could serve as point of departure for student teachers but attention needs to be given to the identification and development of planning styles that reflect differences in how student teachers think and in what they value. Teacher planning is primarily a mental activity and it is likely that better planning will come as teacher educators develop student teachers' critical thinking abilities. Attention also needs to be given to differences in the planning contexts and how these affect teacher planning.

13.7 Summary

This chapter draws on findings from the overall study and discusses its implications on the process of learning to teach. Variations in the initial teacher education courses in terms of philosophy and structure lead to different influences on student teachers' development in the learning to teach process. It is evident that a strong explicit constructivist perspective that runs through students' learning experiences helps develop stronger reflective student teachers. The cycles of transformation model conceptualized for this study is compared with Korthagen's model of professional learning. Findings indicate that student teachers went through the learning cycles and demonstrated abilities in constructing new meaning for teaching and learning and in generating their own personal framework for lesson planning. Student teachers attributed their growth and development to course input, student teaching and reflection. Conditions enhancing reflection at different time frames are discussed. It is noted that time, reflective opportunity, commitment and competence are all significant factors for reflection at various levels. All participants in the study affirmed the role of lesson planning in the process of learning to teach.

In the final chapter, responses to the research questions, limitations and claims of the study, directions for future research will be considered in concluding this thesis.

CHAPTER 14
CONCLUSION

Introduction

This study aimed to examine the nature of the growth and development of student teachers in respect to teacher planning in the process of learning to teach. This chapter now reconsiders the research questions and the outcomes underpinning responses to them. This chapter will also highlight the claims of the research, the limitations of the study and discuss directions for future research.

14.1 Responses to research questions

Research question one: What conceptions of teaching and learning do preservice teachers bring to the course? What are their views about learning and teaching? And, How do these views change over time?

Findings from the present study concur with previous research quoted in Chapter 3 on the influence of preconceptions on student teachers' views on teaching and learning. On commencement of the initial teacher education course, the majority of participants in this research viewed learning as knowledge acquisition and application. Vague conceptions of learning as knowledge construction or as a process were detected in some of the respondents. Such orientations were reflected in their teaching conceptions and approaches that illustrated a view of "transmission of knowledge" as an approach to teaching was evident in their first teaching round. These initial conceptions were reported in Chapter 6. As student teachers progressed through the course, impact of the pedagogical input from subject methods, education foundations, and, in particular, practice teaching began to emerge. They became cognizant of belief structures as shaping forces in their learning to teach process and examined notions of classroom practice through critical reflection. As the data

illustrated, they proceeded through procedural, structural and conceptual changes in their viewing of teaching. The notion of learning merely as knowledge acquisition gradually gave way to learning as a complex process through which students construct their own meaning.

Their role as teachers began to shift from being an "imparter of knowledge" to that of a learning facilitator. These changes were reported in Chapters 8 and 9. The *Cycles of Transformation* model demonstrated that student teachers' prior beliefs and conceptions could be challenged, modulated, and re-constructed. Four themes concerning changes in students' perceptions emerged: the nature of teaching; the relationship between teaching and learning; the contexts of teaching; and, teacher knowledge. Findings in this study confirmed that changes in student teachers' cognitive re-organization and beliefs can be effected through reflection and that external agents such as university lecturers, supervising teachers, peers, students, (and in this case, the researcher) can serve as an impetus for change.

Research question two: What conceptions of teacher planning do preservice teachers bring to the course? How do these views change overtime?

Closely related to their prior beliefs in teaching and learning, student teachers' prior conceptions of lesson planning were technical in orientation and instrumental in approach (as discussed in Chapter 6). At the start of the course, the prime purpose for lesson planning was to get the prescribed content through in the time frame allocated in the teaching round. Student teachers tried to write lesson scripts detailing procedures for lessons. As they progressed through the Post Graduate Diploma course, they experienced cognitive dissonance in their conceptions of teaching and learning, and this impacted on their lesson planning practices. Personal or peer reflections on learning experiences either in the university setting or in school contexts helped transform their initial conceptions in lesson planning.

Dimensions of change in planning orientations, mental planning capacity, flexibility, lesson intent and creation of personal heuristics were identified and explained in Chapter 10. Interestingly, that magnitude of change in student teachers ties closely to opportunities for reflection and personal commitment in the reflective process. The philosophical stance and associated learning opportunities embedded in teacher education programs produced different levels of growth and development in student teachers' knowledge, skills and competence in lesson planning.

Conceptual orientations of individual student teachers were explained in Chapter 11. Graphic representations through concept maps also demonstrated such a contrast in planning conception and were illustrated in Chapter 12.

Research question three: How are preservice teachers prepared for teacher planning? How do preservice teachers plan their teaching?

As discussed in Chapter 5, teacher educators' conceptions of lesson planning directed their efforts and approaches in teaching student teachers' about planning for teaching. Lecturers from City University considered lesson planning as developing student teachers' working knowledge mainly through immersing students in the contexts of teaching and learning. In contrast, Metro University lecturers treated lesson planning as anticipatory reflection, as a thinking process, and as a developmental process. Student teachers learned lesson planning mainly through lecturers' modeling how to plan lessons and how to use lesson plan templates in the context of teaching and learning.

In practice, student teachers learned lesson planning through planning tasks as part fulfillment of their coursework and student teaching requirements. As illustrated in Chapter 6, student teachers in completing the first simulated planning task followed the pathway of identifying teaching content, learning materials and teaching resources. As they progressed through the course, teaching objectives

became integral to their plans and such elements as content, activities and evaluation also became central to their plans. Reflection on the effectiveness of lesson plans in action and experiences in using personalized templates helped student teachers establish their planning routines, thus releasing time for more consideration of student learning. These changes were identified and reported in Chapters 7 and 8.

Research question four: How do preservice teachers develop their pedagogical knowledge, beliefs, and dispositions in teacher planning?

Regarding growth and development in lesson planning throughout the course, student teachers at Metro University were given opportunities to re-visit and reflect on their lesson planning practices throughout the Post Graduate Diploma course. Lesson planning requirements were incremental and developmental in nature - basic lesson planning for small group teaching on commencement of the initial teacher education course, planning tasks for single lessons in the first teaching round, unit planning in subsequent teaching rounds, all these created opportunities for student teachers to practise and refine their skills. Education foundations introduced in the second semester initiated students' conceptions of learning and coursework. Teacher educators also demonstrated how lesson plans could become increasingly sophisticated in order to accommodate higher level complexities in learning situations. As illustrated in Chapters 8, 9 and 10, the cycles of transformation brought about changes in student teachers' pedagogical knowledge, skills and disposition in lesson planning. All participants from Metro University demonstrated a greater magnitude of change in lesson planning than those at City University.

Course requirements in lesson planning in City University were comparatively less demanding than those at Metro University. Students had fewer opportunities to reflect on the effectiveness of lessons and reflection largely depended on student teachers' own commitment and awareness to such processes. Nevertheless, discussion groups prompted sharing and dialogue whilst scaffolding exercises

triggered reflection on conceptions of student learning and impacted lesson planning practices for some students (as reported in Chapter 8). Generally speaking the magnitude of change in student teachers from City University in lesson planning was smaller than that of their Metro counterparts.

Research question five: What is the role of teacher planning in the process of learning to teach?

Student teachers' perceptions of the role of lesson planning in the process of learning to teach transformed over the course. On commencement of the course, student teachers considered lesson planning as being instrumental - serving as a safety net. As student teachers gained confidence in their practice through their teaching rounds, lesson plans became more functional. Lesson routines became internalized and student teachers began to build their own personal templates for planning. Attitudinal change was evident in most students toward lesson planning. They first viewed lesson planning as the fulfillment of university requirements, then as an organizing framework, and finally as a record of thought and a tool for reflection.

The roles of lesson planning shifted from being instrumental to practical then finally conceptual. Their planning became more global in orientation, more flexible, and more focused on student learning. They developed their mental planning capacities and adapted the university templates in such a ways as to create their own personal framework. Not only was lesson planning anticipatory as preparation to the pre-active phase of teaching, but also as a framework for retrospective reflection on which new lessons could be constructed. The roles of lesson planning in the learning to teach process were duly recognized by participants in this study as important and pivotal.

14.2 Limitations of the study

There were a number of limitations in the study. The first was the relationship between the researcher and participants. In order to genuinely gather data that reflected the real situations in teaching and learning there was a need to develop a non-judgemental rapport between the researcher and participants. As the study involved student teachers from two universities, this was not something that happened readily and easily. Therefore, variations in relationships no doubt existed and would have influenced how 'frankly and openly' participants responded to the researcher.

A second limitation stems from the availability of time for interviews with the researcher. Though the researcher was engaged as a participant observer in the tutorial groups and attended education foundation lectures regularly, student teachers were normally engaged in their course work before and after lectures and tutorials, opportunities to elicit views through interviews could only be arranged after teaching rounds. Arrangement for conducting anticipatory and contemporaneous reflections on the planning tasks was not feasible and therefore mainly retrospective reflections were conducted for this study. However, the limitation was partially compensated for by rich collections of documentary evidence such as lesson plans, course work samples, and lesson observation field notes.

There was an overwhelming amount of data collected through course documents, interviews and field notes and it was difficult to develop an exhaustive coding system that addressed all issues related to teaching, learning and lesson planning. Nevertheless, the ever-refining categories used in this study led to the development of the major themes and issues around the who, what, when, why and how of lesson planning. Despite the efforts in scrutinizing and matching data to codes some data was ambiguous and could have been coded differently. This situation arose in some cases related to conceptual changes in views of learning and

a decision was made that data would only be coded in one category even though it may well have represented alternative possibilities; there were, however, few examples of this situation.

The cycles of transformation conceptualized in this study captured student teachers' growth and development in teaching, learning and lesson planning. These cycles resembled the framing, reframing and resolution in the reflective cycles. However, it was noted that the time frame for reflection was predominantly confined to the post-active phase of teaching. Nevertheless, the fact that the cycles of transformation were recursive and extended across framing, reframing and resolution phases of the reflection cycle and were therefore not necessarily restrictive in nature.

Finally, this study was a detailed exploration into how student teachers develop knowledge, skills and attitudes in lesson planning in two particular initial teacher education courses. The findings and results outlined in this research project add knowledge and understanding to how these groups of student teachers learned to teach in the context of the learning experiences pertinent to these particular programs. Clearly, the general thrust of the results and the nature of the data are indicative of the possibilities associated with the specific courses and they may not be generalizable to other initial teacher education courses. However, the claims made in the following section offer a window of opportunity for considering how research of this nature might be tested in a broader context.

14.3 Contributions of the study

As a result of the learning through this research project, the following assertions have been developed.

An understanding of how student teachers make meaning of the component of lesson planning in Teacher Education programs helps in the process of learning to teach.

Despite the enormous amount of literature on teacher planning, little focuses on how student teachers' knowledge, skills and dispositions evolve through an initial teacher education year. Findings from this study add knowledge to the understanding of the developmental process in preservice teacher planning during initial teacher education. At the end of the course, student teachers were confident in developing their own personal heuristics in lesson planning. Thus teacher educators could attend to this developmental nature of lesson planning and scaffold appropriate learning opportunities and learning tasks to help student teachers develop their own conceptual frameworks in lesson planning, giving due consideration to its relation to teaching and learning.

Teacher planning plays an important role in the process of learning to teach.

Lesson planning is integral to almost all initial teacher education programs throughout the world. The teacher education programs investigated in this study demonstrates how different philosophies and associated approaches in teaching student teachers how to plan contribute to levels of growth and development in student teachers' knowledge, skills and dispositions in lesson planning. In order to prompt students' growth and development, the practice of inquiry and reflection has to replace the practice of the ritual fulfillment of filling in prescribed lesson plan templates. The study also highlights that instead of acquainting student teachers with the how of lesson planning, it is important that they should pursue their own questions and problems, and seek information as the need arises and that such student teacher inquiry is practice-oriented; and, particular valuable when focused on

student learning. The developmental nature of lesson planning should be emphasized in the learning process. This study affirms the important role lesson planning plays in the learning to teach process. These findings, together with the literature on teacher planning illustrates the need to encourage student teaches to personalize their plans.

The model of cycles of transformation as a framework to illustrate growth and development in lesson planning.

The cycle of transformation model developed in this study may serve as a conceptual framework to illustrate the growth and development in student teachers' knowledge, skills and disposition in teaching, learning and lesson planning. The complexity of teaching and learning and the variability of teaching contexts work together to enhance conceptions of teachers as thoughtful, capable decision-makers who are reflective and autonomous. Simply knowing the how of lesson planning cannot prepare student teachers for the complexities of teaching and learning. Only when they go through the framing, reframing and resolution phases (as in the cycles of transformation) do student teachers begin to delve into the rationale underpinning their planning for teaching.

14.4 Concluding remarks

Student teacher participants in this study entered their professional education courses with their own agendas for learning to teach. How student teachers develop in the process of planning depends to some extent on how much meaning they make out of the learning experiences they encounter in various contexts. Clearly, models of planning reflect conceptions of teaching and learning. Faced with the demands of classroom reality, student teachers learn to plan for what they see as the important considerations for their teaching. Thus, it seems that student teachers develop their own personal heuristics in planning which they feel best suit the instructional tasks and problems they conceptualize and face.

As this study demonstrates, new instructional tasks can create cognitive dissonance that challenges student teachers' planning practices and the subsequent reflection on practice contributes to changes in their knowledge, beliefs and dispositions in teaching, learning and lesson planning. Clearly, teacher educators' modeling of lesson planning and demonstrating the teaching approaches suitable for use in classrooms serve as interesting ways of putting "theory into practice". There is little doubt that the best planning one can achieve is to prepare student teachers to participate thoughtfully and effectively in classroom situations. To do this, teacher educators could begin to conceptualize models of planning that encompass technical, psychological, and ecological conceptions. Initial teacher education is a beginning point in a teaching career. But as a beginning point it is also an indication that the journey goes on. Moving beyond the technicality in planning and actions is crucial to growth in teaching and teacher preparation must accept responsibility for enhancing the development of such growth.

Appendix 1 National Competency Framework for Beginning Teaching

Areas of competency in "National Competency Framework for Beginning Teaching"

Area of Competency 1

Using and developing professional knowledge and values

1.1 Knows content and its relationship to educational goals

1.2 Understands the relationship between processes of inquiry and content knowledge

1.3 Understands how students develop and learn

1.4 Active in developing and applying professional knowledge

1.5 Operates from an appropriate ethical position

1.6 Operates within the framework of law and regulation

1.7 Values diversity, all students have right to learn

Area of Competency 2

Communicating, interacting and working with students and others

2.1 Communicates effectively with students

2.2 Develops positive relationships with students

2.3 Recognises and responds to individual differences

2.4 Encourages positive student behaviour

2.5 Responds to role in the team responsible for students' education

2.6 Works effectively with teachers, ancillary staff and others

2.7 Works effectively with parents and others responsible for the care of students

2.8 Communicates with school support staff, the profession and the wider community

Area of Competency 3

Planning and managing the teaching and learning process

3.1 Plan purposeful programs to achieve specific student learning outcomes

3.2 Matches content, teaching approaches and student development and learning in planning

3.3 Designs teaching programs to motivate and engage students

3.4 Structure learning tasks effectively

3.5 Demonstrates flexibility and responsiveness

3.6 Establishes clear, challenging and achievable expectations for students

3.7 Fosters independent and co-operative learning

3.8 Engages the students actively in developing knowledge

Area of Competency 4

Monitoring and assessing student progress and learning

4.1 Knows the educational basis and role of assessment in teaching

4.2 Uses assessment strategies that take account of relationships between teaching, learning & assessment

4.3 Monitors student progress and provides feedback on progress

4.4 Maintain records of student progress

4.5 Reports on student progress to parents and others responsible for the care of students

Area of Competency 5

Reflecting, evaluating and planning for continuous improvement

5.1 Critically reflects on own practice to improve the quality of teaching and learning

5.2 Evaluates teaching and learning programs

5.3 Plans to meet longer-term personal and school goals

5.4 Develops professional skills and capacity

Appendix 2 Samples of simulated planning tasks

(a) Planning tasks for preservice teachers used for the first simulated task and follow-up interview in the first round of interview

> "Teaching practice incorporates planning for teaching, creating a learning environment and interacting with students to achieve learning objectives. Careful deliberate planning that takes account of educational goals, responds to clear curriculum and learning objectives and to student learning interests and needs underpins effective practice."
>
> **National Competency Framework for Beginning Teaching, page 45.**

Lesson Planning

In this task, you will be asked to plan and explain a lesson that you would teach to a grade eight class. You will be given some teaching materials and directed to the specific topic. While you are free to use the teaching materials, you are not obliged to. It is provided simply to give you an idea about the kind of materials available to you and to your students.

You will have 30 minutes to plan the lesson. Then you will spend some time with the researcher, verbally walking through and explaining your lesson. During that time, you will also be asked questions like:

1. What would you like to know before planning the lesson?
2. What would you be trying to achieve?
3. What are the important teaching points for this lesson?
4. How would you go about teaching your students?
5. How would you know if the lesson is successful or not?

(b) Planning tasks for preservice teachers used for the second simulated task and follow-up interview in the fourth round of interview

"Teaching practice incorporates planning for teaching, creating a learning environment and interacting with students to achieve learning objectives. Careful deliberate planning that takes account of educational goals, responds to clear curriculum and learning objectives and to student learning interests and needs underpins effective practice."

National Competency Framework for Beginning Teaching, page 45.

Lesson Planning

In this task, you will be asked to plan and explain a lesson that you would teach to a junior science class. You will be given a student textbook and directed to the specific topic. While you are free to use the teaching materials, you are not obliged to. It is provided simply to give you an idea about the kind of materials available to you and to your students.

You will have 30 minutes to plan the lesson. Then you will spend some time with the researcher, verbally walking through and explaining your lesson. During that time, you will also be asked questions like:

1. What would you like to know before planning the lesson?
2. What would you be trying to achieve?
3. What are the important teaching points for this lesson?
4. How would you go about teaching your students?
5. How would you know whether or not the lesson is successful?

Case Study (for English subject method students)

The case study intends to encourage collegial dialogue and reflection on professional practice. You might have encountered similar scenario in your teaching rounds. Please study it carefully and discuss with your group members. You may refer to the following questions to start with.

1. What is going on?
2. Would you consider it an important issue to be dealt with in your teaching? Why?
3. If you were the teacher, how would you tackle it?
4. How would you see the relation between planning and managing the teaching and learning process?

I can't write poems

Many students in Mr. Harris' Grade 7 English class said to him "I can't write poems, I don't know how". He introduced them to similes, metaphors and personifications as they occurred in specific poems and then gave them the opportunity to create similes and metaphors of their own.

There were still some students who claimed they didn't know how to write poems so Mr Harris chose to introduce them to the simple but exact structure of the Haiku form. He described the structure and on the board put an example of a Haiku poem he had written himself. He then initiated a process which enabled the students to write their own Haiku poems. They experienced instant success and eventually became quite adept at capturing personal experiences in the form of the Haiku. They had achieved something they had felt was beyond them and in doing so became more comfortable with poetry as a form of expression.

Case studies illustrating National Competency Framework for Beginning Teaching, page 39.

Appendix 3 First round interview protocol

Knowledge and conception of teaching and learning and planning on teaching

Feb to March 1997 - At the beginning of the PGDE course before the first teaching round

General questions

1. Could you please tell me about your education background? (Optional)
2. What is your major/minor in your undergraduate course? What impresses you most in your major subject in the undergraduate course?
3. What do you think it means for someone to know a subject discipline? If someone claims that he/she has a very good knowledge of (name of subject discipline the interviewee majors at in university), what would you expect them to know?
4. What are your subject methods in the PGDE course? Any reason(s) for your choice of these subject methods?
5. Do you have any teaching experience? Tell me something about it.

Knowledge and conception of teaching and learning

6. What makes you decide to become a teacher?
7. Could you describe briefly your view on teaching? Could you identify any factor(s) that influence your view? (Probe for: how they see teaching; what are considered important in teaching)
8. Could you describe briefly your view on learning? Could you identify any factor(s) that influence your view? (Probe for: how they see learning; what are considered important in learning)

Knowledge and conception of planning for teaching

9. What would you immediately think of when someone asks you to plan a lesson? (Could ask interviewee to construct a concept map of lesson planning at home. Should emphasize that the concept map should be spontaneous without consulting any reference and should spend less than half an hour on it.)
10. Taken together, what does it mean by planning a lesson?
11. At this stage, do you feel confident in planning for a lesson? What are your concerns and worries?
12. How would you go about if you are requested to plan a lesson in (subject method the interviewee is taking at the PGDE course) ?
13. What do you think would help your planning task? (Probe for the things they need to know or the sorts of things they need to perform the planning task.)

Appendix 4 Second round interview protocol

2nd round - Reflections on 1st teaching practice (March 14 - April 4)

April 1997 - Retrospective interview after the first teaching round

General questions

1. Tell me something about your experience in teaching round, as a teacher, and as an observer?
2. What is the most critical incident in your teaching round?
3. How would you evaluate your own teaching round experience?

Lesson planning practice in teaching round

4. In general, how did you go about planning for your lesson?
5. Have you encountered any difficulties when planning for the lesson?
6. How far do you consider that you planned purposeful programs to achieve specific student learning outcomes? (Optional)
7. How far do you consider that you matched content, teaching approaches and student development and learning in your planning? (Optional)
8. How did you find your implementation of your lesson plan in actual teaching? Was it a two step process: lesson planning and teaching in the classroom?

Impact of teaching round on lesson planning and teaching

9. How would you see the way you are prepared for designing for lesson in the Diploma in Education course? (Probe for: Is it practical; useful; compatible with school practice; contradictory to contextual factors)
10. What is the impact of teaching round on your lesson planning? What is the most important thing you have learned that might possibly shape your planning practice in the future?
11. What is the impact of the teaching round on your teaching?

Appendix 5 Third round interview protocol

3rd round - Reflections on 2nd teaching practice (May 26 - June 13)

June 1997 - Retrospective interview after the second teaching round

General questions

1. What is your overall impression of this second teaching round? (Prompts for teaching experiences, observation experiences, school as workplace, students as learners)
2. In terms of teaching, what is the main difference between the two teaching rounds? (Prompt for being innovative)
3. What are the contextual factors either supporting or constraining your teaching in this round?

Impact of various factors on lesson planning practice

4. Can you recall how you went about planning the lesson I observed in the second teaching round? Can you summarize the steps you took when planning for this lesson? Is it similar to or different from the steps you followed in the first teaching round?
5. Why did you plan the lesson the way you did it? (Prompt for conceptual underpinnings for lesson planning)
6. Can you identify the elements in your lesson plan written in this round? Why did you include such elements in your lesson plans? How did you go about addressing these elements?
7. Do you consider yourself being flexible when planning for your lesson in this round?
8. Can you identify the factors affecting your lesson planning practice? (Prompts for impact of Dip Ed course, lecturers, supervising teachers, ecological factors, other contextual factors)
9. What have you learned from your university lecturer, your supervising teachers, your students, or any other persons in aspects of lesson planning in this teaching round?
10. After this teaching round, are you more confident in lesson planning? Have you developed any new strategies for lesson planning? If yes, what is it? Are there any concerns you would like to deal with? Or any knowledge base you would like to acquire?
11. What do you consider are the elements of a good lesson plan? What roles do these elements play in the interactive teaching?

Appendix 6 Fourth round interview protocol

4th round - Conceptions of the development and growth in pedagogical knowledge of teaching planning after the teacher education course

October – November 1997 - Towards the end of the PGDE course

First part : Follow up interview on completion of the planning task

1. Could you please tell me how you go about planning for this lesson?
2. What have been considered and included in your lesson plan? Why do you include these elements in your lesson plan?
3. Why do you plan the lesson in the way you did it? What is the rationale behind your lesson planning practice?
4. Do you follow any procedures, models, or conceptual framework when planning for teaching? Have you developed for yourself any conceptual framework (or well-defined format) in teacher planning? If yes, could you please describe briefly your conceptual framework.

Second part : Interview on development and growth in pedagogical knowledge of teacher planning

1. In our first interview, you were asked to describe your view on learning? Do you think that your view has changed over the Diploma in Education course? Could you please describe briefly your view on learning now.
2. Follow on to the previous question? Do you think that your view on teaching has changed over the Diploma in Education course? Could you please describe briefly your view on teaching.
3. (Optional) What do you think are the factors contributing to the change(s) in your view on learning? And, on teaching? What is the most critical factor attributing to the changes?
4. How do your views on learning and teaching influence your planning for teaching?
5. How would you describe teacher planning? Are there any changes in your conceptions in teacher planning when compared with your initial conception at the beginning of the course? If yes, what are these changes? Why are there such changes?
6. How would you describe the way(s) you are prepared for teacher planning?
7. What are the sources of knowledge for teacher planning? What have you learned about teacher planning over the Diploma in Education course?
8. In regard to teacher planning, could you identify any relationship between the

foundation subjects, subject methods, and teaching rounds? If yes, in what way(s) are they correlated? If no, how would you like to see them correlated?

9. In your opinion, are you taught any conceptual/theoretical framework or model on teacher planning in the Diploma in Education course? If yes, what kind of framework or model is it? If no, what kind of framework or model do you think might be included to help prepare you in teacher planning? Can you explain the rationale behind the lesson plan format(s) you were introduced to in the Diploma in Education course?
10. What are the factors contributing to your development in teacher planning over the course? What is the most important factor contributing to your development in teacher planning?
11. Do you think a conceptual framework is needed in teacher planning? Why?
12. What knowledge bases are needed for effective teacher planning?
13. To sum up, what is the role of teacher planning in the process of learning to teach?

Appendix 7 Samples of lesson plans from the first and third teaching rounds

(a) Jenny's English lesson plans in the first teaching round

ENGLISH: YEAR 10
Thursday 27th March, 1997 (Period 5)

Lesson Time: 45 mins

Topic : Introduction to The Wave - Nazi Germany and Neo-Nazism

Lesson Aims:

As I have been advised that this group is unlikely to have very much background knowledge of Nazi Germany, which is a central theme in the novel, This lesson is designed to gauge what knowledge they do possess and to get them thinking about the power of conformity and uniformity and the ramifications of such a system for the individual. We will also be considering the conditions which give rise to such movements as Nazism, ne-Nazism and the gang mentality which they should be familiar with.

Big Ideas - Conformity vs. Indivisualism -- Power and Corruption

Materials:

Video - segment of "The Fatal Attraction of Adolf Hitler"

Key Questions:

What do you think of when I say "Nazi Germany"?
Why do people feel the need to belong to groups? What does it make them feel about themselves? How does it make them feel about those outside the group?
What sort of conditions give rise to conformist groups such as the Nazis?
How do people belonging to those groups justify their involvement? Do they identify themselves against the "other"? How can this lead to scapegoating?
(What is a scapegoat?)

Introduction:

Brainstorming:
What do you think of when I say "Nazi Germany"?

Write responses on board. 5 min.

Try to make your CV unique, reflective of your personality and interests - highlight the positives

CV Wizard

Give instructions to all students on accessing the CV template wizard
As they move through the screens, point out which sections may be useful for them to select and which are not relevant. 5 min

Students will compile their own template and then fill in the sections appropriately. Teacher will move around to offer individual help as necessary. 30 min

End of lesson: 2 min

Ensure that all work is saved and printed before the students pack away.
Collect completed CV's.

EVALUATION:

It's amazing how little the class got through this lesson. The classroom dynamics of the computer room are completely different and, it's almost a license to muck around. Keeping kids on task was almost impossible — while making with a group on one side of the room others on the other side would be logging on to the 'net or playing solitaire. It didn't help that there were not quite enough machines for all students running the right software (although I'd been assured there were). Only two kids actually finished — some didn't even start — so I will have to organise another computer lesson this week.

(b) Jenny' English lesson plans in the third teaching round

ENGLISH LESSON PLAN
Year 9 - Thursday 4th Sept, 1997 (Period 3) 26 students.

Topic: Tomorrow When The War Began
Writing Folio.

Background: Students have an extremely good knowledge of the novel and the themes/issues raised within it. When this activity was mentioned in class, many students seemed enthusiastic & looked forward to having a chance to write creatively.

Objectives: (A prepared sheet of topics to choose from is attached.) The students will be able to use the text as a springboard for writing in one of a variety of genres. Students will have a good understanding of what is expected of a folio piece - purpose, audience, genre.

Class Instruction:

- Hand out sheet with topics to select
- Writing folio piece - creative
- Think about purpose & audience

Ask these questions

① Why do I want to write this? (Purpose)
② What do I want to say? (Content)
③ How do I want to say it? (Style, genre)
④ Who do I want to say it to? (Audience)
⑤ How can I best say it? (Crafting, editing)

First lesson is for trying on ideas. You may have to look at a few different topics before you find something you are confident writing

about. Think about each topic and try brainstorming ideas. Write down anything that comes into your head & structure it later.

Remember that the given topics are a framework for you to put your ideas into. Content comes from your imagination.

- Class will work on their piece for this period
- First draft will be needed for conferencing on Tuesday

Conclusion:
- Ensure class is aware of Tuesday deadline for 1st drafts
- Oral presentations tomorrow

~~Evaluation~~ EVALUATION:

Not too terrible - Many of the class were absent & some were late due to bell mix-ups. Students were getting on task. A few had very definite ideas about what they wanted to do. Others had no idea. Have time for table with the idea of an imaginative response. One girl asked if it was O.K. to answer the question "Why do I want to say this?" with "because it's the easiest one on the sheet."

Tomorrow, When the War Began
Writing Folio Assignment

Choose one of the following writing tasks. These tasks are meant as a framework for your own creative response to the text. Use these topics as a springboard for a creative, imaginative piece.

Your finished piece should be between 800 and 1000 words long.

* Imagine you are a journalist working in an area not taken by the invaders. Write the initial front page report for your newspaper and a follow-up article dated six months later which describes the direction the war is taking.

* *Tomorrow, When the War Began* is to be made into a feature film and you have been asked to write the adapted screenplay. Choose a scene from the book and write a script for this scene in the film. Don't forget to add directions for the actors and for any special effects necessary to heighten the action of the movie.

* What is life like for those who were captured? Write about a day inside the Showgrounds camp. How are the prisoners treated? What do they have to do? How do they get along with their captors? What do they feel about being prisoners? You may like to focus on one or more of the children's parents as your central characters or to write from their perspective.

* On one of their forays, the children have found the diary of one of the invaders. Write a few of the entries this diary may contain. Consider who you may be - old or young, male or female, professional soldier or conscript. Write about how you feel about what you are required to do and your feelings towards the Australians.

* Imagine you are the editor of an underground newspaper in the Australia described in *Tomorrow, When the War Began*. Write an editorial discussing world reaction towards the invasion of Australia.

* Imagine that you are Ellie. You are able to smuggle a letter to your parents. In case the letter is intercepted you must not identify your whereabouts, or put anything in the letter that would endanger the safety of your parents or anyone else opposed to the invasion. Write the letter.

* "Humans do such terrible things to each other that sometimes my brain tells me they must be evil. But my heart still isn't convinced." Use this quote as the inspiration for a short story of your own devising.

(c) **Rachel's Mathematics lesson plan in the first teaching round**

Lesson 4 -Maths

Number Patterns - Factors and Prime Numbers

BACKGROUND KNOWLEDGE

Completed multiples, LCM and started divisibility tests..

AIMS AND OBJECTIVES

1. To understand what factors, common factors, HCF and prime numbers are
2. To apply already learnt knowledge to a new area.

CONTENT

1. Reminder of last lesson - set rest of Ex 2C for Homework
2. Introduction to factors - liquorice factory
3. Steps to calculating factors
4. Introduction to Common Factors and HCF
5. Individual work on Ex. 2D and Ex 2E
6. Liquorice Factory - Prime Numbers
7. Individual Work on Ex.2G

EQUIPMENT AND RESOURCES

Resources R.I.M.E. Liquorice Factory
Heinmann Mathematics 8

PROCEDURE

1. Ask classes permission to tape class as part of an assignment I must complete.
   Signpost lesson - "due to the Easter break and the Athletics Day yesterday you have missed a lot of lesson and therefore we have to work hard today to catch up. Remind them about last lesson - "looked at tests that we could do on large numbers to determine if they are divisible by a particular number". "Can you remember what numbers we did in last lesson?" "That leaves us 4, 6, 7, 8, 11, 12.
   For homework tonight I would like you do Ex. 2C Q 7, 8, 9, 10 & 11. These questions will help you with divisibility tests for the numbers we have not yet done.
   Question 11 is especially important so I will be checking that you have completed the exercise next lesson." "This lesson we are going to look at Factors but first lets begin with a story."

2. Hand out worksheet - warning that this sheet will be needed for both this and next lesson.
   Liquorice factory story - Read it from the R.I.M.E. lesson.
   After finishing the story take the number 36 and tell the class that this machine broke down. Ask them what machines might be used instead in this case. Write on the board the list they give you. From this you can introduce the term factor - telling them that 2, 4, 6, 9, 18 are factors of 36.
   Ask them to open workbooks and write down the following definition. A <u>factor</u> is a number that divides into another number exactly, with no reminder. eg. 2 is a factor of 12 since it goes into 12 exactly 6 times, with no reminder.

   The easiest way to work out the factors of say 49 is to write down all the pairs of numbers that multiple to give you 49. If you start at one and count up you should not miss any factors. Go through the example of 49 with them.

3. Introduce the terms Common Factor and Highest Common Factor. Link it to Common Multiple and Lowest Common Multiple - They should almost come up with the definition themselves this way. Tell them to then write the following definitions.
   A <u>common factor</u> is one that appears in the factor lists of two or more given numbers. The <u>highest common factor</u> (HCF) is the largest of the common factors. Work through this example on the board.
   Find the common factors of 12 and 18, and state the HCF.

4. Set them to work on Ex 2D Q1 a, c, Q2 a, c, e, g, Q# LHS Ex 2E Q1 a, c, e, k Q2

5. Whether or not the class has finished at focus their attention again to the front.
   Let's return to the Liquorice Factory, we found that the number 36 machine could have been replaced by 2 and 18, 4 and 9, 6 and 6. But at the start of the story we found that 6 broke down and it was replaced by 2 and 3.
   Go through the process of trying to get to the machines which can no longer be divided by another number. Get them to work going through each machine eliminating those that are not needed.
   Once done use R.I.M.E lesson to introduce prime numbers.
   In their books get them to write down the definition of a Prime Number. A <u>Prime Number</u> has exactly two factors: itself and 1.

6. Set them to work on Ex 2G every second problem - must complete all set work this lesson for homework.

STUDENT EVALUATION

1. Involvement in class discussion.
2. Ability to apply learnt knowledge in individual work.

SUPERVISING TEACHER'S COMMENTS

(d) Rachel's Mathematics lesson plan in the third teaching round

Maths Lesson Plan 2 - General Mathematics 2

Trigonometric Ratios and Their Applications

Year 11 Period 1 25/8/97

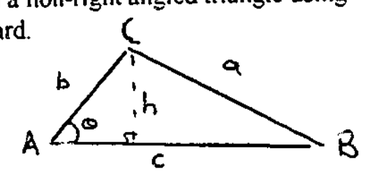
Topic: Trigonometry in triangles with out right-angles using cosine rule.

Previous Knowledge: Looked at method of finding area of a triangle using sine. Came up with rule - Area = 1/2bcsine(angle).

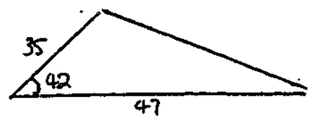
Contents:
1. Revision of last lesson work
2. Go through cosine rule.
3. Set to work on Exercise 17.6 and check homework.
4. Help individual students.
5. Set homework and conclude class

Method

1. State where they should now be up to tell them will be checking later in the period. "Let's quickly go over what we looked at last lesson". Go over the equation used for finding the area of a non-right angled triangle using and *b*. Draw the following triangle on the board.



When we fin the area of a triangle we need to multiple the height by the base and then half it. In this case we know what the base is, = c, but what is the height. If I then call the dotted line in my triangle h and say that we want to find h in terms of θ and *b*. Do an example on the board. Point out that θ is always the angle between c and b.



What is the area of this triangle? $b = 35$, $c = 47$, $\theta = 42$. sin 42.
Area=1/2*35*47*.669130606 4 = 550.36m.

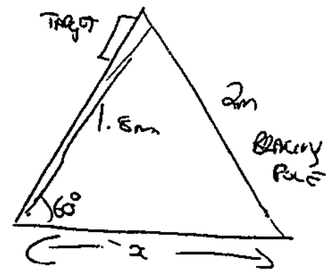
2. There is another rule we use to help us calculate any of the lengths or angles of a triangle. Write on the board - a2 = b2 + c2 - 2b cos A. Important to note that you use this rule if you want to find a or A but there is a different variation of the rule for b B and c C.

They are b2 = a2 + c2 - 2ac cos B
c2 = a2 + b2 - 2ab cos C

Do following example.

An archery target needs to be braced so that it is inclined a 60 degrees to the horizontal. A bracing pole of length 2m is hinged to the target 1.8m from its base. How far behind the target should the bracing pole be placed to created the desired angle?

Solution:
1. Define variables given.
b = 1.8 a = 2 A = 60 What is c? What rule do we use?



2. Into equation
4 = 3.24 + c2 - 2*1.8*c cos 60
4 = c2 - 1.8c + 3.24
0 = c2 -1.8c - 0.76

3. Solve using general formula for quadratic solution
If ax2 + bx + c = 0
then $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

= 2.153 or -0.3530
can not be negative so answer is 2.2m

3. Set them to work on Exercise 17.5. All of question 1 and question 3. Go around and check homework. If anyone has not completed it then warn them that they have until tomorrow but should it not be completed by the time I check in the next lesson they will be back on Thursday lunch time to complete it.

4. Assist students with any problems on Exercise.

5. Set Exercise for homework, must finish all of question 1 and 3.

(e) Saran's Science lesson plan in the first teaching round

Date: 25. 3.97
Time / duration of teaching period: L6 45min
School: Ivahoe Girls Grammer School
Supervisor: Mrs. Marcia Williams
Year Level: 10.
No of students: 28
Subject area / topic: Materials from the earth - metals

Purposes
Aim
- Tidy experimental results (5min)
- Complete questions on pages 50-51 (30min)
- Check questions (boxed) on Page 47 (if time permits. (2min)

Objectives
~~Experimental Results can~~ will be validated.
- To understand that the properties of alloys are different from the metals from which makeup alloys.
- These properties can be varied using different compositions of metals.
- Relate properties of alloys to their function
-

Procedure
Introduction: say what the students need to do in 45min ie Read Q 2+3 on page 51 + answer
Do problem solving page 51
Discuss expt results. (7min)

Students Answer Questions pg 51 - 2+3 (5min)

Check students answers + Write extra points on board.
T. question - (5 min)
How do these results relate to Prac
Solder making.
From fig what can you tell about the melting point of tin + ~~a~~ solder.

Did anyone have very different m.points ~~bt~~ for tin + solder.

How can you explain your results

Students given time to read + answer problem solving questions page 51 (5-7min)

Teacher asks for a summary from a ~~Student~~ - what are some of the properties of alloys which determine + use. ~~For~~ (3min

- Testing hardness of solder + metals.
- Ask students what the expected results
- Ask them to explain their results (5-7min)

- Conclusion Alloys have properties different from the materials which are used to make them. Vary the amount of constituent → vary property of alloy

Homework Read Page 52-53
Write down answers in point form

Again - the pace of the lesson was on the slow side

(f). Saran's Science lesson plan in the third teaching round

Class: Year 10 Science

Date: 17:10:97

Aim

- Draw distance time graph for motion of a body
- What can they learn from distance time graph?- velocity, stopping + starting, (acceleration) dont use this term but non-uniform velocity
- ~~What~~ is Using ticker tape to calculate velocity, ~~area~~ distance travelled,
- Define acceleration
- Using ~~of~~ Velocity-time graph to measure acceleration.
- Acceleration questions.

Lesson plan

~~Activ~~ Introduction (3min) - What is to be learnt
- put/give definitions ~~on board~~.

Task1 ~~D~~ Draw a graph - Ask questions - (Board use) (10min)
~~st~~ distance-time graphs.

Task2 give questions - students complete questions
Check Student's Ans (5~~10~~min)

Task3 Definition of velocity + how velocity can be found using distance/time graph (Read notes to Students & ask them to copy) ~~ten~~ 5min

Task4 Questions - Asking to calculate velocity from d/t time graph (Time 10min)

Task 5 :- Motion of ticker timer - give notes (verbal) students write down. (10min)

Questions on ticker timer :- (15 min)

Define acceleration + deceleration (verbal) note taking (10min)

Work sheet given students calculate (10min)
check & Ans 5min (verbal)
further acceleration questions - time 15min.

Conclusions Summerise - Board- (3min)

(g) Tony's Mathematics lesson plan in the first teaching round

Class: 11 B Lesson no. 1 12th March 8-52-9-3(

Operations on Polynomials.

Student objectives.

The student will be able to;

(1) add polynomials by grouping together the coefficients of like powers

(2) apply the distributive property.

$$a(b+c) = ab + ac$$

(3) generalise expansion to handle quadratic polynomials i.e.

$$(ax+b)(cx+d)$$

Teacher Development activities.

I will try to:

(1) motivate the students that manipulating Polynomials is a practically useful skill

Resources

The prescribed Text "Maths Methods 1&2" by FITZPATRICK, GALBRAITH & HENRY

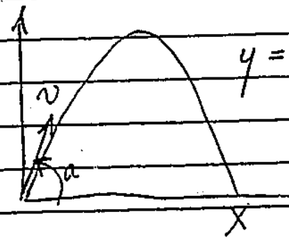
Lesson Structure

gain attention of student. "Good Morning class, could I have your attention please"

Introduction (15 mins)

"In this chapter on manipulating polynomials · we will learn the skills required to put algebra to work"

Introduce Galileo's equation for the cannon ball.



$$y = \frac{\sin a}{\cos a}x - \frac{g}{2v^2\cos^2 a}x^2$$

a = take off angle

v = muzzle velocity of cannon ball.

"Now This equation is a polynomial in x because both x & x^2 occur." We would like to Know where the cannon ball comes back to earth, ie X"

Lead students through factorization

$$y = x\left(\frac{\sin a}{\cos a} - \frac{gx}{2v^2\cos^2 a}\right) \Rightarrow$$

$y = 0$ when $x = 0$ or $x = \frac{2v^2 \sin 2a}{g}$

Conclude the intro with a few incidental remark concerning the absence of mass from Galileo's eq^n and how this lead Newton to formulate his first law of motion

Learning activities

Activity 1 (objective 1, 10 mins)

Add poly's by adding like powers eg. x

eg. $(7x^2+9) + (2x^2+3x-8) = (7+2)x^2 + 3x + (9-8)$

$= 11x^2 + 3x + 1$

Reinforce with the ~~5 examples~~ exercises from Text 1b

Activity 2 (objective 2, 15 mins)

Employ the distributive property of numbers i.e.

$$a(b+c) = ab + ac$$

"You use this rule whenever you do long multiplications eg. $16 \times 17 = 16(7+10) = 16\times 7 + 16 \times 10$

$= 112 + 160 = 272$"

Go through some examples eg. $x(x+3)$ $3x(2x+4)$

Put some numbers in place of x and check left & right sides are equal.

Generalise golden rule $\boxed{a(b+c) = ab + ac}$

to handle quadratics. Let's $a = d+e \Rightarrow$

$$(d+e)(b+c) = (d+e)b + (d+e)c$$
$$= db + eb + dc + ec.$$

reinforce with exercises 1C.1

Ending Today we have learnt about ~~exp~~ adding and expanding Polynomials.

H/WK. Finish 1C.1 for 1st/WK.

(h) Tony's Mathematics lesson plan in the third teaching round

The study of Triangles

Lesson No:.....3 Topic:.....The Pythagoras Thm.

1 Student Objectives

The student will be able to:

1. use similar triangles to prove the Pythagoras Thm.
2. appreciate the converse Pythagoras theorem, i.e.
   (a) $c^2 = a^2 + b^2 \Rightarrow \angle C = 90°$
   (b) $c^2 < a^2 + b^2 \Rightarrow \angle C < 90°$
   (c) $c^2 > a^2 + b^2 \Rightarrow \angle C > 90°$
3. employ the Pythagoras Thm. to find the third side length, given any pair of side lengths in a right angled triangle

2 Introduction

Pythagoras of Samos, c.560-c.480 BC, was a Greek philosopher and religious leader who was responsible for important developments in the history of mathematics, astronomy, and the theory of music. He migrated to Croton and founded a philosophical and religious school there that attracted many followers. Because no reliable contemporary records survive, and because the school practiced both secrecy and communalism, the contributions of Pythagoras himself and those of his followers cannot be distinguished. Pythagoreans believed that all relations could be reduced to number relations ("all things are numbers"). This generalization stemmed from certain observations in music, mathematics, and astronomy.

The Pythagoreans noticed that vibrating strings produce harmonious tones when the ratios of the lengths of the strings are whole numbers, and that these ratios could be extended to other instruments. They knew, as did the Egyptians before them, that any triangle whose sides were in the ratio 3:4:5 was a right-angled triangle. The so-called Pythagorean theorem, that the square of the hypotenuse of a right triangle is equal to the sum of the squares of the other two sides, may have been known in Babylonia, where Pythagoras traveled in his youth; the Pythagoreans, however, are usually credited with the first proof of this theorem.

In astronomy, the Pythagoreans were well aware of the periodic numerical relations of heavenly bodies. The CELESTIAL SPHERES of the planets were thought to produce a harmony called the music of the spheres. Pythagoreans believed that the earth itself was in motion. The most important discovery of this school–which upset Greek mathematics, as well as the Pythagoreans' own belief that whole numbers and their ratios could account for geometrical properties–was the incommensurability of the diagonal of a square with its side. This result showed the existence of IRRATIONAL NUMBERS.

Whereas much of the Pythagorean doctrine that has survived consists of numerology and number mysticism, the influence of the idea that the world can be understood through mathematics was extremely important to the development of science and mathematics.

3 Learning Activities

3.1 Activity 1 *(student objective 1.)*

The theorem of Pythagoras is a statement that the square of the hypotenuse of a right triangle is equal to the sum of the squares of its other two sides. At the time of Pythagoras of Samos (6th century BC), the square of a number n was represented by the area of a square with side of length n. Using this representation, the Pythagorean theorem may be stated: The area of the square on the hypotenuse of a right triangle is equal to the sum of the areas of the squares on the legs.

With reference to Fig.1, we will now employ similar triangles to prove the famous Pythagoras theorem.

$$\begin{aligned} \frac{a}{c} &= \frac{x}{a} \\ \Rightarrow a^2 &= cx \end{aligned} \qquad (1)$$

1

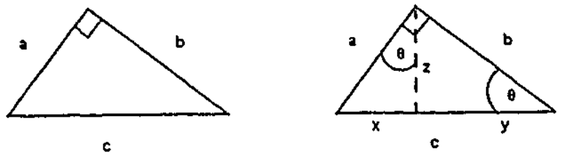


Figure 1: The right angled triangle with side lengths a, b & c can be split into a pair of right angled triangles with side lengths a, x & z and y, b & z. We can use Euclidean geometry to show that this second set of triangles are *equiangular* i.e. similar

$$\begin{aligned} \frac{b}{c} &= \frac{y}{b} \\ \Rightarrow b^2 &= cy \end{aligned} \tag{2}$$

Adding (1) and (2) and using the geometric constaint $c = x + y$ we get

$$\begin{aligned} a^2 + b^2 &= cx + cy \\ \Rightarrow a^2 + b^2 &= c(x + y) \\ \Rightarrow a^2 + b^2 &= c^2 \end{aligned} \tag{3}$$

which is none other than Pythagoras' Thm.

3.2 Activity 2 *(student objective 2.)*

Pythagoras, or perhaps one of his students, proved that if triangle ABC is a right–angled triangle with the right–angle at C, then $c^2 = a^2 + b^2$. The converse theorem (If $c^2 = a^2 + b^2$ in a triangle ABC, then the angle at C is a right–angle) appears to have been used much earlier. For example, early Egyptian surveyors used knotted ropes to form triangles with sides 3, 4, and 5 units long. Because $5^2 = 3^2 + 4^2$, the angle opposite the side of length 5 was assumed to be a right–angle. This surveying technique was useful for marking off the boundaries of fields after the annual flooding of the Nile River.

Students will break into small groups. They will tie knots in peices of string at equi-spaced intervals and form right–angled triangles of various shapes in attempt to discover Pythagorean triples other than the (3,4,5).

4 Homework Assignments (student objective 3.)

[1],p:168 Individual Consolidation Pythagoras' Thm

Resources

[1] R. Brodie, S. Swift 1993 *Qmaths*11a.Moreton Bay Publishing.

(i) Susan's History lesson plan in the first teaching round

History Lesson Plan

Date: Mon 24.3.97

Duration: 45 mins

Class: Year 9F History

Unit Topic / Aim: New People In An Old Land: To examine the causes of white settlement in Australia and find out what it was like to be among the first Europeans to arrive in Australia.

Lesson Topic / Aim: First Fleet Convicts: To understand the characteristics, crimes and motivations of First Fleet convicts.

Intended Learning Outcomes:

Knowledge
- characteristics of First Fleet convicts (eg. age & occupation)
- types of crimes committed
- sentences dealt
- possible explanations of the crimes

Skills
- obtain information from written sources
- actively participate in a role play
- imagine what the situation might have been like
- listen to other members of the class
- present a point of view
- speaking in front of a group

Values and Attitudes
- listen to other members of the class / group
- empathise wi'.t the situation of convicts, victims, witnesses etc

Resources:

Coupe, S. (1995) "Their Ghosts May Be Heard - Australia to 1900" 2nd edition, Longman, Australia

Role description cards

Props eg. judges wig

16/3/97

History Lesson Plan

Learning Experiences:

Content / Subject Matter	Method	Timing
Introduction	Link to previous learning. Introduce role play. Check all are present and organise class into appropriate groups.	7 mins
Developmental Activities Role Play - The trial of 8 convicts	Students have been given role descriptions in a previous lesson along with an explanation of the preparation they need to do for the role play. The Role Play is run as 8 x 5 minute mini court cases where the following criminals are on trial (see p 70 of text): 1. George Bannister – cancelled 2. James Grace 3. Thomas Bryant 4. Esther Abrahams 5. James Freeman 6. Elizabeth Beckford 7. Francis Woodcock 8. Jane Creek Each court case will involve: • 1 Magistrate (different student for each case) • 1 criminal (different student for each case) • 1 Clerk to read the charge (always the same) • either 1 witness or 1 victim (different student for each case) • 1 Bailiff to bring the criminal forward (always the same) • in one case there is a parent to speak on behalf of the child criminal Note: Each student will be assigned one of the above roles and during the other cases they will sit on the jury.	40 mins in total

History Lesson Plan

Example of a court case

Teacher: Asks court to stand as Magistrate enters for the trial of ....

Magistrate: Introduces trial and calls for the criminal to be brought forward.

Bailiff: Brings criminal forward.

Magistrate: Asks criminal to state name, age and occupation.

Criminal: States name, age and occupation.

Magistrate: Asks Clerk to read the charge.

Clerk: Reads charge against criminal and introduces the victim / witness.

Victim / witness: Tells the court about the crime.

Magistrate: Asks criminal if he has anything to say.

Criminal: Says some words in their defence or indicates they don't understand or pushes their parent forward to speak.

Magistrate: Asks the jury how they find the defendant.

Jury: All together say "guilty!"

Magistrate: Delivers the sentence.

Bailiff: Removes the criminal from the court.

Teacher: Asks court to stand as Magistrate leaves.

Conclusion	Brief summary of what was learned.	1 min

Evaluation: Based on participation in role play.

(j) Susan's SOSE lesson plan in the third teaching round

Geography Lesson Plan

Date: 8.9.97

Duration: 50 mins

Class: 9.3 Studies Of Society, p3

Unit Topic: Africa

Lesson Topic / Aim: To understand the extent to which women are involved in growing food in Africa, the problems they face and the possible solutions.

Intended Learning Outcomes:

Knowledge
- what work women in Africa engage in
- problems caused by lack of time
- problems caused by cash cropping
- problems caused by loss of male labour
- solutions
- difference between "fact" and "thinking" questions

Skills
- obtain information from oral and visual sources
- construct good questions
- analyse the type of question
- think critically
- work effectively in a small group
- identify key points

Values and Attitudes
- to understand the value laden nature of the term "development"
- to listen to other members of the class

Resources: Video - "Man made Famine" - a New Internationalist publication

Handout - questions constructed by the girls last lesson

Soft ball

Cards for each small group to write a question on

Geography Lesson Plan

Learning Experiences:

Content / Subject Matter	Method	Timing	
Introduction	Recap where we got up to last lesson. Explain aim for today's lesson.	5 mins	11.00
Developmental Activities *Key Questions:* What type of questions did we come up with?	Write two of the questions on the board (one comprehension and one analysis question). Discuss differences between "fact" and "thinking" questions.	5 mins	11.05
Key Questions: What did we learn from the video? Were our questions "fact" or "thinking" questions?	Each girl is given a handout which has at least one question written by each girl. The soft ball is thrown to a girl who must read the question, state whether it is a "fact" or "thinking" question and attempt to answer it. Girls use the discussion to ensure they have taken notes for later use in their assignment. Once the question is answered, the ball is thrown to anther member of the class and the process continues.	25 mins	11.10
Key Questions: What else do we want to know about women in Africa?	Girls form small groups of three or four to come up with a "thinking" question about women in Africa. Some stems are written on board to help the process. Question is written on a card ready to pass to another group to discuss.	5 mins	11.35
	Each group passes their question to the next and discusses a possible answer. One girl in each group takes notes.	5 mins	11.40
Conclusion	Each group is asked to briefly outline the question they discussed and a few of their responses. Girls given an idea of what to expect next lesson.	5 mins	11.45

Evaluation: Based on group discussion, questioning & question construction 11.50

"Fact" question - What percent of the weeding do women do?

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"Thinking" question - "If it doesn't rain often, why do they[2]

Geography Lesson Plan

Self Assessment

	S	N/I	N/A	Comments
Time allocation	☑	☐	☐	
Structure of lesson	☑	☐	☐	
Pace of Activities	☑	☐	☐	
Activity Appropriateness	☑	☐	☐	
Explanations	☑	☐	☐	
Questioning	☑	☐	☐	
Content detail	☑	☐	☐	

S = Satisfactory
N/I = Needs Improvement
N/A = Not Applicable

Things done well:

I was pleased with the intro discussion about FACT and THINKING questions. The girls responded really well, and contributed with enthusiasm. It was a good way to go through the content of the video.

Things to improve:

If it were my class - I would have been able to have set them up ready for the AVD. I won't be here so it was a bit hard when they asked "what assignment".

Other comments:

They were very well behaved - the lesson went really well. I was unsure how this PEEL discussion would go but now, I would definately use this approach again.

5

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Appendix 8 Initial coding schedule

1.	Base data
1.1	Interviewee's position
1.1.1	Student interviewee
1.1.2	Lecturer interviewee
1.2	Gender
1.2.1	Male interviewee
1.2.2	Female interviewee
1.2.3	Mixed groups
1.3	Age group
1.3.1	20-29 age group
1.3.2	30-39 age group
1.3.3	40-49 age group
1.3.4	50-59 age group
2.	Education background
2.1	Education background in general
2.2	Major in undergraduate studies
2.2.1	Major in languages
2.2.2	Major in Mathematics and Science
2.2.3	Major in Arts and Humanities
2.2.4	Major in cultural Arts subjects
2.3	Subject methods
2.3.1	Languages
2.3.2	Mathematics and Sciences
2.3.3	Arts and Humanities
2.3.4	Cultural Arts
3.	Views on expertise in learning
3.1	Views on being an expert in learning and teaching
3.2	Expertise based on knowledge
3.3	Expertise based on skills
3.4	Expertise based on problem solving skills
4.	View on teaching in general
4.1	As transmission
4.2	As transferring of attitude in learning
4.3	As exercising control over knowledge
4.4	As care for students
4.5	As establishing in students the need to learn

4.6 As developing students' potentials
5. View on learning
5.1 As construction of meaning
5.2 As development of multiple intelligences
5.3 As acquisition of knowledge
5.4 As application of knowledge and skills
5.5 As intuition
5.6 As process
6. Lesson planning in general
6.1 Step and procedures
6.2 Elements of lesson plan in general
6.2.1 Purposes, aims and objectives
6.2.2 Teaching contents and key questions
6.2.3 Learning activities and teaching strategies
6.2.4 Evaluation
6.2.5 Prior knowledge of students
6.2.6 Time frame
6.2.7 Reflection as integral part
6.2.8 School context factors
6.2.9 Flexibility
6.2.10 Class management
6.3 Lesson planning – concerns and knowledge base
6.3.1 Knowledge of objectives
6.3.2 Subject knowledge
6.3.3 Planning skills
6.3.4 Teaching strategies and learning activities
6.3.5 Evaluation methods
6.3.6 Knowledge of students
6.3.7 Teaching resources
6.3.8 Concerns - Time factor
6.3.9 Concerns – Knowledge of planning framework
6.3.10 Personality of teachers and learners
6.4 Conceptual understanding of lesson planning
6.4.1 As conceptual framework
6.4.2 As guidelines or scripts
6.4.3 As thinking process
6.4.4 As Prediction of learning activities
6.4.5 As record of thought

6.5 Sources of knowledge for lesson planning
6.5.1 Prior experiences
6.5.2 Subject methods
6.5.3 Foundation subjects
6.5.4 Supervising teachers
6.5.5 Teaching practice
7. Conceptual changes in lesson planning

Appendix 9 Revised coding schedule

4. View on teaching in general
4.1 As transmission
4.2 As transferring of attitude in learning
4.3 As exercising control over knowledge
4.4 As care for students
4.5 As establishing in students the need to learn
4.6 As developing students' potentials
4.7 Conceptual change in views of teaching
4.8 Factors leading to conceptual changes
5. View on learning
5.1 As construction of meaning
5.2 As development of multiple intelligences
5.3 As acquisition of knowledge
5.4 As application of knowledge and skills
5.5 As intuition
5.6 As process
5.7 Conceptual changes in views of learning
6. Lesson planning
6.1 Step and procedures
6.2 Elements of lesson plan
6.2.1 Purposes, aims and objectives
6.2.2 Teaching contents and key questions
6.2.3 Learning activities and teaching strategies
6.2.4 Evaluation
6.2.5 Prior knowledge of students
6.2.6 Time frame
6.2.7 Reflection as integral part
6.2.8 School context factors
6.2.9 Flexibility
6.2.10 Class management
6.3 Lesson planning concerns and knowledge base
6.3.1 Knowledge of objectives
6.3.2 Subject knowledge
6.3.3 Planning skills
6.3.4 Teaching strategies and learning activities
6.3.5 Evaluation methods

6.3.6 Knowledge of students
6.3.7 Teaching resources
6.3.8 Concerns - Time factor
6.3.9 Concerns – Knowledge of planning framework
6.3.10 Personality of teachers and learners
6.4 Conceptual understanding of lesson planning
6.4.1 As conceptual framework
6.4.2 As guidelines or scripts
6.4.3 As thinking process
6.4.4 As Prediction of learning activities
6.4.5 As record of thought
6.5 Sources of knowledge for lesson planning
6.5.1 Prior experiences
6.5.2 Subject methods
6.5.3 Foundation subjects
6.5.4 Supervising teachers
6.5.5 Teaching practice
6.5.6 Readings
7. Conceptual changes in lesson planning
7.1 Orientations
7.2 Personal framework
7.3 Mental images
7.4 Routines
7.5 Flexibility
7.6 Personal needs
7.7 Knowledge growth
7.8 Alternate plan
7.9 Focus
7.10 Procedures
7.11 Thinking process
8. Factors affecting lesson planning
8.1 Teaching practice
8.2 Personal work style
8.3 Personal needs
8.4 University requirements
8.5 School contextual factors
8.6 Supervising teachers
8.7 Students

Appendix 10 Samples of lesson plan formats from both Universities

(a) Lesson plan format form Core Mathematics Method – City University

Core Mathematics Method - Lesson Plan Format

School: _____ Class: _____ Lesson No: _____ Date _____ Time: _____

TITLE - A broad title indicating the mathematical content of the lesson,.e.g. addition of fractions.

STUDENT OBJECTIVES - A list of learning outcomes students should achieve by the end of the lesson stated using this format: Student will be able to: (1) .... (2) ..... (3) ....., etc

TEACHER OBJECTIVES - A list of classroom management, teaching methods and skills you intend to work on as you teach the lesson. For each, include a strategy that you intend to use. State using this format: I will try to: (1) ..... by ..... (2) ..... by ..... , etc

RESOURCES

(a) List references (b) Itemise materials to be used (c) Attach any worksheets, tests, etc.

LESSON STRUCTURE

INTRODUCTION Give details of how you will introduce the lesson and its main objectives. Try to do this in a way that creates interest and motivates students while giving them a sense of purpose for the lesson and for the specific learning activities to be used.

LEARNING ACTIVITIES - List in sequence and provide brief details of the learning activities to be used. For each activity:

(a) give an estimate time for completion
(b) state the student objective(s) linked to the activity
(c) provide content ideas, examples and setting out you will use
(d) identify important ideas and understandings to be emphasised, and how this will be done
(e) state key questions you will raise. question sequences you will use

As you plan each activity give thought to what you and the students will be doing at each stage.
Give careful consideration to how you will make the transition from one activity to the next.

ENDING - Indicate how you will review and summarise the main outcomes of the lesson, and how you will link these to past or future work.

ASSIGNMENTS - Indicate homework assignments or information about tasks to be completed.

CHALKBOARD PLAN - Give a sketch of where and what you intend to write on the chalkboard.

SUPERVISOR'S COMMENTS - Encourage your supervisor to write comments on his/her perceptions of the strengths and weaknesses of the lesson. (Attach a copy to the lesson plan.) Organise a time to discuss the comments and advice as soon as possible after the lesson.

SELF-EVALUATION - Before reading your supervisor's comments, write down your perceptions of the strengths and weaknesses of the lesson, and insights gained regarding students learning of mathematics. Be honest in your appraisal of the lesson and don't forget to indicate the good aspects of the lesson.

(b) Lesson plan format from Science Method – City University

THE INDIVIDUAL LESSON PLAN

The individual lesson plans are to be more specific and hence, more detailed in their presentation (at least for the first teaching round anyway).

A good lesson plan should contain

1. Clear Objectives for the lesson
2. Specific background information
3. Any safety precautions deemed relevant (including key questions)
4. Content)
5. Method (Activity)) 4 Columns
6. Timing)
7. Objectives Check)
8. Evaluation of the lesson by you, for you.

(9. A flow chart)

Examples of good lesson plans are given below.

Yr. 8 Science
Niddrie High School

12/3/97
43 min.

Forces

1. Backgroud: Nil
2. Objectives: By the end of this lesson, students should be able to
   1. state the effects on a body when a force acts
   2. list a wide range of situations in which forces act
   3. write down at least 3 different types of force
   4. record observations accurately
   5. draw general conclusions from their observations
   6. voluntarily carry out some further activities
3. Equipment: See ASEP "Forces" Teacher's Guide (materials are on the 'Forces" trolley).
4. Plan:

Time	Activity (Method)	(Content) Notes	Check	Objective
7	A. Teacher's introduction	Show pictures of various forces (a la pp. 3-7 ASEP Forces book)	2,1	
3	B. Book distribution Objectives sheet; record books	Allow students to read p.1 - p.7 and browse through books		
10+	C. Activity 1. ASEP Forces pp. 8-9	Distribute equipment. The effect on motion of forces - stretching, squashing, breaking, stopping, deflecting, etc.		3,1
10+ repeated	C. Activity 1. ASEP Forces	Distribute equipment. The effect on motion of forces stretching, squashing, breaking, stopping, deflecting, etc.		3,1
10+	D. Activity 2. ASEP Forces pp. 10-11	Electric and magnetic forces p.11 Further activities on hand for quick workers		3
5=	E. Demonstration	Moving boy, deflected, stopped, pushed by teacher. Collect equipment and put away.		1
5	F. Checking record book answers, notemaking	Answers are on p.103, ASEP Forces Text.	4,5	
3	G. Teacher's summary	"When a force acts on a body, the body may change shape, slow down, speed up or be deflected or spin." "Forces can occur when bodies are in contact or at a distance."	4,5	
43 min.				

5. Evaluation:

   Timing
   Activities 1.
   2.

Demo.

6. Criteria:
   (a) objectives
   (b) motivation
   (c) feedback
   (d) variety of activities

(c) Lesson plan checklist from English subject method – Metro University

LESSON PLAN CHECKLIST

[To be used as a shorthand reminder in conjunction with your lesson plan guide.]

BACKGROUND OF CLASS

- What expectations does this class have about English lessons?
- What is the behaviour of this class generally like?
- What have they already done in English this year?

PRELIMINARY PREPARATION

- How does this lesson fit in to the class's total English program?
- What resources do I need for this lesson?
- What resources/materials does the class need?

STATE LESSON AIMS

- What are my long term aims for this class?
- What do I hope to achieve in this lesson?

(State aims in terms of learning opportunities, not as behaviorist lists)

STARTING THE LESSON

- What does the class need to know?
- How do I make sure they listen?

LESSON PROCEDURE

- Plan your questions in detail (and allow for alternatives)
- Plan when to use the blackboard (and use it continuously as a teaching aid)
- Plan an appropriate balance ("Balanced Diet") of

  - talking
  - listening
  - reading
  - writing activities.

- Allocate time to each activity (and make sure your class knows).
- Plan appropriate monitoring and feedback activities throughout the lesson.

LESSON CONCLUSION

- Summarise where your class has got to (or what they have done/learnt)
- Arrange for the completion or collection of work.
- Restore classroom to its usual arrangement (if furniture has been moved).

EVALUATION AND REFLECTION

- Make sure your supervisor provides you with written comments on your lesson.
- Write your own evaluation of your lesson.
- Make notes for future planning.

(d) Lesson plan format from Geography – Metro University

LESSON PLAN FORMAT: notes of lessons should be set out as follows:

School **Class:**

Supervisor: **Date:** **Duration of lesson:**

Unit Topic:

Lesson Topic:

Intended Learning Outcomes: what do you expect the students to achieve during this lesson? what knowledge, skills values and attitudes are you wanting to develop?

Resources for classroom use: list here reference books, texts, videos etc

Learning Experiences:

Content/Subject matter	Method
should include a brief outline in developmental sequence of:	should describe HOW the lesson is to be developed in order to achieve the learning otcomes set out above and should focus on the **pupils'** activities.
1. main ideas, concepts to be developed;	Method should be divided into the following stages:
2. key questions to be used;	1. Introductory activities: How the lesson is to be introduced, the students motivates and involved etc..
3. resources, av material etc. to be used.	2. Developmental activities: What the students will be doing at various stages throughout the lesson and how you will achieve this. Include an estimate of the time for each step.
	3. Concluding activities: How the lesson will be rounded off, ideas and concepts reinforced etc.. Homework?

EVALUATION

How do intend to assess the students' achievement of the learning outcomes in this lesson? eg through participation in discussion, written work, dramatic or pictorial presentation etc?

LESSON PLAN SELF ASSESSMENT GUIDELINES

	S	N/I	N/A	Comments
Time allocation	☐	☐	☐	
Structure of lesson	☐	☐	☐	
Pace of activities	☐	☐	☐	
Appropriateness of activities	☐	☐	☐	
Explanations	☐	☐	☐	
Questioning	☐	☐	☐	
Content detail	☐	☐	☐	

S = Satisfactory N/I = Needs Improvement N/A = Not Applicable

Things done well:

Things to improve:

Other comments:

(e) Lesson plan format from History – Metro University

LESSON PLAN FORMAT

SCHOOL: ..... Year: .....

SUBJECT: History Number in class:

.....

TOPIC: ..... Length of lesson:

.....

OBJECTIVES

(a) Knowledge:

The students will be able to .....

(b) Skill development:

The students will be able to .....

(c) Values and attitudes:

The students will be willing to .....

The students will appreciate .....

KEY QUESTIONS

A list of the key questions to be asked during the lesson

MATERIALS FOR CLASSROOM USE

(specify)

CONTENT	METHOD
Introduction In content include: • a summary (in point form) of the various components of knowledge to be imparted to students (ie. *what* is the lesson about?) Conclusion	In method include: • Details of activity (ie. *how* will the content be taught?) • Instructions to students • Time estimate for each activity

BOARD SUMMARY

Draw out the shape of the board and indicate how the space will be used

SUPERVISOR'S COMMENTS

(Provide at least one page)

SELF EVALUATION

Reflect on your lesson.

- Note the things that succeeded and the things that needed to be changed
- Add any ideas that you have for improving the lesson

(f) Lesson plan formats from Mathematics method – Metro University

LESSON PLANS

BACKGROUND KNOWLEDGE

Summarize the background which students posses prior to the lesson, particularly work done in the previous period or assigned homework. Only background pertinent to your topic need be mentioned.

AIMS AND OBJECTIVES

Exactly what do you hope that your students will be able to do by the end of the lesson? To what degree of difficulty? Should your aims be different for some students? Are your aims only of the knowledge and skill type? After considering the above, list your objectives (probably 3 or 4) in terms of student behaviour.

CONTENT

A list of points to be covered in the order they will be covered. This could be used as a summary of the lesson.

EQUIPMENT AND RESOURCES

Any equipment required, textbooks or hand outs used should be listed and copies attached where appropriate. A blackboard summary should be included.

METHOD

This section should include the details of what is planned for the lesson. It should be a step by step outline of how you think the lesson will proceed including explanations (not word for word), worked examples organizational considerations, timing of the lesson etc.

The following points should be considered.

Explanation	What makes a good explanation? How might you use aids like the chalkboard, O.H.P., models etc.? Attention span of these students? What questions will maximise participation? WRITE THEN COMM Might a written handout be a better approach?
Activities	For how much time will the students be active rather than passive? How many of their senses will be used? Is the lesson monotonous? Could an outdoor component be used?
Exercises	Is there a sufficient range of difficulty for all the students? Is there anything as well as, or instead of, the textbook type of problem e.g. puzzles, games etc.
*Organization	How are you going to arrange distribution of handouts? What arrangement of the furniture do you want? Are charts large enough to be seen at the back of the room?

MAJOR DIFFICULTIES ANTICIPATED

What organizational problems are likely to arise?
Where will the likely difficulties with understanding of content occur?

STUDENT EVALUATION

Outline how you will test whether the students have achieved the objectives you set for them. Maybe this will be by oral questions, observation of students working, correction of student exercises, etc.

EXTRA ACTIVITIES

What extra activities are you going to have for the fast worker?
Are you going to set homework?

SUPERVISING TEACHER'S COMMENTS

Leave space for your supervisors comments.

SELF EVALUATION

Consider the following points as soon after completion of the lesson as possible. A written self-evaluation often helps you to clarify your thinking (five or six lines is usually sufficient).

(1) whether or not the work you planned fitted the time available.

(2) Any modifications to your approach in the light of experience.

(3) Any points the pupils were slow to appreciate and why.

(4) Points you would wish to revise at the start of a subsequent lesson.

(5) Were there any distracting personal mannerisms?

(6) Achievement of objectives, was this accomplished?

(7) What was the most important new thing you learnt in this lesson?

Appendix 11: Samples of first simulated planning tasks

(a) Tony and Maths group's first simulated task on Mathematics

First attempt after the first teaching round

Subject : Mathematics
Year Level : Year 8
Unit Topic : Percentages
Lesson topic : Introduction to percentages (from General to specific)
Sequence on topic : A 50 minute first lesson on the topic
Text/teaching materials : Driver, McLeod, Ganderton (1992). *Maths Alive 8*. Melbourne: MacMillan.

Exact layout of lesson plan presented on completion

Intro

General → Specific case

1. Does anyone know how to explain the meaning of percentage?
2. Elicit answers from class
3. Yes class. Percentage means 'a fraction out of one hundred'
4. Use the pie chart model various percentages

meaning of %

Obj:

At end of lesson, students should be able to

1. understand meaning of %
   individual specific examples
2. change % to fraction
   including cancolling [counseling]

Teacher objectives

1. Survive
2. Teach maths
3. Manage time effectively
4. "Assess" students' learning

Pie chart concept

3 ply or propose

100 markings around circumference

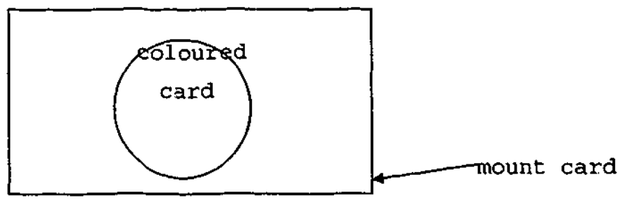
hole in middle to mark centre

(x 6)

Groups of four

need: scissors, disk, coloured card, 1 x plain card, black pen.

Each group given different % to display



30 %

Students need to count markings to find percentage

Relates area to numbers in hand on + visual way.

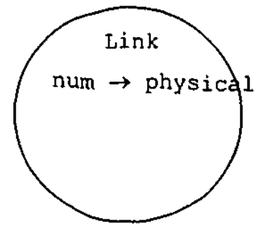
Ideas

pie chart - colour 1/2 hour

sporting scores - cricket?

humidity

interest rates



2 concepts

make coloured picture art"

make physical model "string

2 concepts per/cent

(b) Saran and Science group's first simulated planning task on Science

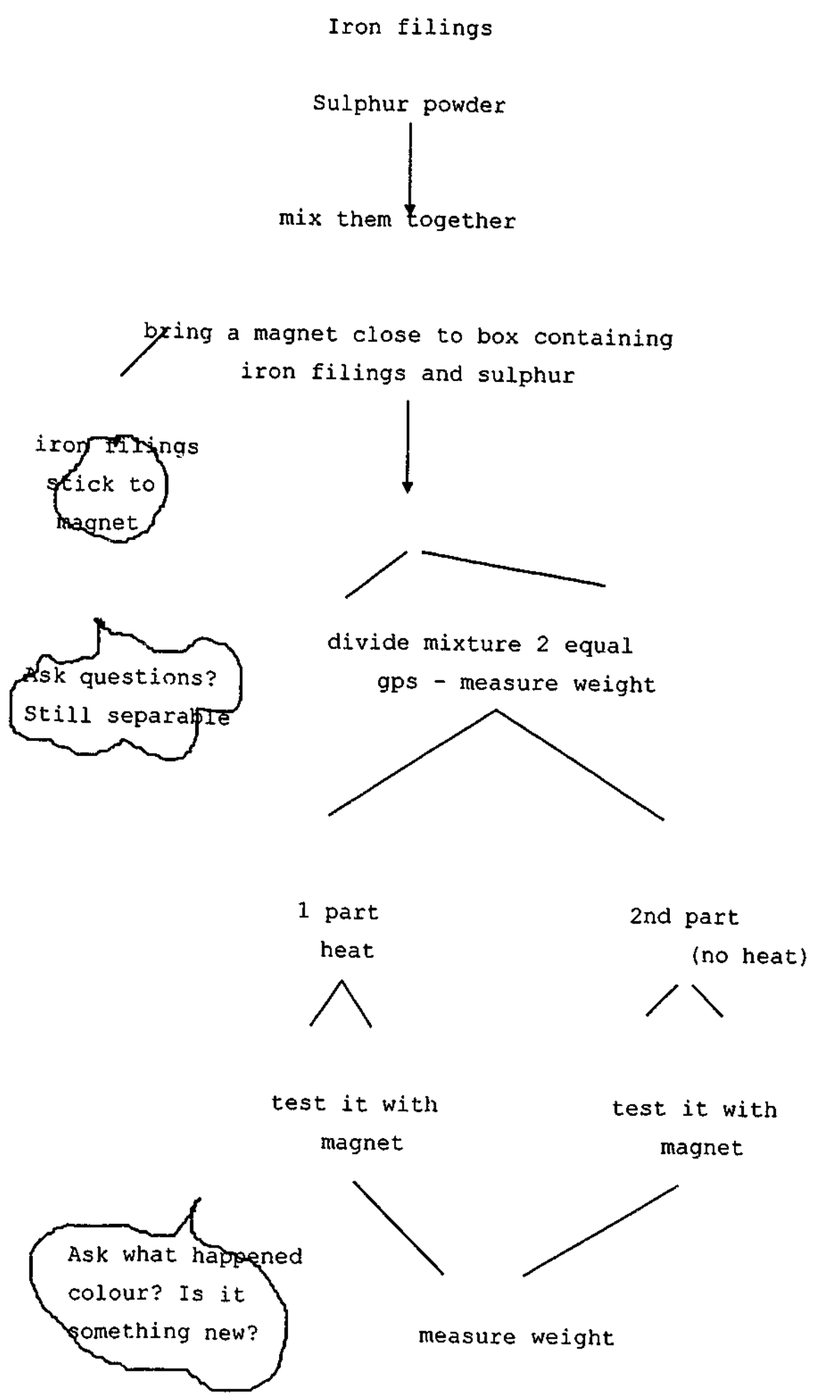
First attempt after the first teaching round

Subject : Science
Year Level : Year 9
Unit Topic : Molecules and ions
Lesson topic : Introduction to molecules and ions
Sequence on topic : A 50 minute 1st lesson on the topic
Text/teaching materials: Parsons, James (1996). Outcomes Science 3 Melbourne: Heinemann.

Exact layout of lesson plan presented on completion

Time		
15 mins	Demonstration & discussion	Iron + sulfur → $FeSo_4$ Atoms → compounds ↑ mixture separated by magnet
15 mins	Handout/ Board work	<u>Questions</u> What was the atoms/compounds in this demonstration? Defining terms compounds molecules Looking at other molecules/compounds H_2O H_2 N_aCl etc metals etc Discuss properties etc.

Handout



(c) Jenny' first simulated planning task on History

First attempt before first teaching round

Year level : Year 8
Subject : History
Unit Topic : The Crusades
Lesson Topic: : Beginnings of Crusades
Sequence in topic : A 50 minutes first lesson of the topic
Text/teaching materials : Guest et. al Discovering the Medieval World Ch 4 Queensland: Jacaranda Press

Exact layout of lesson plan presented on completion

Yr 8 - 50 minutes

Materials: Handouts with one side - Peace and Truce of God
2nd side - Pope Urban's Speech
Pictures of knights, Vermont etc.

Beginnings of Crusades

Objective - Students to consider reasons why crusaders embarked on Crusades

- Open question session - What are crusades? Gauge student knowledge (if any) on subject
- Write responses on board

5 min.

- Give definition of Crusades and dates of 1st - 4th Crusades

5 min.

- So why did the first Crusade start?
-Briefly describe Peace and Truce of God, give shortened handout

10 min.

Question:
What does this tell us about the behaviour of medieval knights?
Why do you think the church wanted to control this behaviour?

- Church answer was Call to Crusade.
Turn over handout. Read Urban II's speech together. Clarify any problems that may arise.

10 min.

Group Activity - 20 min.
Groups of 4-5 students. Design a propaganda poster calling to Crusade (Provide some pictures etc.) using the reasons Pope Urban gives.

- End of record -

(d) Rachel's first simulated planning task on Mathematics

Record of lesson planning task

First attempt before first teaching round

Year level : Year 8
Subject : Mathematics
Unit Topic : Percentage
Lesson Topic: : Estimating percentage
Sequence in topic : First lesson of the topic
Text/teaching materials : Phillips. G. Heinemann Mathematics 8 Ch 4

Exact layout of lesson plan presented on completion

Topic: Estimating Percentage

Aims:
1. Introduce concept of percentage as a unit of measurement
2. To apply knowledge of percentage to daily life

Assumptions: Already know fractions

Plan

1. Introduction: what is a percentage, daily use 2 mins
2. Estimation without prior knowledge 4 mins
3. Break down percentage into units, using class estimate 7 mins.

Description

1. Intro:
(a) Ask the class if they know what a percentage is. Get them to give an estimate.
(d) Show newspaper/tests/sale advertisement or showing the use of

percentage in society
(c) Ask them if the[y] have seen anything at home, school, shopping etc that uses percentages.
(c) Explain percentage as like fraction 50% is a portion of 100%. Just as .5 is only a portion of 1.

2. Have a glass half full of water - get them to estimate percentage. Have a square object cut into 70%, 30% (or any percentage level). Estimate -
From this you can gain perception of how well the understanding is.

3. Look at how 100% can be broken into equal amounts of 10. Introduce concept that by working out how many multiples of ten their are you can ascertain %. Example with square object. Draw line down middle, then split each session into 5 positive equal parts. Get them to check %. Were they close. Do this also with a circle shape. Having explained that % are like fraction. A circle is less confusing to deal with.

Need

1. Whiteboard marker
2. Glass with water
3. Square object

Outcomes

- Be able to give estimates and percentage involving shaded objects.

- End of record -

(d) Susan's first simulated planning task on Geography

First attempt before first teaching round

Year level : Year 8
Subject : Geography
Unit Topic : Introduced species
Lesson Topic: : Case Study - Problems of introduced species
Sequence in topic : Identified as the second lesson in the unit
Text/teaching materials: Geography around us Book 2

Exact layout of lesson plan presented on completion

Year8
Unit Topic Introduced Species

Lesson Topic - Case Study - Problems of introduced species

Learning Objectives

- Knowledge

- identify the specific problems associated with one introduced plant or animal species
- identify where the problem occurs

discuss possible solutions

- Skill

- work effectively in small groups
- analyse a problem and,
- suggest appropriate solutions
- justify the solution chosen
- gain information from written, visual and oral sources.

- Value and Attitudes

- gain an appreciation of...

Resources

- Geography Around Us

- Information from the Internet
- Newspaper articles
- Slides of Introduced species
- Envelopes

Content	Time	Method
Learning Experiences		
Introduction		
Q. What were some of the problems caused by introduced species we came up with last 5 lesson?		1 Show slides of introduced species 2 Briefly call for and prompt 5 responses to q. and write pts on board 3 Explain today's lesson (give instruction)
Exploratory Activities	10	
Q. What problems do the introduced species cause?		1 Divide class into 5 groups of 5, hand out an envelope to each group about a different Int.species 2 Group to each read or look at and swap article or picture
	10	3 Group to discuss problems and form list
Q. Where does this problem occur?	5	Group looks at map and describes where problem occurs
Q. What are some possible solutions?	10	Group is given second envelope with text on strips of paper - they must sort the text into groups of solutions under headings given
Conclusion		
Q. Which solution would you choose and why(*)?	5	Teacher summarises what groups should have done so far and sets homework q.(*). Students to write a

few paragraphs about which solution they would choose and share with group next lesson ready for group presentation

Group 1 Blackberries

- short text explaining problem from -- text book, Internet, newspaper
- map showing where problem is
- extracts of text suggesting possible solutions
- pictures of introduced species and problems it causes
- work sheet with headings and place to stick solutions (1 each)

Group 2 Paterson's Curse
as above

Group 3 Prickly pear
as above

Group 4 Cane toads
as above

Group 5 Rabbits
as above

- End of record -

Appendix 12: Samples of second simulated planning tasks

(a) Saran and her group's second simulated planning task on Science

Second attempt after the PGDE course

Subject : Chemistry
Year Level : Year 9
Unit Topic : Molecules and ions
Lesson topic : Introduction to molecules and ions
Sequence on topic: A 50 minute 1st lesson on the topic
Text/teaching materials: Parsons, James (1996). Outcomes Science 3 Melbourne: Heinemann.

Exact layout of lesson plan presented on completion

Objectives

At the end of the lesson, students should be able to

- define elements, molecules, compounds and ions
- give examples (simple) for each group
- state how elements and molecules differ
-
- state how molecules and ionic compounds differ
- understand that in matter there are spaces between molecules

Materials

- Material for experiment
- Molecular models of water, nitrogen, lattice structure of sodium

Lesson plan

Introduction: Relate to previous lesson on atoms
(7 min)

You have learnt that all things are made of atoms, are all the atoms alike? differ?
How are they different?
Make sure they talk about protons, neutrons & electrons

at the end of intro
Heading on board - Joining of atoms
define molecule, ions, compounds, elements ions on board with partial gaps.

Students copy partially notes (7 min)

Student (one) reads aloud
Teacher stops at certain points help them fill their notes (10 min)

from picture students are asked to give examples for each definition

Molecular models asked them to build (5 min)

Expt - Intro what expt shows (5 min)
(15 min)
Asked student to participate

Conclusion - Ask students summarise key points

(b) Tony and his groups' second simulated planning task on Mathematics

Second attempt after the PGDE course

Subject : Mathematics
Year Level : Year 8
Unit Topic : Percentages
Lesson topic : Introduction to percentages
Sequence on topic : A 50 minute first lesson on the topic
Text/teaching materials : Driver, McLeod, Ganderton (1992).*Maths Alive 8*. Melbourne: MacMillan.

Exact layout of lesson plan presented on completion

School: Topic: Date: Time:

1. Intro
- Revision - fractions
  - Ex. 1/2 of 10 =
  1/4 of 20 =
- Fractions out of 100 1/2 of 100 = ?
  1/4 of 100 = ?
- Elicit meaning of percent

5 mins

Def^{n} Fractions out of 100 are given as percentages
We use % to denote percentage i.e. per 100

Students will write in book the definition
Fractions → Percentage ~ 20 mins.
- Class practice.

Assorted exercises from Ex 8A

Assess level of student comprehension by monitoring progress of written work.

Percentage to Fraction - What does 34% mean?

- Yes 34% means 34 out of a hundred

  How do you write 34 out of a hundred as a fraction?

  Yes, that is right, 34% = 34/100.

  Can we write this fraction in a neater way?

  O.K. $34\% = 34/100 = \frac{\cancel{2} \times 17}{\cancel{2} \times 50} = \frac{17}{50}$

- *How would you write 67% as a decimal fraction?*

  O.K., what does 67% mean?

  That is correct. 67% means 67/100.

  How do we write this fraction as a decimal?

  Correct. 67% = 67/100 = .67.

  ~ 20 mins.

- *Class Practice. Selected Exercise from page 178*

- ~ 5 mins.

(i) Assign 10 mins of H/W.

(ii) Student record H/W in diaries

(iii) Student pack up, ready to leave classroom.

(c) Susan's second simulated planning task on Geography

Second attempt towards the end of the course

Year level : Year 8
Subject : Geography
Unit Topic : Introduced species
Lesson Topic : Pets
Sequence in topic : Identified as the first lesson in the unit
Text/teaching materials : Geography around us Book 2

Exact layout of lesson plan presented on completion

Lesson Plan

Class details

Topic - introduced species / PETS

Lesson aim - For student to develop an informed opinion about the best way to limit environmental damage caused by domestic pets

Resources - Text book / handout / Tape recorders, tapes, view point cards

Intended Learning Outcomes

* Knowledge - what effect do pets have on the environment
  - How do pets become a problem
  - what different views do people hold about the issue

*Skills - drawing
  - active group work
  - obtain info from visual, written forms

- highlight key info
- role play - see a situation from someone else's view
- present an argument in oral form

* Values / attitudes - appreciate the opinions and views of others

Evaluation - Tape recordings, questioning, group work

Learning experiences

Question	Activity	Timing
What picture do you already have about cats & dogs in your environment?	Make a sketch of a day in the life of your cat/dog (or one you can think of). Include what the pet does during the night & the day.	5 mins
	Form small groups to share your sketch - make a list of the things the pets do.	5 mins
	All group answers drawn together by teacher on board. (Discuss anything listed that impacts on the environment).	5 mins
What do our pets do to the environment?	Explain that we do not follow out pets all day/night (esp cats) & we might be surprised if we knew what they were doing. Use a series of slides/colour overheads to show different pictures of a pet's activities. Images shown of cats chasing penguins at Phillip Island, hunting Lyrebirds in	10 mins

	Sherbrooke Forest etc. Discuss images with class. Provide class with a handout which outlines the problems caused by pets - allow reading time & ask class to highlight the potential problems & add any of their own ideas in the space at bottom	10 mins
What should be done about these problems? Should people be allowed to have pets? Should pets be allowed outside at night? What should be done to minimize the impact of pets on the environment?	Class divided into groups of 4 and given different roles. The class is going to put together a talk back radio program about the issues of pets impacting on the environment. Each group is going to record a response to the questions asked from the point of view given to them one a card. Different points of view include: - a ten year old boy who owns a cat - an 80 yr old lady who lives alone with a cat - a National Park officer - a local Council member - someone who belongs to a group who protects native birds - the RSPCA Group given time to discuss answers and record them on tape. Teacher takes tapes away & edits them so it	15 mins

sounds like a talk back radio program. Tape played in next class & used to bring out different views & help students evaluate arguments

d) Jenny's second simulated planning task on History

Second attempt towards the end of the PGDE course

Year level : Year 8
Subject : History
Unit Topic : The Crusades
Lesson Topic : Beginnings of Crusades
Sequence in topic : A 50 minutes first lesson of the topic
Text/teaching materials : Guest et. al Discovering the Medieval World Ch 4 Queensland: Jacaranda Press

Exact layout of lesson plan presented on completion

Lesson Plan Year 8 50 minutes

Introduction to the Crusades

Knowledge objectives:

The student will

- know what is meant by the term "Crusade"
- have some understanding of the geographical locations involved in the waging of the first Crusade e.g. distance, terrain, etc.
- discover some of the reasons put forward by the Crusaders for going on Crusade

Skill objectives:

The student will be able to:

- read a map & measure distances to scale
- read and comprehend a primary source document

Values objectives:

Students will be willing to:

- compare the values and religious beliefs of the Crusaders with their own
- attempt to understand some of the factors which motivate

people to go to war

Materials required:

Map of route of the 1st Crusade | Textbook
Copy of Pope Urban's speech |

CONTENT	METHOD
What is a Crusade?	Ask students what they understand as being meant by the term "Crusade" Give students a couple of minutes Individual "think time" to write down their ideas Break into groups of about 5. Write/draw on a large piece of paper what the group thinks "Crusade" might mean

→ I would be reluctant to give them too much time on this, depending on students' knowledge they may know nothing or a great deal. This activity would give me the opportunity to discover what (if anything) students have heard/read/seen about the Crusades & may point out any misconceptions as well)

	Working from the info. given by the groups, try to clarify → the idea of "holy war" → Time frame - (middle ages 1095, 30 yrs after Norman invasion) →Christian vs Muslim.
Where did the Crusades take place?	Using the map of Europe on an O/H projector, point out countries. Question the students on what certain regions are like - e.g. Arabian countries, deserts,

	mountains - draw on any knowledge from geog. or Yr 7 History (Greece, Roman Empire etc.) Use an overlay to show the route of the 1st Crusaders Ask students to use a ruler & the scale to measure the distance from Verdun to Jerusalem. Compare this distance with Australian distances e.g. Sydney → Perth
How did the Crusaders get there?	Open question to class - note suggestions on board. Point out that the majority of Crusaders were on foot.
Key Question: What would it take to get you to go to war? What reasons would you need to walk all this way to fight an enemy?	Class discussion Try to ascertain what motivation (if any) would be necessary for students to take such action.
Pope Urban II's speech at Clermont	Class to read Urban's speech to try to discover some of the reasons why 50000 men, women & children set off on 1st Crusade See questions to answer individually in textbook p. 57)
Conclusion	Develop a class list from response (on the board) of reasons for crusading Next lesson: Discussion of any other reasons the class can think of (they could have a think about

this in their own time).
What do these reasons tell us about medieval society? How different is it from our own? etc.

(e) Rachel' second simulated planning task on Mathematics

Second attempt towards the end of the PGDE course

Year level : Year 8
Subject : Mathematics
Unit Topic : Percentage
Lesson Topic: : Estimating percentage
Sequence in topic: First lesson of the topic
Text/teaching materials : Phillips. G. Heinemann Mathematics 8 Ch 4

Exact layout of lesson plan presented on completion

TOPIC: PERCENTAGES

AIM: INTRODUCE CONCEPT OF PERCENTAGES TO STUDENTS AND ENHANCE ABILITY TO ESTIMATE PERCENTAGES

What do I want to cover?

- What is a percentage?
- How is it used?
- Where do we find percentages used?
- How can we estimate percentages?

METHOD

1) Open class up to discussion on what percentage is? Try to get the students to come up with examples of percentages - e.g. 50% of class is 14 yrs. (Their books should not be open). Through discussion we can look at and define the first three dot points listed above. At conclusion of discussion students will agree on definitions/written statements relating to above dot points. Will not tell them if correct.

2) Have examples and percentages from newspaper/products. In pairs students have one or two. The above statements apply to this percentage (METHOD & CHECKING THEIR THEORIES).

3) As a group, find a variable we can calculate a percentage - relating to our class - e.g. age. Students organise a method of noting/ordering percentages. Throughout process timing to determine percentage of say 14 yrs in class. Might have to move chairs graphically notating/representing data. This will then lead on to section in text estimates percentages.

4) Set students to work on exercise 4A in text. Having given another example (from text). Do questions 1, 2, 3, 4 a/b/e/i/h, 5

5) Extension work question 7, 8

6) Homework - completion of exercise to question 5
Collect as many examples of percentages on packaging from your home. Note down what and on what.

CONTENT

1. Intro to percentages / discussion
2. Examples within world
3. Evaluation of class percentage for 14 yrs olds
4. Ex 4A

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