Learning Strategy Use of Chinese PhD Students of Social Sciences in Australian Universities

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Extensive research into students’ learning strategy use in classroom settings has convincingly established that effective use of learning strategies enables learners to take responsibility for their own learning, promotes learner autonomy, and positively relates to students’ academic performance. However, little research has systematically examined the learning strategy use of PhD students. Consequently, relatively little is known about how students carry out their doctoral learning, in which learner autonomy is of paramount importance. Even less is known about Chinese PhD students in Australian universities and how they cope with independent doctoral study. Few investigations have explicitly focused on the learning processes of this student cohort, and anecdotal evidence has often described Chinese school and university students as passive, dependent and reproductive learners, even though empirical studies assert otherwise.

To better understand the learning processes of Chinese PhD students in Australian universities, this study examines their learning strategy use and the factors influencing their application of learning strategies. Using qualitative research methods, which focused on understanding the phenomenon from the students’ perspectives within the context, this study collected interview data from a group of Mainland Chinese PhD students of social sciences. Computer assisted qualitative analysis was performed to provide an in-depth, grounded understanding of the students, their interactions with the learning environment, and their learning processes.

This study shows that the investigation of learning strategies is a powerful tool to reveal how PhD students develop autonomy in the doctoral learning process. The results show that the students adopted a range of learning strategies to improve their learning efficiency, to enhance their self-teaching, and to facilitate development of their research competence. Despite the commonalities in their learning strategy use, the students exhibited significant individual differences in applying specific learning strategies, which were determined by their personal qualities, their perceptions of learning contexts, and the demands of the research tasks. This reveals the idiosyncrasies in the learning behaviours of this group of Chinese students and their learner autonomy.
This study demonstrates that theoretical and methodological preparation for PhD study was the most significant influence on the students’ learning experience. By applying effective learning strategies, the students who encountered problems of theoretical deficiency, insufficient methodological knowledge, and underdeveloped research skills were able to develop their knowledge and enhance their research competence through the actual process of doing the research. Nevertheless, it appears that methodological training and support were needed to assist them in further enhancing their learning efficiency.

The findings of this study reveal that this group of Chinese PhD students were autonomous learners and their application of learning strategies was a result of dynamic interactions between their personal variables and the contextual demands. This study lends support to the argument that, in cross-cultural settings, it is constructive to develop a contextualised understanding of students’ learning behaviours. Furthermore, from the students’ perspective, supervisors who understand them as individuals at the personal level are better able to assist them in learning.

Within the stated limitations, this study recommends that future research on Chinese PhD students’ learning strategy use incorporates the perspectives of both students and their supervisors and involves their counterparts from other ethnic backgrounds in order to further understand the effects of cultural differences on their learning strategy use.
STATEMENT OF ORIGINALITY

I certify that this thesis is the result of my own research, except where otherwise acknowledged. I also certify that this work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

Signed: ..........................................
       Chunyan Yang

Date: ............................................
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Chapter 1 Introduction

1.1 Background of this study

There has been a steady and substantial growth in the number of international students in Australian universities since the late 1980s (Department of Education Training and Youth Affairs [DETYA], 2000, 2002a, 2002b; Neumann, 2002). Government statistics show that since 1994, Mainland China has been one of the top ten source countries providing international students to Australia (Australian Education International [AEI], 2001a). For example, during the year 2001, 11.5% of the international students studying in Australia were from Mainland China. This is indicative of Mainland China being “Australia’s number one source country for international students” (AEI, 2001b). With regard to research higher degree (RHD) students, 47% of the Overseas Postgraduate Research Scholarship Scheme (OPRS) students commencing in 1994 were from Mainland China (Grigg, 1996). Furthermore, in the sector of PhD programs, Mainland Chinese students comprise the largest group of international students (AEI, 2000; 2001a).

Despite the significantly high percentage of Mainland Chinese PhD students among the international RHD students in Australia over the past 20 years, the learning processes of this particular group of students have not been systematically investigated, although substantial studies have been done with school or university coursework students from Asia, including ethnic Chinese (Chalmers & Volet, 1997; P. S. C. Chan, 1999; Kember & Gow, 1990, 1991; Smith, 2001; Watkins & Biggs, 1996, 2001b; Watkins, Reghi & Astilla, 1991; Zhang & Watkins, 2001).

The literature on Asian students presents different, and at times contradictory, descriptions of the ways in which they approach their learning. Anecdotal evidence tends to negatively stereotype Asian students as passive, dependent, and reproductive and rote learners (Ballard, 1995; Ballard & Clanchy, 1997; Samuelowicz, 1987). However, empirical studies (Biggs, 1991, 1996; Chalmers & Volet, 1997; Kember & Gow, 1991; Watkins, Reghi & Astilla, 1991) challenge the negative stereotypes and strongly suggest that Asian students use deep and achieving approaches (Biggs, 1987) at a higher level than their Western counterparts.
The studies cited above have significantly enhanced our understanding of Asian students. However, the differences between highly directed and structured school or undergraduate curricula and the open and negotiable work of postgraduate research (Phillips & Pugh, 1987, 2000) suggest that it is worthwhile to investigate the learning processes of Chinese PhD students in their own right. The rationale is that learning contexts have significant influences on students’ learning (Biggs, 1999; De Corte et al., 2003; Entwistle & Smith, 2002; Ramsden, 1988).

Research suggests that postgraduate studies require students to exhibit “more deep-level processing, more self-regulated learning and higher levels of critical thinking” in comparison with students at undergraduate level (Vermetten, Vermunt & Lodewijks, 1999, p. 222). Learners’ autonomy underpinning such processes is most emphasised in doctoral learning (Johnson, Lee & Green, 2000; Phillips, 1994; Ryan & Zuber-Skerritt, 1999). Research in the last decades involving local PhD students in Western countries consistently shows that the inability to research independently contributes, to a large degree, to the persistent problems of the world-wide low completion rates and prolonged completion times of PhD students in social science disciplines (Australian Vice-Chancellors’ Committee [AVCC], 1990; Buckley & Hooley, 1988; Golde, 1998; Kehrhahn, Scheckley & Travers, 2000; Lovitts, 2001; Lovitts & Nelson, 2000; Martin, Maclachlan & Karmel, 2001; Rudd, 1985; Tinto, 1993). In such a context, how do Mainland Chinese PhD students cope with their doctoral studies? What are the factors which facilitate or constrain their learning at the doctoral level? These questions have not been adequately addressed in the literature.

The findings of studies concerning international doctoral students from non-English speaking backgrounds suggest that these students tend to face the difficulties caused by English language deficiency and adaptation to an academic culture which emphasises critical thinking and analytical skills (Aspland, 1999a, 1999b; Belcher, 1994; Cadman & Ha, 2001; Farquhar, 1999; Maheshwari & Malfroy, 2001; Parry & Hayden, 1994; Smith, 1999). Moreover, the different learning styles and approaches that these students have developed in their previous educational experiences and their inadequate background knowledge of the discourse in the new educational contexts are considered to be other major causes of their problems (Ballard & Clanchy, 1997). However, to enhance the learning of international students, it is argued that
identifying problems is not sufficient; rather, it is important to understand what these students do in their learning (Biggs, 1997, 1999, 2001, 2003), which provides the keys to solving problems.

To understand what students do in their learning it is important to look into their learning strategy use. Learning strategy research has shown that independent learners know and appropriately apply a wide range of learning strategies to manage their own learning (Winne, 2001). In addition, the use of learning strategies enables students to take responsibility for their studies and thus promotes learner autonomy (Clifford, 1999; Weinstein, 1987; Weinstein & Van Mater Stone, 1996). Empirical evidence further shows that the use of appropriate learning strategies has a positive effect on academic achievement (Entwistle, 2002; Hattie, Biggs & Purdie, 1996; Tait & Entwistle, 1996; Zimmerman, 1998; Zimmerman & Schunk, 2001). These findings suggest that investigation of students’ application of learning strategies provides insights into the nature of their learning. Such insights are likely to enrich the understanding of how students operate in a particular learning context, given that learning strategies are influenced by both personal and contextual factors (Biggs, 1984; Entwistle, 2002; Ramsden, 1988; Richardson, 2000; Vermetten, Lodewijks & Vermunt, 2001; Vermetten, Vermunt & Lodewijks, 2002).

Nevertheless, the emphasis on understanding students’ use of learning strategies has not been taken up by research on international PhD students, as indicated by the fact that only a limited number of studies have paid special attention to the learning experience of international research higher degree (RHD) students with an interest in their supervisory relationships (Aspland, 1999a; Cadman & Ha, 2001; Maheshwari & Malfroy, 2001; Ryan & Zuber-Skerritt, 1999) and acculturation (Cadman, 2000; Ingleton & Cadman, 2002). This study was designed to address the research gap by examining the learning strategy use of Mainland Chinese PhD students of social sciences in Australian universities.
1.2 Research questions

The aim of this study is to investigate the learning processes of Mainland Chinese PhD students of social sciences in Australian universities, by examining their learning strategy use. Two research questions are derived from the research aim:

1) What learning strategies are used by Mainland Chinese PhD students of social sciences in Australian universities?
2) What are the factors which contribute to their learning strategy use?

In line with the research questions, this study will first identify the learning strategies used by this group of students to obtain a descriptive understanding of how they go about their doctoral studies in the Australian academic context. Next, the analysis of the factors relevant to their learning strategy use will explain why and how such strategies are adopted and illustrate how these students interact with the learning environments.

Given the discussed research focuses, it is worthwhile to note that this is not a comparative study. In other words, it is not intended to compare the learning strategy use of Mainland Chinese PhD students and that of students from other backgrounds but to obtain an in-depth understanding of how this particular group of students undertake their doctoral studies in Australia. This limitation is expected to make the thesis manageable.

1.3 Theoretical basis of learning strategy research

The emergence and development of learning strategy research has been boosted by the changed perceptions in the mid-1900s of the role that learners play in educational processes. Such a change was a result of the shift from behaviourist theories to cognitive theories of learning in educational psychology (Weinstein & Mayer, 1986). Before the mid-twentieth century, instructional psychology was dominated by behaviourism, which describes learning as a process of responding to stimuli (De Corte, 1996; Jarvis, 2002; Mayer, 1996; Weinstein, 1988). From the behaviourist perspective, learners passively respond to the materials provided by teachers and are
expected to learn automatically by “being exposed to the right teaching methods or curriculum” (Weinstein & Underwood, 1985; Weinstein et al., 1979, p. 45).

In this model, as “passive recipients of rewards and punishment” (Mayer, 1996, p. 32), learners are perceived to play a very limited role in teaching-learning processes, and to have little power to control their own learning (Weinstein & Underwood, 1985). Therefore, with an intention to enhance the quality of student learning, educational research efforts in the past were made almost exclusively to improve various aspects of teaching practice and environment, such as curriculum design, instructional modes, and speed and sequence of instruction (Dansereau, 1978; Weinstein et al., 1979). However, research in such a direction generally did not result in the expected improved effectiveness (Dansereau, 1978; Weinstein, 1978), and “contributed little to our knowledge of how to facilitate a learner’s ability to develop and utilize effective and efficient learning strategies or intellectual skills” (Weinstein, 1978, p. 31).

The situation has changed since the “cognitive renaissance” in psychology in the 1960s (Hunt & Ellis, 2004, p. 15). Interest in studying the mind was resumed after being interrupted by the triumph of behaviourism in the early 1900s; people started to “believe that human behavior could not be adequately described without including mental processes” (Hunt & Ellis, 2004, p. 15). The fundamental contribution of cognitive psychology to education was that learners were recognised as “information processors” and “sense makers” (Mayer, 1996, p. 31), or “the builders of their own knowledge” (Resnick & Collins, 1996, p. 377), rather than “passive recipients of rewards and punishment” (Mayer, 1996, p. 32).

As active educational participants, learners interpret, process and synthesise “the information from the outside environment and from their own thinking processes” in complicated and idiosyncratic ways to construct new knowledge which is meaningful for themselves (Meyers & Jones, 1993; Weinstein, 1978, p. 53; Weinstein et al., 1979). Therefore, learning outcomes are determined, not solely by how and what information is presented to learners, but by how learners process the information received (Weinstein & Mayer, 1986). In other words, learners have more responsibility for their own learning than their teachers. Influenced by cognitive psychology, the focus of educational research and practice has gradually shifted from
concentrating on teaching and teachers to learning and learners (Weinstein et al., 1979). However, this change has not yet significantly taken place in the research on doctoral students, as the discussions in Section 2.4 will illustrate.

The conceptual change of the learners’ role in educational processes refocused the research interest on to students’ information-processing capabilities (Weinstein et al., 1979). Individuals’ ability to use learning strategies was believed to be critically responsible for the differences in their academic performance (Dansereau, 1978; Weinstein & Underwood, 1985). This premise has promoted the research of learning strategies since the late 1970s. Initially, the research attention, by and large, was placed on training learners to use learning strategies and evaluating the effectiveness of learning strategies (e.g., McCormick, Miller & Pressley, 1989; O'Neil, 1978; O'Neil & Spielberger, 1979; Pask & Scott, 1973; Pressley & Levin, 1983a, 1983b; Weinstein, Goetz & Alexander, 1988). The participants in the training programs were predominantly school, college or undergraduate students. Furthermore, the strategies that were taught or evaluated in earlier studies were mainly prescribed by the researchers based on personal experience or relevant cognitive theories of learning, rather than elicited from learners themselves (Weinstein, 1978; Weinstein & Underwood, 1985). What challenged the effectiveness of such training was the empirical finding that the learning strategies actually being used by students were sometimes very different from those “described in the literature or devised by experts on learning” (Chissom, Iran-Nejad & Burry, 1989, p. 2). Of the earlier strategy training programs, the study by Weinstein, Underwood, Wicker, and Cubberly (1979) was a distinctive exception. They developed their program on the basis of the strategies collected from effective learners by means of semi-structured interviews.

Along with the research on learning strategy training, there has been a strong growth in the studies which focus on identifying the learning strategies used by students (e.g., Braten & Olaussen, 1998; Derry, 1990; Halbach, 2000), investigating students’ use of learning strategies in varied contexts (e.g., Glenda Anthony, 1994; Carr & Jessup, 1995; Chalupa, Chen & Charles, 2001; Chamot, 1987; Chen, 2002), and examining the variables which influence students’ learning strategy use (e.g., Ablard & Lipschultz, 1998; Arbreton, 1998; Bartlett, 2002; Bembenutty & Zimmerman, 2003).
The cognitivist perspective underpinning learning strategy studies shows that: First, learning occurs when learners construct meaning through the interaction between their prior knowledge, the new information that they receive, and their learning activities. Second, the ability to monitor and regulate learning performance is critical for students to control their own learning. Third, motivational factors (e.g., goals, expectancies and beliefs), in addition to cognitive abilities, have significant influence on student learning. Fourth, social interaction essentially contributes to students’ knowledge construction and cognitive development. Lastly, strategies need to be understood within the context in which they are applied (Bruning et al., 2003).

### 1.4 Definition of learning strategies

Learning strategies have been defined and interpreted in varied ways. Given that it is not feasible to provide an exhaustive collection of the definitions or interpretations, this review is intended to selectively examine a number of definitions (as listed in Table 1.1) with an aim to understand the nature of learning strategies and thus to identify a definition which is pertinent to this study.

**Table 1.1 Selected definitions of learning strategies**

<table>
<thead>
<tr>
<th>Year &amp; source</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1972 Pask and Scott (1972, p. 218)</td>
<td>Learning strategies were defined with relation to a learner’s mental competence which reflect[s] an individual’s cognitive style and lead[s] him [sic], in free learning conditions, to prefer a certain type of strategy, i.e., to direct his [sic] attention in a specific way to different parts of a learning task, to ask specific sorts of questions, to assimilate material by specific types of “self explanation” and to pose specific sorts of hypotheses.</td>
</tr>
<tr>
<td>1974 Gagne (1974, p. 4)</td>
<td>Learning strategies refer to] skills of self-management that the learner acquires, presumably over a period of years, to govern his own processes of attending, learning, and thinking.</td>
</tr>
<tr>
<td>1977 Travers (1977, p. 448)</td>
<td>The procedures [observable or internal] for solving classes of problems are referred to as problem-solving strategies. Different individuals may acquire different strategies for solving problems as they pass through life and hence may show different approaches to solving the same problem.</td>
</tr>
<tr>
<td>1978 Rigney (1978, p. 165)</td>
<td>Cognitive strategy will be used to signify operations and procedures that the student may use to acquire, retain, and retrieve different kinds of knowledge and performance. These operations and procedures may be cognitive information processing, as in mental imagery, or may be cognitively controlled, as in skimming through a textbook to identify major points. Cognitive strategies involve representational capabilities of the student (reading, imagery, speech, writing, and drawing)[,] selectional capabilities (attention and intention) and self-directional capabilities (self-programming and self-monitoring).</td>
</tr>
<tr>
<td>Year</td>
<td>Author(s)</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
</tr>
<tr>
<td>1978</td>
<td>Weinstein (1978, p. 32)</td>
</tr>
<tr>
<td>1979</td>
<td>Singer &amp; Gerson (1979, p. 216)</td>
</tr>
<tr>
<td>1985</td>
<td>Dansereau (1985, p. 210)</td>
</tr>
<tr>
<td>1985</td>
<td>Jones, Amiran &amp; Katims (1985, p. 273)</td>
</tr>
<tr>
<td>1986</td>
<td>Weinstein &amp; Mayer (1986, p. 315)</td>
</tr>
<tr>
<td>1986</td>
<td>Nisbet &amp; Shucksmith (1986, p. vii)</td>
</tr>
<tr>
<td>1988</td>
<td>Weinstein (1988, p. 291)</td>
</tr>
<tr>
<td>1988</td>
<td>Gagne, Briggs, &amp; Wager (1988, p. 69)</td>
</tr>
<tr>
<td>1988</td>
<td>Schmeck (1988, p. 17)</td>
</tr>
<tr>
<td>1990</td>
<td>Derry (1990, p. 348)</td>
</tr>
<tr>
<td>1990</td>
<td>O’Malley &amp; Chamot (1990, p. 1)</td>
</tr>
<tr>
<td>1990</td>
<td>Oxford (1990, p. 8)</td>
</tr>
<tr>
<td>1996</td>
<td>Weinstein &amp; Meyer (1996, p. 423)</td>
</tr>
<tr>
<td>1996</td>
<td>Weinstein &amp; Van Master Stone (1996, p. 419)</td>
</tr>
</tbody>
</table>
A learning strategy is a set of one or more procedures that an individual acquires to facilitate the performance on a learning task. Strategies will vary depending on the nature of the task.

A strategy is a design or plan for approaching a high-level goal, such as mastering a new software system or understanding the history of a political party.

Learning strategies can be defined as regularly used combinations of learning activities, which in turn refer to thinking activities that students employ to learn.

[Learning strategy is a] systematic plan oriented toward regulating academic work and producing successful task performance.

A close examination of the definitions listed in Table 1.1 reveals that there are variations in what constitutes a learning strategy, resulting in the confusion in the meaning of the term (Derry, 1990). As Derry remarks, a learning strategy has been used to represent: first, a specific procedure involved in information processing or problem solving (e.g., O'Malley & Chamot, 1990; Oxford, 1990; Rigney, 1978; Travers, 1977; Weinstein & Mayer, 1986; Weinstein & Meyer, 1996; Weinstein & Van Mater Stone, 1996); second, a combination of specific information-processing or problem-solving procedures (e.g., Dansereau, 1985; Jones, Amiran & Katims, 1985; Riding & Rayner, 1998; Schmeck, 1988; Vermetten, Vermunt & Lodewijks, 2002); third, executive processes or skills for self-management (e.g., Gagne, 1974) or for selecting and governing particular information processing procedures (e.g., Gagne, Briggs & Wager, 1988; Nisbet & Shucksmith, 1986; Singer & Gerson, 1979; Weinstein, 1978); and lastly, a systematic plan formulated for accomplishing a learning task (e.g., Derry, 1990; Schunk, 2004; Weinstein, 1988; Winne, 2001).

Regardless of these variations in the definitions, researchers tend to emphasise the effect of learning strategies and they hold consistent views about the goal and function of learning strategies. The ultimate goal of learning strategies is to assist the learners to successfully accomplish their learning tasks, which is realised by the three main functions delineated below.

First, by using learning strategies, learners encode, store and retrieve information in such a way as to enhance their understanding, acquiring and utilising of knowledge. For example, by imagery strategies, learners create mental images or draw pictures to...
assist an adequate understanding of the information processed (Jones, Amiran & Katims, 1985).

Second, learners use learning strategies to facilitate self-management and to direct their cognitive processes or learning behaviours, in order to achieve desired outcomes. This involves regulating their motivational and affective states to create a constructive internal environment. For example, by comprehension monitoring strategies, students first set up goals for a learning activity, during the learning process they assess the degree to which the goals are being met, and then they modify the strategies being used to achieve the goals (Weinstein & Mayer, 1986).

Last, the use of learning strategies promotes learners’ autonomy and encourages them to take responsibility for their own learning. By applying effective learning strategies, learners are able to establish realistic goals, and they know how to help themselves to achieve such goals in accordance with their understanding of their personal characteristics, task requirements, and specific learning contexts in which the knowledge will be learned or applied (Weinstein & Meyer, 1996; Weinstein & Van Mater Stone, 1996).

The definitions in Table 1.1 also indicate that learning strategies possess a number of features. First, learning strategies are essentially intentional and goal-oriented (Jones, Amiran & Katims, 1985; Nisbet & Shucksmith, 1986). As mentioned in the preceding paragraphs, learning strategies are applied to assist learners to attain their ultimate learning goals. More specifically, they can be employed to solve problems encountered (Travers, 1977), to cope with demanding learning tasks (Schmeck, 1988), to address a specific learning objective (Jones, Amiran & Katims, 1985), or to regulate learners’ motivational and affective conditions and thus to facilitate the acquisition and application of new knowledge (Weinstein & Mayer, 1986). Second, learning strategies are both personalised and contextualised. Learners’ capabilities influence their choice of learning strategies (Rigney, 1978), and in turn the learning environment, such as the nature of a learning task, evokes learners’ adoption of specific strategies (Nisbet & Shucksmith, 1986; Riding & Rayner, 1998). A learning strategy can be most effective only when it matches the learner’s cognitive abilities and situational demands (Singer & Gerson, 1979). Third, learning strategies can be initiated by learners themselves or learned from their life experiences or formal
instruction. This feature supports the idea that researchers could teach or help learners to develop learning strategies (Weinstein & Hume, 1998; Weinstein & Meyer, 1996). Last, learning strategies consist of both cognitive and behavioural activities (O'Malley & Chamot, 1990; Weinstein & Meyer, 1996).

In the light of the nature of learning strategies discussed so far, Derry’s definition appears to be more relevant to this study than others, given that most of the other definitions characterise learning strategies with an emphasis on information encoding and retrieval processes (Bruning et al., 2003) and thus lack the flexibility to be applied out of such a context. According to Derry, “a learning strategy is viewed as a complex plan one formulates for accomplishing a learning goal” (Derry, 1990, p. 348). However, in this definition, the components of the plan are not specified, which could cause difficulties in interpreting which activities are actually strategic. To improve its applicability, a slight modification is made to this definition. Consequently, a learning strategy is defined as a complex plan that one formulates for attaining a learning goal. Such a plan consists of any cognitive processes, behavioural activities, and emotions which learners employ to facilitate their accomplishment of academic tasks.

1.5 Significance of this study

The significance of this study primarily lies in its focus on the learning strategy use of this particular group of students. Investigating the learning strategy use of students is the key to understanding “the relationship between person, situation, and performance” (Biggs, 1984, p. 112), and provides explanations for individual learning differences (Dempster, 1989; Pressley, 1994). The focus of this study has the potential to provide in-depth understanding of these students and their learning from their own perspectives. This has significant implications for finding ways to improve the quality of their learning.

Second, this study pioneers a systematic investigation of learning strategy use of doctoral students in the research-learning context. Its findings will provide fresh insights to the literature on learning strategies. Furthermore, it introduces a new perspective to the study of improving the quality of doctoral education, which has been dominated by the investigations into the supervision processes.
1.6 Limitations of the study

The major limitations of this study are recognised in the research methodology (see Section 3.4.5 for detailed discussions). This study employs interviews as the only data collection tool, which defines the limitations of the study. First, the learning contexts of the participants are reconstructed merely by their own accounts. Therefore, the researcher’s understanding of the students’ perspective may be disadvantaged by the absence of observing their daily study life (Taylor & Bogdan, 1998). Second, the interviewees’ verbal reports may be biased by their psychological or emotional conditions, or simply by memory failure. The biases can lead to incomplete reports or those possibly lacking in truth (Brenner, Brown & Canter, 1985; Jovchelovitch & Bauer, 2000; Marshall & Rossman, 1999). Last, interviewing is a time-consuming activity. This has the potential to discourage people from participating, and thus causes difficulties in finding subjects, which in turn may produce biases in the sample available (Brenner, Brown & Canter, 1985). Discussion of these limitations is provided in Section 3.4.5.

Constrained by the small number of participants from the same ethnic background, this study is only able to address a small portion of the research gap identified in the literature. This limits its results to this particular group of students rather than providing a representative understanding of Chinese PhD students in other disciplines or of other doctoral students from diverse backgrounds.

1.7 Organisation of the dissertation

This dissertation consists of six chapters. This first chapter introduces the background of the study; presents the research questions; justifies the study in terms of the theoretical basis of learning strategy research, definition of learning strategies, and the significance and limitations of the study; and lastly, provides an overview of the structure of this dissertation.

Chapter Two presents a critical review of relevant literature in three areas, namely, studies on learning strategies, studies on PhD students’ learning, and studies on Chinese students’ learning. Sections 2.2-2.3 cover the literature on learning strategies.
The discussions focus on the theoretical bases of learning strategy studies, definition and classification of learning strategies, and the factors influencing students’ learning strategy use. In the course of the discussions, the significance of investigating the learning strategy use of doctoral students is justified. Furthermore, based on the review, a model for understanding students’ learning processes by investigating their learning strategy use is developed for interpreting the data collected in this study (Section 2.6).

Section 2.4 reviews the literature on the learning of PhD students in general. First, it maps the academic environment in which the participants of this study carry out their PhD studies. Next, the discussions of the research foci and main concerns of the existing literature reveal that, in general, the learning processes of doctoral students have not been sufficiently scrutinised in their own right. This also serves to justify the research focus of this study.

Section 2.5 inspects the literature on ethnic Chinese students’ learning. It first examines the learner characteristics of these students. This examination covers moral development, teacher and student relationships, causal attributions for achievement, motivation for learning, approaches to learning, and adaptation to learning environments. In addition, the variations among ethnic Chinese groups are discussed. The review discloses significant differences in the learning of students from diverse ethnic Chinese groups. This provides the rationale for focusing explicitly in this study on the learning process of Mainland Chinese students and, more specifically, Mainland Chinese PhD students of social sciences in Australian universities.

Chapter Three presents the methodology adopted in this study. It provides justifications for the method of narrative inquiry which consists of three types of interview – storytelling, stimulated-recall, and semi-structured interview. Moreover, it describes the data collection procedures and data analysis processes.

Chapters Four and Five present the results of data analysis. Chapter Four recounts the doctoral learning experiences of each participant in the form of narratives. In addition, it provides information on the demographic background and the education and research experience of each individual. Chapter Five details the learning strategies identified by the cross-case analysis and discusses the factors which
contribute to the participants’ use of learning strategies. Furthermore, it includes the interpretations of learner characteristics of the participants, their interactions with the learning environment, and their management of affective factors in the learning process.

In Chapter Six, the final chapter, conclusions are drawn about the research questions and the implications of the findings are considered. Finally, the limitations of this study and the recommendations for further research are discussed.
Chapter 2 Literature Review

2.1 Introduction

Chapter One established the research focus of investigating the learning strategy use of Chinese PhD students of social sciences in Australian universities. In sequence, this chapter will review the literature in three areas: learning strategies, doctoral student learning, and Chinese student learning. Corresponding to the research questions raised in Chapter One (Section 1.2), this review will focus on the classification of learning strategies (Section 2.2), factors influencing learning strategy use (Section 2.3), learning strategy use of doctoral students (Section 2.4), and learning strategy use of Chinese students (Section 2.5). The chapter will be closed with a model that will be used to interpret and analyse the data collected in the present study (Section 2.6).

2.2 Classification of learning strategies

A learning strategy has been defined in Section 1.4 as a complex plan that one formulates for attaining a learning goal, which consists of any cognitive processes, behavioural activities, and emotions that learners employ to facilitate their accomplishment of academic tasks. To obtain a systematic understanding of students’ learning strategy use, it will be helpful to sort varied learning strategies into categories (Gagne, Briggs & Wager, 1988). However, the lack of a universally accepted “organisational scheme” (Weinstein, 1988, p. 292) has resulted in a number of different classifications. The majority of the classifications related to the learning strategies used by school or undergraduate students have been in classroom contexts (e.g., Biggs, 1984; Dansereau, 1978; Derry, 1990; Kirby, 1984a; Pask, 1976, 1988; Pintrich, 1999; Weinstein & Mayer, 1986), while the others have been developed to discuss the learning strategies used in specific domains such as second language learning (O'Malley & Chamot, 1990) or occupational training (Warr & Allan, 1998).

The diversity of the classifications causes difficulties in comparing the results of research on learners’ learning strategy use. In turn, it appears to be difficult to obtain a coherent understanding of students’ learning strategy use across different educational levels or across learning contexts. To cope with this difficulty, and to
develop a classification to guide the data analysis of this study (Section 2.2.2), the existing learning strategy classifications (Section 2.2.1) will be first critically reviewed.

2.2.1 Existing classifications of learning strategies

It is noticeable that the majority of the classifications cited above (p. 14) were developed between the 1970s and the 1990s. This phenomenon requires an explanation before proceeding any further. The review of the literature suggests that this is attributable to the emergence of the concept of self-regulated learning in the late 1980s (Zimmerman, 1986). The notion of self-regulated learning describes “how learners control their thoughts, feelings, and actions in order to achieve academically” (Zimmerman & Schunk, 2001, p. vii), and it emphasises the “function of students’ motivation, cognitive strategy use, and metacognition” (Wolters, 2003a, p. 189).

The introduction of this concept has had a remarkable influence on the field of learning strategy research. Since the 1990s, the research focus has been dominantly redirected towards investigating varied factors relevant to self-regulated learning, which includes learning strategy use. This effect is evidenced by a substantial number of publications on the topic in recent years (e.g., Boekaerts, 1999; Boekaerts, Pintrich & Zeider, 2000; Bouffard, Vezeau & Bordeleau, 1998; Butler & Winne, 1995; Ertmer & Newby, 1996; Eshel & Kohavi, 2003; Iran-Nejad, 1990; Kuiper, 2002; Purdie & Hattie, 1996; Radowevich et al., 2004; Schunk & Zimmerman, 1998; Winne & Jamieson-Noel, 2003; Wolters, 2003a; Zimmerman, 1986; Zimmerman & Martinez-Pons, 1986, 1990; Zimmerman & Schunk, 1989, 2001). From the self-regulated learning perspective, learning strategies, as a component of the model, were grouped into two categories: cognitive strategies (Pintrich, 1999) or processing strategies (Vermunt, 1996, 1998) and metacognitive and self-regulatory strategies (Pintrich, 1999) or regulation strategies (Vermunt, 1996, 1998).

Self-regulated learning represents a new perspective on learning strategy research. However, this perspective is not taken up in the present study for the following reasons. First, self-regulated learning emphasises the influence of metacognition and motivational beliefs (e.g., self-efficacy, intrinsic motivation, and outcome expectancy)
on student use of learning strategies (Bembenutty & Zimmerman, 2003; Schunk, 2004; Wolters, 2003a). The constrained focus on metacognition and motivational beliefs implies that they are the only significant factors at work. However, as Pintrich (2003, p. 671) argues, there are other personal (e.g., prior knowledge) and contextual factors which “motivate, support, and direct” students’ learning behaviours; and it is desirable to investigate how the interactions between different personal and contextual factors influence learning behaviours instead of verifying the significance of single constructs in relation to others. Next, empirical evidence shows that focusing on self-regulation in learning is likely to overlook other learning strategies that learners may apply in their learning processes. For example, Ablard and Lipschultz (1998) reported that high-achieving students used other types of learning strategies which are not necessarily for self-regulating, such as linking new information to already-known information. Lastly, self-regulation has an exclusive interest in learner “self-generated [emphasis added] thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals” (Zimmerman, 2000, p. 14). In other words, perspectives of “self-regulated learning do not deal with the whole-person-in-context” (Boekaerts, 2002, p. 591). With respect to learning strategy use, it demonstrates a neglect of the learning strategies that are introduced by others such as teachers, peers or parents. Aware of these pitfalls of the self-regulated perspective on learning strategy use, the present study investigates the participants’ use of learning strategies from a broader perspective, which pays attention to the procedures involved not only in self-regulating and information processing, but also in managing social and affective factors; not only the strategies initiated by learners themselves but also those introduced by others. However, without doubt, this study will draw on the insights into student learning provided by studies on self-regulated learning.

The above discussion justifies why the review in this section does not include more recent studies. The following section will present a collective discussion of the influential classifications of learning strategies in the literature, which were proposed by a number of researchers. Table 2.1 represents the classifications sorted by authors; and it includes the criteria for categorising, categories and subcategories within each classification, and example strategies within each category.
Table 2.1 A summary of existing classifications of learning strategies

<table>
<thead>
<tr>
<th>Types of classification (sorted by authors)</th>
<th>Criteria for categorising</th>
<th>Categories within the classifications</th>
<th>Subcategories</th>
<th>Example strategies in categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dansereau’s classification</td>
<td>By differentiating the recipient of the strategic actions (i.e., the task or the learner)</td>
<td>Primary strategies (operating on the task)</td>
<td>Comprehension-retention strategies</td>
<td>- paraphrase-imagery, - networking, - analysis of key concepts, - self-inquiry, - self-reflection on underlying causes of errors</td>
</tr>
<tr>
<td>(Dansereau, 1978, 1985; Dansereau et al., 1979)</td>
<td></td>
<td>Support strategies (operating on the learner)</td>
<td>Retrieval-utilisation strategies</td>
<td>- means-ends analysis, - planning, - organising retrieved information to identify gaps in it</td>
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<td></td>
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<td>- goal setting and scheduling, - concentration management, - monitoring and diagnosing</td>
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<td>Pask’s classification</td>
<td>By distinguishing individuals’ psychological orientation to information processing, i.e., learning styles</td>
<td>Strategies of holists</td>
<td>Microstrategies</td>
<td>- constructing global description of topics, - identifying general relationships between ideas or topics, - actively using analogies in the learning processes</td>
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<tr>
<td>(Pask, 1976, 1988; Pask &amp; Scott, 1972, 1973)</td>
<td></td>
<td>Strategies of serialists</td>
<td>Macrostrategies</td>
<td>- narrowly focusing on facts or details, - attending to the specific relations of the topic being studied</td>
</tr>
<tr>
<td>Kirby’s and Biggs’ classifications</td>
<td>By identifying the strategies’ distance from the task, generality, and teachability</td>
<td>Mesostrategies (Biggs, 1984)</td>
<td>Mesostrategies</td>
<td>The authors described the strategies in term of their functions, but didn’t provide specific information about the content of the strategies.</td>
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<tr>
<td>(Biggs, 1984; Kirby, 1984b)</td>
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<tr>
<td>Weinstein and Mayer’s classification (Weinstein, 1988; Weinstein &amp; Mayer, 1986)</td>
<td>By differentiating the intended function of strategies</td>
<td>Rehearsal strategies</td>
<td>Basic rehearsal strategies</td>
<td>Complex rehearsal strategies</td>
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<td>- simply repeating to oneself the items in a list, following the sequential order</td>
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<td>- copying the material</td>
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<td></td>
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<td></td>
<td>- underlining or shadowing the main ideas</td>
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<td></td>
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<td>- taking selective verbatim notes</td>
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<td></td>
<td></td>
<td>Elaboration strategies</td>
<td>Basic elaboration strategies</td>
<td>Complex elaboration strategies</td>
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<td></td>
<td></td>
<td></td>
<td>- developing a mental image</td>
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<td>- creating a sentence to link up two or more items</td>
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<td></td>
<td></td>
<td></td>
<td>- paraphrasing</td>
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<td>- summarising</td>
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<td>- creating analogies</td>
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<td>- generative notetaking</td>
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<td></td>
<td></td>
<td>- question answering</td>
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<td></td>
<td></td>
<td></td>
<td>- linking new information to prior knowing, experiences, attitudes, or beliefs</td>
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<td>- applying a principle to everyday experience</td>
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<td>- linking the content of one course with the content of another</td>
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<td></td>
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<td></td>
<td>- trying to use a problem-solving strategy in a new situation</td>
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<td></td>
<td></td>
<td>Organisational strategies</td>
<td>Basic organisational strategies</td>
<td>Complex organisational strategies</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>- categorising items in a list with respect to shared characteristics or attributes</td>
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<td>- outlining the main ideas of passages</td>
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<td></td>
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<td></td>
<td>- creating conceptual diagrams to display relationships</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- networking</td>
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<tr>
<td>O'Malley and associate's classification (O'Malley &amp; Chamot, 1990; O'Malley et al., 1985)</td>
<td>According to the level or type of cognitive processing involved</td>
<td>Comprehension monitoring strategies</td>
<td>Affective and motivational strategies</td>
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</tr>
</tbody>
</table>
| | | - setting up learning goals  
- checking the degree to which the goals are being met  
- modifying the strategies being used to achieve the goals, if needed | - using relaxation and positive self-talk to reduce anxiety  
- finding a quiet place to study to reduce external distraction  
- establishing priorities and setting a schedule to reduce procrastination |
| | | | |
| Metacognitive strategies | Planning | - advance organisers  
- directed attention  
- functional planning  
- selective attention  
- self-management | |
| | Monitoring | - self-monitoring | |
| | Evaluation | - self-evaluation | |
| Social/affective strategies | Cognitive strategies | - resourcing  
- repetition  
- grouping  
- deduction  
- imagery  
- elaboration  
- transfer  
- inferencing  
- etc. | - question for clarification  
- cooperation |
<table>
<thead>
<tr>
<th>Strategies for declarative knowledge</th>
<th>Focusing attention</th>
<th>Fitting ideas from a passage into a general structure</th>
<th>Analysing the internal organisation of a complex text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategies for procedural knowledge</td>
<td>Elaboration strategies</td>
<td>Question answering (including self-questioning)</td>
<td>Paraphrasing</td>
</tr>
<tr>
<td>Cognitive strategies</td>
<td>Rehearsal</td>
<td>Organisation</td>
<td>Elaboration</td>
</tr>
<tr>
<td>Behavioural strategies</td>
<td>Interpersonal help-seeking</td>
<td>Seeking help from written material</td>
<td>Practical application</td>
</tr>
<tr>
<td>Self-regulated strategies</td>
<td>Emotional control</td>
<td>Motivational control</td>
<td>Comprehension monitoring</td>
</tr>
</tbody>
</table>
It can be seen that the tabulated classifications establish their categories on the basis of diverse criteria and that they are independent of each other. Each type of classification has its own strengths. For example, Weinstein and Mayer’s classification relates different learning strategies to different comprehension tasks, which provides invaluable guidance in learning strategy use. Derry’s classification draws attention to the differences in learning declarative and procedural knowledge and suggests particular strategies for learning different types of knowledge. Warr and Allan’s classification contributes to the understanding of learning strategy use in the context where practical skills are emphasised, rather than the context of classroom learning where the acquisition of domain knowledge takes priority.

However, when being applied to the context of doing a research higher degree, each of the classifications shows obvious inherent constraints. Doing a research higher degree involves learning both domain knowledge and research skills, as well as applying such knowledge and skills to generate new knowledge through the research process. At face value, it possesses the features of both classroom learning, which focuses on the acquisition of domain knowledge; and occupational training, which emphasises the mastery of practical skills. The differences between learning for a research higher degree and for a coursework degree have been documented by a number of researchers (e.g., Evans, 2002; Johnson, Lee & Green, 2000). The differences exist in both the expected learning outcomes and the teacher-students relationships.

When the unique characteristics of learning for a research higher degree are taken into consideration, it appears to be difficult to apply any particular classification in Table 2.1 independently to investigating learning strategy use in this context. Nevertheless, the following observations suggest the possibility of organising specific strategies in each type of classification into a generic schema. Such a schema will provide a coherent structure to encompass the cognitive processes represented by the learning strategies identified by varied authors.

First, although the authors contended that their investigations of learning strategy use were based on cognitive theories about student learning, the criteria on which they established the categories were mostly detached from such theoretical bases, except for the classification developed by O’Malley and associates. In other words, the
categories in the majority of the classifications did not manifest the cognitive processes involved in student learning, although the examples of specific strategies did explicitly describe such processes. The consistency of their theoretical bases and the fact that they all defined learning strategies in terms of cognitive processes indicate that it is possible to understand the learning strategies in varied classifications within one theoretical framework.

Second, overlaps are easily identified among the classifications. Specifically, the strategies which describe the same cognitive processes are defined differently in each particular classification system and are grouped into varied categories. For example, the strategies describing the process of paraphrasing appear in a number of the classifications but are listed in different categories. In Dansereau’s classification (e.g., Dansereau, 1985), they are recognised as paraphrase-imagery strategy within the category of primary strategies. In Weinstein and Mayer’s classification (Weinstein & Mayer, 1986), they are listed as paraphrasing in the category of elaboration strategies. In Derry’s classification (Derry, 1990), they are identified as a kind of elaboration strategy but in the category of strategies for declarative knowledge. The overlaps among the classifications further suggest that it is feasible to unify the distinct classification systems into one schema.

The discussions so far have established that a schema grounded in cognitive theories about student learning promises the synthesis of varied learning strategy classifications. The inspection of the tabulated classifications discloses that the classification of O’Malley and associates represents such a schema. It is noticeable that this classification is specific to language learning strategies. However, its theoretical basis is the “cognitive information processing view of human thought and action” (O’Malley & Chamot, 1990, p. 1), and its criteria for categorising strategies are the types of cognitive processes involved in student learning. Hence, despite its particularity to language learning, this classification is broad enough to contain the cognitive processes in varied learning contexts, including the learning for a research higher degree. Therefore, it is rational to adopt the schema exemplified by O’Malley and associates to organise the learning strategies identified by different researchers. Accordingly, learning strategies will be classified into three general categories: metacognitive strategies, cognitive strategies, and social/affective strategies (O’Malley & Chamot, 1990).
The rationales for adopting this classification are as follows. First, its strategy categories transparently illustrate the cognitive levels of students’ engagement in the learning process (i.e., cognitively or metacognitively). Furthermore, it takes into consideration students’ interaction with the learning environment as well as the management of affective factors (e.g., emotional and motivational variables) in the learning process (i.e., social and affective strategies). It is important to understand how students manage environmental and affective factors in their learning, given that the effects of environmental variables on people’s thought and behaviour are fundamental to cognitive psychology (Hunt & Ellis, 2004), and that emotions are inherent in the learning process such that the affective is inseparable from cognition (Flannery, 1993). The application of this classification will result in a comprehensive analysis of student use of learning strategies, and will provide insights into how students interact with specific academic tasks and the contextual variables (Boekaerts, 1999).

To develop the learning strategy classification applied to the present study, the specific strategies in each of the classifications in Table 2.1 will be examined in terms of the cognitive processes which they represent and then be re-organised into the three general categories, namely, metacognitive strategies, cognitive strategies, and social/affective strategies.

2.2.2 The learning strategy classification applied to this study

This section presents the development of the learning strategy classification adopted in the present study. As discussed in Section 2.2.1, this classification is based on the schema derived from the classification of O’Malley and associates (O’Malley & Chamot, 1990). It includes three broad strategy categories: metacognitive strategies, cognitive strategies, and social/affective strategies. According to O’Malley and Chamot (1990), there is a hierarchical relationship between the strategy categories. Specifically, metacognitive strategies are higher order skills, which coordinate the application of cognitive and social/affective strategies. Furthermore, each general category consists of several subcategories which organise specific strategies used in learning processes. Table 2.2 demonstrates the components of the classification. It also provides the definitions of subcategories in each of the three general categories.
and example strategies within each category. The example strategies listed in Table 2.2 were collected from the classifications summarised in Table 2.1. In Sections 2.2.2.1 – 2.2.2.3, the three general strategy categories will be elaborated in turn.
<table>
<thead>
<tr>
<th>Categories</th>
<th>Subcategories</th>
<th>Definitions</th>
<th>Examples</th>
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</thead>
<tbody>
<tr>
<td>Metacognitive</td>
<td>Planning</td>
<td>Processes involving making systematic arrangements in advance regarding</td>
<td>- Goal setting</td>
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<td>strategies</td>
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<td>accomplishing a learning task</td>
<td>- Scheduling</td>
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<td>- Directed attention</td>
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<td>- Selective attention</td>
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<td>- Preparing the use of learning strategies</td>
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<td></td>
<td>Self-monitoring</td>
<td>Procedures involving using one’s metacognitive resources to check on the</td>
<td>- Checking on comprehension efficiency and accuracy</td>
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<td>effectiveness of learning activities, the efficiency and accuracy of</td>
<td>- Self-reflecting on or seeking reasons for actions</td>
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<td>comprehension, or the affective status of oneself</td>
<td>- Self-questioning or self-inquiry (to monitor the understanding)</td>
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<td>- Reflective self-instruction (i.e., reflecting on and analysing own performance, or</td>
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<td>comparing own performance to expert model or classroom model)</td>
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<td>- Checking the degree to which the learning goals are being met</td>
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<td>- Modifying the strategies being used, if necessary</td>
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<td></td>
<td>Self-evaluating</td>
<td>Strategies related to self-assessing the quality of learning outcomes after</td>
<td>- Checking the outcomes of one’s learning against a self-selected or course-defined standard</td>
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<td></td>
<td></td>
<td>completing a learning task</td>
<td>after it has been completed</td>
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<tr>
<td>Cognitive</td>
<td>Rehearsal strategies</td>
<td>Activities generating verbatim or literal reproduction</td>
<td>- Highlighting or underlining main ideas</td>
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<td>strategies</td>
<td></td>
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<td>- Taking selective verbatim notes to generate literal reproduction</td>
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<td></td>
<td>Elaboration</td>
<td>Procedures enhancing understanding by means of integrating new information</td>
<td>- Schema-building</td>
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<td></td>
<td>strategies</td>
<td>into an elaborated knowledge network</td>
<td>- Developing mental image to assist understanding</td>
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<td>- Paraphrasing</td>
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<td>- Summarising</td>
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<td>- Creating analogies</td>
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<td>- Generative notetaking</td>
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<td>- Question answering (including self-questioning about content)</td>
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<td>- Using prior knowledge, experiences, attitudes or beliefs to make the new information</td>
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<td>meaningful</td>
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<tr>
<td>Cognitive strategies</td>
<td>Organisational strategies</td>
<td>Processes involving arranging learning materials into a framework to facilitate the encoding and recall</td>
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<td>- Organising information with respect to shared characteristics or attributes (i.e., categorising)</td>
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<td></td>
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<td>- Networking</td>
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<td>- Outlining main ideas of the learning material</td>
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<td>- Creating diagrams to display relationships between key concepts and support evidences, or between cause and effect</td>
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<tr>
<td>Resourcing</td>
<td>Activities of referring to various information media to seek assistance when learners identify a gap in their available knowledge or face a problem</td>
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<td></td>
<td>- Seeking help from written materials other than routine learning materials (such as written documents, manuals, computer programs, or other non-social sources)</td>
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<td>Hypothesising</td>
<td>Activities involving reasoning and guessing</td>
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<td>- Reasoning and guessing why a particular pattern is not an example of a concept</td>
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<tr>
<td>Practising</td>
<td>Procedures to increase one’s knowledge by trying things out rather than by talking with other people or consulting written materials</td>
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<td>- Seeking to enhance understanding by carrying out a practical activity</td>
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<td>Social strategies</td>
<td>Activities involving interactions with social environmental variables (e.g., teacher, peers)</td>
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<tr>
<td>Affective strategies</td>
<td>Those control processes responsible for 1) managing various negative emotions (e.g., anxiety, anger, fear, frustration, and the like); and preventing concentration failures caused by these emotional factors and other distractions (e.g., noise.); 2) retaining motivation and attention despite a limited interest in the task or in the face of difficulties</td>
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<td>- Interpersonal help-seeking</td>
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<td>- Cooperative learning</td>
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<td>- Question for clarification (i.e., eliciting from a teacher or peer additional explanations, rephrasing, examples, or verification)</td>
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<td>- Relaxation and positive or constructive self-talking</td>
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<td>- Finding a quiet place</td>
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<td>- Establishing priorities</td>
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<td>- Setting up a time schedule as a way to reduce procrastination</td>
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2.2.2.1 Metacognitive strategies

Metacognitive strategies involve the procedures that students implement to plan for learning, to monitor their learning activities, and to evaluate the outcomes of learning activities (O'Malley & Chamot, 1990). These strategies provide learners with tools to execute self-management or self-regulation (Alderman, 1999; De Corte, 1996) in order to attain desired learning outcomes. To some extent, they are responsible for regulating cognitive and social/affective strategies (Gagne, Briggs & Wager, 1988; Vermunt, 1996; Weinstein & Van Mater Stone, 1996). In other words, the application of metacognitive strategies may cause modification of cognitive strategies or social/affective strategies when necessary. Furthermore, metacognitive strategies are most detached from learning tasks, and are by and large transferable across different learning tasks and domains (Biggs, 1984; O'Malley & Chamot, 1990; Veenman & Verheij, 2003).

Three types of metacognitive strategies are most frequently referred to in the literature: planning, self-monitoring and self-evaluating (O'Malley & Chamot, 1990; Pintrich, 1999; Weinstein & Van Mater Stone, 1996; Zimmerman & Martinez-Pons, 1986). These strategies are conceptually interrelated (Pintrich, 1999) and the implementation of them has impact on other strategies, as mentioned in the preceding paragraph. Table 2.2 shows that each of these strategies includes a number of specific strategies that learners may apply in their learning.

Planning is most desired when the time for learning is limited (Eilam & Aharon, 2003). It involves setting up goals to attain, sequencing and timing learning activities, focusing attention selectively on the goals, and organising learning strategies to achieve the goals (Eilam & Aharon, 2003; Kirby, 1984a; Zimmerman & Martinez-Pons, 1986). Goal setting specifies the anticipated outcomes of learning or performance (Miller & Brickman, 2004; Zimmerman, 2000). When the accomplishment of ultimate goals is sustained, process sub-goals which are subordinate to the ultimate goals are developed to serve as a path leading to the
realisation of the distal outcome goals. The attainment of the sub-goals does not only
demonstrate progress but also fosters learners’ self-confidence and intrinsic interest
in the tasks undertaken (Miller & Brickman, 2004; Zimmerman, 2000). *Focusing
attention selectively* is a form of self-control and helps learners to improve their
concentration and thus to maximise the effectiveness of their efforts (Zimmerman,
2000). *Selecting learning strategies*, or strategic planning (Zimmerman, 2000),
requires learners to analyse the task (Zimmerman, 2000) and activate their prior
knowledge (Eilam & Aharon, 2003). Only when the selected strategies match the
task and the context can they be used most effectively (Zimmerman, 2000).

*Self-monitoring* is a significant metacognitive strategy. It requires learners to
deliberately check on and diagnose the effectiveness of their learning when
implementing the learning activities and strategies selected to accomplish their plans
(Dansereau, 1985; Weinstein & Van Mater Stone, 1996; Zimmerman, Bonner &
Kovach, 1996). Monitoring processes engage learners in assessing the degree to
which they are meeting the goals; seeking reasons for actions by means of
self-questioning or self-reflecting; and when necessary, amending the learning
strategies being used, or adjusting their plans (Dansereau, 1985; Derry, 1990; Warr
& Allan, 1998; Weinstein & Mayer, 1986). These monitoring strategies enable
learners to identify failure of attention or malfunction of learning activities and
strategies, and in turn, warn learners to regulate their learning behaviours in line
with their goals (Pintrich, 1999). The application of self-monitoring strategies is
likely to provide feedback that facilitates learners to self-correct learning behaviours
and enhance learning efficiency and academic performance (Lan, 1996; Pintrich,
1999; Winne, 2001).

*Self-evaluating* is essential for students to control their own learning or to develop
learner autonomy (Clifford, 1999). In contrast to self-monitoring, self-evaluating is
normally performed when learning tasks are completed. By self-evaluating learners
compare their learning outcomes against self-selected or course-defined criteria to
evaluate the quality or progress of their own learning (Zimmerman & Martinez-Pons,
Confirmative self-evaluation results promote self-satisfaction (Zimmerman, 2000) and “enhance self-efficacy and keep students motivated to improve” (Schunk, 1994, p. 81). Negative self-evaluation results suggest the need for learners to adjust their learning behaviours or strategies in subsequent learning processes in order to achieve better performance (Zimmerman, 2000). In addition, self-evaluation involves causal attribution (Zimmerman, 2000). The attribution of reasons for success or failure is an important influence on students’ motivation, investment of efforts, and design of subsequent actions (Zimmerman, 2000). (See more discussion about causal attribution in Section 2.3.1.2).

2.2.2.2 Cognitive strategies

Cognitive strategies refer to the procedures which directly operate on the learning materials and are intended to enhance the interpretation, understanding and acquisition of information (O'Malley & Chamot, 1990). By definition, this strategy category is identical to the primary strategies described by Dansereau and associates (Dansereau, 1978, 1985; Dansereau et al., 1979) (see Table 2.1). However, it does not contain the strategies related to self-reflecting or self-inquiry in Dansereau’s primary strategy category. Such strategies are more relevant to metacognitive strategies in the current classification. Cognitive strategies involve both general cognitive procedures and content-bound or task-limited procedures (Alexander, Graham & Harris, 1998). General cognitive procedures are those applicable to different domains (e.g., science or languages) and to varied academic tasks (e.g., doing an experiment or comprehending a text), such as rehearsal, organisation and elaboration (Alexander, Graham & Harris, 1998). In contrast, the application of the cognitive strategies which are closely related to specific learning tasks or certain domains is constrained by the nature of specific tasks (O'Malley & Chamot, 1990; Weinstein & Mayer, 1986), and more sensitive to learning contexts and less transferable across different types of tasks (Biggs, 1984).
Of the cognitive strategies presented in Table 2.2, rehearsal, elaboration, and organisational strategies (Weinstein & Mayer, 1986) have been widely accepted as important cognitive strategies (cf. Pintrich, 1999; Warr & Allan, 1998) to facilitate information encoding, storing, and retrieving processes (Weinstein & Mayer, 1986). The strategies of resourcing (O'Malley & Chamot, 1990; Warr & Allan, 1998), hypothesising (Derry, 1990) and practising (Derry, 1990; Warr & Allan, 1998) were derived from the research on learning strategy use in second language learning (e.g., O'Malley & Chamot, 1990), procedural knowledge learning (Derry, 1990), and occupational training (Warr & Allan, 1998). They are important for information seeking (e.g., resourcing) and the acquisition of procedural knowledge or practical skills (e.g., hypothesising, practising).

Rehearsal strategies refer to learners’ reciting of the materials to be learned, which generates verbatim or literal reproduction. These strategies include students simply repeating to themselves the presented items, copying material, underlining or highlighting the main ideas of texts, and taking selective verbatim notes. These processes help learners transfer the selected or acquired information into working memory to form a basis for further study (Weinstein & Mayer, 1986).

Elaboration strategies are the processes whereby learners are able to construct meaningful associations between the presented items, or to integrate the to-be-learned materials with prior knowledge and personal experiences. Typical elaboration strategies involve paraphrasing; summarising; generative notetaking; using prior knowledge, and personal experiences, attitudes and beliefs to make the new information meaningful; linking the content of one course with the content of another; and trying to use a problem-solving strategy in a new situation (Weinstein, 1988; Weinstein & Mayer, 1986). (See Table 2.2 for more examples of elaboration strategies.)
Organisational strategies involve generating frameworks to arrange learning materials, which aids comprehension and facilitates recall (Weinstein & Mayer, 1986). These strategies include: categorising the presented items with respect to shared attributes; outlining main ideas of a text; networking by identifying internal relations among the ideas in a text; creating conceptual diagrams to display relationships between key concepts and supporting information, or between cause and effect.

Resourcing involves the actions intended to obtain information from non-social reference resources other than routine learning materials (O'Malley & Chamot, 1990; Warr & Allan, 1998). Such resources include printed documents, manuals, computer programs and other non-social sources. Resourcing processes are expected to provide additional information to aid the understanding of regular learning materials.

Derry (1990) defines hypothesising as an important strategy for learning procedural knowledge which involves pattern-recognition procedures. Hypothesising requires students to analyse and guess why a particular pattern is or is not an example of a concept. The use of this strategy encourages independent thinking (Derry, 1990).

Practising is as essential for developing cognitive skills as it is for physical skills (Bruning et al., 2003; Hunt & Ellis, 2004). For example, the development of automated processes in attention and problem solving requires a great amount of practice (Bruning et al., 2003). As a strategy, practising refers to the procedures which enhance understanding and skill improvement by practical application rather than by consulting other people or written resources (Warr & Allan, 1998).
2.2.2.3 Social/affective strategies

Social/affective strategies are the procedures that learners adopt to manage their interactions with environmental factors (e.g., teachers, peers or others; noise), or to take control over affective factors (e.g., emotion, motivation) (O'Malley & Chamot, 1990). These strategies allow learners to focus attention, maintain concentration, manage performance anxiety, establish and sustain motivation, and manage time effectively (Weinstein & Mayer, 1986). Given that social/affective strategies mainly influence learner-related factors, they are generally applicable to varied academic tasks (O'Malley & Chamot, 1990).

Examples of social/affective strategies are found in a number of the classifications listed in Table 2.1, including concentration management (Dansereau, 1985); using relaxation and positive talk to reduce anxiety, finding a quiet place to study to reduce external distraction, and establishing priorities and setting a schedule to reduce procrastination (Weinstein, 1988; Weinstein & Mayer, 1986); question for clarification, and cooperation (O'Malley & Chamot, 1990); interpersonal help-seeking, emotional control, and motivational control (Warr & Allan, 1998). These items contributed to the development of the social/affective strategy category in the current classification, as shown in Table 2.2.

The application of social/affective strategies empowers learners to create, monitor, and control a suitable learning environment, both internal and external (Pintrich, 1999; Weinstein & Mayer, 1986). Although these strategies do not directly influence the acquisition of knowledge or skills, they assist in constructing a context in which effective learning can take place (Dansereau, 1985; Dansereau et al., 1979; Weinstein, 1988), by managing emotional and motivational factors (Warr & Allan, 1998). For example, emotional control procedures help learners to manage anxiety and prevent concentration failures caused by the intrusion of destructive thoughts. Motivational control procedures enable learners to retain motivation and attention despite a limited interest in the task or in the face of difficulties.
The strategies of interpersonal help-seeking, questioning (e.g., teachers or peers) for clarification, and cooperation learning assist learners to manage their interactions with others according to their needs and goals (Pintrich, 1999). Different from other strategies, these strategies mainly involve the interactions with varied social variables. Research on help-seeking (Karabenick, 1998) suggests that the strategies consisting of inherently social activities are greatly related to various cultural, personal or interpersonal influences, which “determine whether or not an individual will use others as learning resources” (Karabenick, 1998, p. ix). For example, interpersonal help-seeking is viewed as “a valuable self-regulating, proactive learning strategy that can provide the foundation for autonomous achievement” (Karabenick, 1998, p. ix; Newman, 1994). However, studies investigating student goal orientation and help-seeking strategy use in classroom contexts have found that students who adopted a performance goal orientation tended to avoid using this strategy (Arbreton, 1998; Karabenick, 2003, 2004; Tanaka et al., 2001).

So far, the discussion has focused on establishing a classification of learning strategies to be applied in this study. Based on the critical review of a number of classification systems in the literature (Section 2.2.1), the classification developed by O’Malley and associates (O’Malley & Chamot, 1990; O’Malley et al., 1985) was adopted to synthesise the strategies in all other classifications in that it transparently illustrates learners’ cognitive engagement in learning processes, their interactions with learning environments, and their management of affective variables. This classification consists of three general strategy categories, namely, metacognitive, cognitive, and social/affective strategies, as elaborated in Section 2.2.2. However, it should be borne in mind that the classification was generated from the investigations of learning strategies used by students other than PhD students in learning settings other than learning for a research higher degree. Therefore, the classification will be used only as a general guide, and will be open to modification in the course of this study. The examples of specific strategies in each category (see Table 2.2) are not exhaustive but rather representative to exemplify the nature of a particular strategy.
category; they may or may not be used in the final analysis, which depends on the data actually collected. New categories of learning strategies may emerge in this study, as suggested by the next discussion (Section 2.3).

2.3 Factors influencing learning strategy use

Research has convincingly established that learners’ selection of learning strategies is determined by their personal variables, factors in the learning environment, and the interactions between the various personal and contextual factors (Biggs, 1984; Boekaerts, 1999; Pressley, 1994; Ramsden, 1988, 1997; Vermunt, 2005). The consistency and variability of individuals’ use of learning strategies (Thomas & Bain, 1982; Vermetten, Lodewijks & Vermunt, 1999) are attributable to personal influences and environmental influences, respectively (Vermunt, 2005; Vermunt & Vermetten, 2004).

Personal influences have been frequently examined in relation to metacognition, motivation, personality, educational experiences, prior knowledge, and other variables (e.g., academic capabilities, learning style, age and gender). Furthermore, extensive evidence strongly suggests that students’ adoption of a certain approach to learning\(^1\) influences their choice of specific learning strategies (e.g., Biggs, 1984, 1987; Entwistle, 1987; Marton & Saljo, 1997). Given its close relation to the educational, institutional and cultural contexts within which learning occurs (Biggs & Rihn, 1984; Sadler-Smith & Tsang, 1998), this particular factor will be addressed in Section 2.5.5. Important contextual factors include teaching practices, disciplinary differences, nature and time requirement of tasks, and assessment methods.

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\(^1\) In the literature, approach to learning is essentially used to illustrate how students process information. It includes not only the “how” of learning, i.e., the processes and strategies; but also the “what” of learning, i.e., the aspects of a learning task in which students are interested (Marton, 1975, 1988; Marton & Saljo, 1976, 1997).
The factors in the personal domain (Section 2.3.1) and the contextual domain (Section 2.3.2) have independent and interactive influences on student use of learning strategies (Vermunt, 2005). For the purpose of this discussion, the influences will be examined with respect to particular factors in each domain.

2.3.1 Personal variables

Personal variables have a direct influence on learning strategies, as suggested by Pressley’s (1994) comments, “[strategies] are much of what is enabled by metacognition, fuelled by motivation, and used to access, activate, and manipulate prior knowledge” (p. 269). These variables explain interpersonal differences (Geisler-Brenstein, Schmeck & Hetherington, 1996; Pressley, 1994) and intrapersonal consistency (Thomas & Bain, 1982; Vermetten, Lodewijks & Vermunt, 1999) in learning strategy use. To control the size of the thesis, the discussion in this section will focus on metacognition, motivation, personality, educational experiences and prior knowledge.

2.3.1.1 Metacognition

Research on learning strategies and self-regulated learning demonstrates that metacognition is central to students’ management of their own learning in higher education with respect to pursuing the optimum effectiveness of learning efforts (Vermunt, 1996; Zimmerman, 1998, 2000; Zimmerman, Bonner & Kovach, 1996). Metacognition refers to two interrelated aspects: (a) individuals’ awareness and knowledge about their own cognitive processes and products, and (b) their abilities and tendencies to execute such awareness to control the cognitive processes (Bruning et al., 2003; Flavell, 1976, 1979; Lawson, 1984; Simons, 1996). On the one hand, metacognitive knowledge provides information on how learner, task and strategy function independently and interactively to influence the course and outcome of learning. On the other hand, executive processes are significantly related to goal setting, extending and adjusting metacognitive knowledge, and activating
and modifying learning strategies (Flavell, 1979), which is essential for the flexibility and efficiency of learners’ use of learning strategies (Forrest-Pressley & Gillies, 1983).

Individuals differ from one another in their metacognitive competencies (Bruning et al., 2003; Corkill, 1996; Schunk, 2004). Compared to their younger counterparts, older learners are more aware of the cognitive processes involved in learning activities and more capable of controlling these processes. It has been found that metacognitively sophisticated learners are able to evaluate whether the investment of time and effort in strategic processing is worthwhile (Garner, 1988). The strength of metacognitive skills lies in their positive relation to learning outcome, regardless of intellectual ability (Veenman & Verheij, 2003).

By actively assessing whether the strategies applied match the task at hand and self-monitoring the effect of their strategic behaviours on the task performance, students are able to select more appropriate strategies in future learning (Short & Weissberg-Benchell, 1989), and in turn, gain control over their own learning processes (Zimmerman, 1994, 2001). The sense of being in control is important for students to keep themselves motivated and continue to study on their own (Zimmerman, Bonner & Kovach, 1996).

In addition to the executive processes, three types of metacognitive knowledge are believed to be fundamental to the effective use of learning strategies: self-knowledge, task knowledge, and strategy knowledge (Garcia & Pintrich, 1994; Weinstein & Van Mater Stone, 1996).

Self-knowledge, or “self-awareness” (Twining, 1991, p. 3), is what learners know about themselves. It provides information about what the individuals like or dislike. What kinds of tasks are easier or harder for them to complete, what abilities they have, what learning styles they prefer, and what learning strategies and study skills they possess. The significance of this knowledge lies in that it reveals a learner’s
academic strengths and weaknesses (Twining, 1991; Weinstein & Van Mater Stone, 1996). Rich self-knowledge enables learners to manage their resources accordingly to accomplish their academic goals and to be aware of what support they need to successfully complete a task (Twining, 1991; Weinstein & Hume, 1998; Weinstein & Van Mater Stone, 1996). Furthermore, in the light of self-knowledge, learners are able to adopt the learning strategies that match their personal characteristics. This consistency is crucial for the effectiveness of learning strategies, and in turn, the improvement of learning performance (Palmer & Goetz, 1988; Pask, 1988).

Task knowledge is about the nature of different academic tasks and the expected learning outcomes (Weinstein & Van Mater Stone, 1996). This knowledge typically relates to knowing the requirements of different tasks, and the skills needed to complete a type of task. It is argued that task knowledge is crucial for the students from a different educational background to succeed in a new educational system (Weinstein & Hume, 1998). Research has shown that different learning tasks may demand diverse learning strategies, such as learning simple tasks versus complex tasks (Dansereau, 1985; Herber, 1985; Weinstein & Mayer, 1986), or learning declarative versus procedural knowledge (Derry, 1990). Moreover, different learning strategies can vary in effectiveness for different learning tasks (Dansereau, 1978). Lack of task knowledge is likely to cause learners difficulties in setting educational or learning goals (Weinstein & Van Mater Stone, 1996) and in implementing learning strategies (Garner, 1990).

Strategy knowledge is what students know about what learning strategies are applicable to different learning tasks and their characteristics (declarative knowledge about strategies), how to apply the strategies appropriately (procedural knowledge about strategies), and when to apply a particular strategy or a combination of strategies (conditional knowledge about strategies) (Weinstein & Van Mater Stone, 1996). A learner who only has declarative and procedural knowledge about a particular strategy may not be able to flexibly apply it to varied tasks (Garner, 1990).
Strategy knowledge is “central to the concept of strategic learning” (Weinstein & Hume, 1998, p. 12). It enables learners to select and develop appropriate strategies in different learning situations and thereby to accomplish different learning tasks effectively. The more alternative strategies students have, the more likely they will be able to adjust their learning activities to meet their learning goals (Derry, 1990).

2.3.1.2 Motivation

Given that learning strategies are mainly initiated and chosen by learners themselves, the role of motivation in learning strategy use is emphasised (Palmer & Goetz, 1988). Motivation can be defined by its psychological functions: activating behaviour (i.e., the motivational force engages students in or stops them from learning), directing behaviour (i.e., the motivational force determines which learning activities learners choose to perform), and regulating persistence of behaviour (i.e., the motivational force explains why individuals are persistent in pursuing a goal) (Alderman, 1999, 2004). The motivation construct explains “the ‘whys’ of student choice, level of activity and effort, and persistence at classroom academic tasks” (Garcia & Pintrich, 1994, p. 127). A number of factors mediate student motivation such as academic goals, self-efficacy, outcome attributions, interest, and value (Pintrich, 2003; Weinstein & Van Mater Stone, 1996; Wolters, 2003a). Students will be motivated to approach their learning strategically when they value different types of knowledge, are keen to use them, and believe in their own ability to use them (Weinstein & Hume, 1998). On the other hand, effective use of appropriate learning strategies helps to promote and maintain students’ effort and motivation on goal-directed activities (Bembenutty, 1999; Garcia & Pintrich, 1994; McCann & Garcia, 1999; Wolters, 1999, 2003a).

With regard to learning strategies, student motivational patterns determine what strategies they use and how effectively they apply the selected strategies (Biggs, 1984). The following sections will scrutinise how goal orientation, self-efficacy,
causal attribution, interest and value influence students’ motivation and ultimately their learning strategy use.

**Goal orientation**

The perspective of academic goals values students’ active role in “choosing, structuring, and interpreting” their achievement experiences (Meece, 1994, p. 26), and explains their “reasons and purposes for approaching and engaging in achievement tasks” (Pintrich, 2003, p. 676). Goal orientation has been discussed in various terms and definitions (Pintrich, 1999). The distinction between mastery goals and performance goals (Dweck, 1989, 1999) has been widely cited and has become the “standard label” in the field (Pintrich, 2003, p. 676).

Mastery goals involve mastering knowledge and skills and increasing one’s competence (Dweck, 1989, 1999; Meece, 1994). Students with a mastery goal orientation strive to learn and understand, to develop new skills, to master new tasks, and to pursue self-development based on self-referenced standards (Pintrich, 1999, 2003). Performance goals aim at gaining favourable judgements of one’s performance from others (Dweck, 1989, 1999; Meece, 1994). Students with a performance goal orientation are concerned with getting good grades, demonstrating high ability, obtaining approval of high ability from others, comparing their ability or performance with other students, and attempting to do better than others (Pintrich, 1999, 2003). Goal-orientation research suggests that, although they foster different patterns of motivation, mastery goals and performance goals both promote achievement endeavours, and may operate simultaneously in complementary ways whereas one type of goal may be more emphasised than the other in varied contexts (Dweck, 1999; Lemos, 1999; Meece, 1994; Nicholls et al., 1989; Pintrich, 2003). Research shows that the adoption of multiple goal orientations will allow students to manage their learning more flexibly in different learning contexts (Suarez Riveiro, Cabanach & Arias, 2001; Valle et al., 2003).
Research that relates goal orientation to student use of learning strategies (Ablard & Lipschultz, 1998; Arbreton, 1998; Biggs, 1984; Pintrich, 1999; Pintrich & Garcia, 1991; Radosevich et al., 2004; Schutz & Lanehart, 1994; Suarez Riveiro, Cabanach & Arias, 2001; Tanaka et al., 2001; Valle et al., 2003) has consistently found that students with a predominant mastery goal orientation tend to persist in the face of challenge. Moreover, compared with students with a predominant performance goal orientation, these students more frequently use cognitive and metacognitive strategies which produce deep-level understanding and self-regulation (e.g., organising and transforming information, elaboration, seeking help from others, and monitoring). In addition, students who focus on learning more actively manage their learning environment to reduce the distractions (Wolters & Rosenthal, 2000).

In contrast, the correlation between a performance goal orientation and learning strategy use is not linear (Ablard & Lipschultz, 1998), and the findings in this regard are mixed and suggest that performance goals do not necessarily promote superficial learning (Seo & Park, 2001). On the one hand, a number of researchers found that, in comparison to other students, students with a performance goal orientation used significantly fewer strategies which encourage cognitive engagement and self-regulation (Radosevich et al., 2004; Suarez Riveiro, Cabanach & Arias, 2001). However, they used significantly more strategies which sustain motivation such as self-handicapping, defensive pessimism, and self-affirmation\(^2\) (Suarez Riveiro, Cabanach & Arias, 2001). On the other hand, other researchers discovered that performance goal orientation was related to strategies which generated deep-level understanding and self-regulation when examined in conjunction with mastery goal orientation (Ablard & Lipschultz, 1998). In support with this finding, Seo and Park (2001) concluded that performance goal orientation, as did mastery goal orientation,

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\(^2\) Self-handicapping is an anticipatory strategy used to essentially create obstacles to success in order to maintain self-worth and positive self-schemas (see Wolters, 2003a for a detailed discussion about this strategy); defensive pessimism involves making efforts to work harder in order to avoid anticipated failure (see Wolters, 2003a for a detailed discussion about this strategy); and self-affirmation is initiated to affirm a positive global evaluation of the self by activating positive conceptions of the self (see also Garcia & Pintrich, 1994).
had a positive direct effect on appropriate learning strategy use which promoted
deep-level understanding rather than superficial learning.

These findings collectively support the stance that the importance of mastery goals
should not be overstated and it may be beneficial to adopt a multiple goal orientation
which combines both mastery and performance goals (Suarez Riveiro, Cabanach &
Arias, 2001). Evidence shows that most effective self-regulation was performed by
the students who developed multiple goals (Suarez Riveiro, Cabanach & Arias,
2001), and that students with multiple goals achieved better academic performance
than others (Valle et al., 2003).
Self-efficacy

Self-efficacy refers to students’ beliefs about their capabilities to execute learning activities or skills to successfully manage their academic tasks (Bandura, 1997; Schunk, 1994; Zimmerman, 1995). These beliefs influence students’ decision about the investment of efforts, selection of actions, and persistence and flexibility in attending to academic tasks (Maddux, 1995; Pajares, 1996; Schunk, 2004). In contrast to those who doubt their capabilities, students with a high level of self-efficacy undertake difficult tasks more readily; they set themselves challenging goals and maintain a strong commitment to them; they exert greater efforts to accomplish goals in the face of failures or setbacks; they remain task-focused, think strategically, and persist longer when confronting difficulties (Bandura, 1997; Pajares, 1996; Schunk, 2004). Although self-efficacy helps to promote and keep students’ motivation, it is important to accurately estimate one’s capabilities by adapting self-efficacy to specific situations (Bandura, 1997; Pintrich, 2003; Pintrich & Schunk, 1996). Students who consistently overestimate their capabilities may decline to modify their behaviour when receiving feedback about their weaknesses (Pintrich, 2003).

Empirical studies have shown that self-efficacy has a direct influence on the choice and use of learning strategies (Schunk & Zimmerman, 1994; Zimmerman & Martinez-Pons, 1990), and that it is positively correlated with learning strategy use and academic performance in different learning tasks across domains in classroom contexts (Pintrich, 1999; Pintrich & De Groot, 1990; Pintrich & Garcia, 1991). Specifically, the level of academic self-efficacy varies widely among students and changes for an individual in different academic contexts. Self-efficacious students are more likely to report using varied cognitive (e.g., rehearsal, elaboration, and organisation) and metacognitive (e.g., planning, monitoring, and self-regulating) learning strategies, although some of their strategies such as rehearsal do not produce a deep level of comprehension. Compared with those who have low self-efficacy, students with high personal belief in their capabilities are more likely
to actively engage in learning, persist at difficult or uninteresting tasks, and achieve better academic performance. A recent study on procrastination (Wolters, 2003b) further discovered that students with low self-efficacy put off starting their academic tasks more frequently than those who have confidence in their abilities.

**Causal attributions**

Accounting for another cognitive construct that influences students’ motivation (Pintrich, 2003; Weinstein & Van Mater Stone, 1996; Wolters, 2003a), causal attributions are concerned with students’ beliefs about causes of academic outcomes and how these beliefs shape their expectations and behaviours (Alderman, 1999, 2004; Weiner, 1985, 1986). Perceived causality is relevant to goal expectations, effort investment, choice of activities, and affective states (Weiner, 1986).

On the basis of an extensive review of empirical studies on attributions, Weiner (1985, 1986) examined causal perceptions in the circumstances of success and failure in academic settings, and concluded that students frequently attribute their success or failures to factors such as ability, effort, task difficulty, and luck. The relation between these factors and student motivation can be interpreted in a three-dimensional causal analysis which consists of locus (internal or external to the learners), stability (stable or unstable over time), and controllability (controllable or uncontrollable by the learners). In this system, ability is defined as internal, fixed, and uncontrollable; effort is viewed as internal, unstable, and controllable; task difficulty is external, fixed, and uncontrollable; and random outcomes are assigned to luck, an external, unstable, and uncontrollable factor.

According to Weiner (1985, 1986), the properties of perceived causes of a particular outcome impact on learners’ expectancy of goal attainment, emotional reactions, and their effort and persistence. External and uncontrollable attributes (e.g., luck) tend to discourage students’ expectation of success, adversely impact on their motivation, and evoke negative affective reactions when failures are experienced. In contrast,
internal and controllable attributes (e.g., effort) encourage students’ feelings of control and thus enhance their motivation; increase their effort, persistence, and achievement; and promote greater self-esteem or pride when success is experienced (Schunk, 1994; Weiner, 1986, 2001). Research shows that the perceived control of one’s own learning and behaviour positively relates to academic success and the level of achievement (Pintrich, 2003). Furthermore, attributing success or failure to internal and controllable factors (e.g., effort) suggests a willingness to take a high level of responsibility for one’s own learning (Valle et al., 2003). Nevertheless, in terms of managing motivation, it is necessary to adapt causal attributions in accordance with contextual situations (Pintrich, 2003; Weiner, 1986; Wolters, 2003a).

By investigating the role of students’ beliefs about self and strategies, Palmer and Goetz (1988) found that the influence of causal attributions on learners’ expectations for future performance, task persistence, affective reactions, and task choice affected students’ decisions about when and how to use learning strategies. Specifically, students are less likely to use effective strategies when they have low expectations of success, they are anxious and self-critical about their performance, they do not initiate studying efforts or fail to persist in these efforts, or they attempt tasks in which study strategies have a limited chance of success. In line with these findings, recent studies found that a higher expectation of success encouraged students to more frequently use strategies for self-regulating (VanZile-Tamsen, 1998), and that positive emotions tended to promote the use of metacognitive strategies (e.g., monitoring) and cognitive strategies (e.g., elaboration, organisation, and critical thinking) (Pekrun et al., 2002).
Interest and value

Interest is a construct closely related to intrinsic motivation (Boekaerts & Boscolo, 2002; Deci, 1992; Pintrich, 2003; Schiefele, 1991). Research reveals that interest-based learning motivation positively influences the processes and outcomes of learning (Krapp, 2002). In the literature, two types of interest have been distinguished: personal interest and situational interest (Boekaerts & Boscolo, 2002; Krapp, 2002; Pintrich, 2003).

Personal interest refers to “interest built on stored knowledge about and value for a class of objects or ideas which leads to a desire to be involved in the activities related to that topic” (Boekaerts & Boscolo, 2002, p. 378). This interest generates inner forces which stimulate learners to explore more about the topic. From this perspective, personal interest is as important as intrinsic motivation (Boekaerts & Boscolo, 2002). In contrast to personal interest, situational interest originates from the learning environment, such as the interest generated by the task or the context (Boekaerts & Boscolo, 2002; Krapp, 2002; Pintrich, 2003). Regardless of its form, interest itself promotes intrinsically motivated learning behaviours (McWhaw & Abrami, 2001).

Pintrich (2003) commented that research on interest has been conducted mainly with reading comprehension tasks. Although research in this regard is relatively limited, it has shown that high levels of both personal and situational interest enhance cognitive engagement, learning, and academic achievement (Pintrich, 2003; Tobias, 1994). In the study investigating the effects of goal orientation and interest on students’ learning strategy use, McWhaw and Abrami (2001) observed that, when performing reading tasks, students with high interest used more cognitive and metacognitive strategies than those with low interest.

Value is concerned with learners’ goals and beliefs about the importance and interest of the task (Pintrich, 2003; Pintrich & De Groot, 1990). Perceptions which devalue
the learning tasks do not motivate students to engage in the use of learning strategies, especially those for self-regulation (Schunk, 2004), whereas the perceived importance and interest of a task promotes the use of strategies for managing motivation, and in turn, uphold students’ effort and persistence at the task (Wolters & Rosenthal, 2000). Accordingly, students who believe that the tasks are important and interesting use more cognitive strategies which produce deep understanding, execute self-regulation more often, and do not easily give up (Pintrich & De Groot, 1990; VanZile-Tamsen, 1998; Wolters & Pintrich, 1998).

The research reviewed in this section has consistently demonstrated that individuals who are adaptively self-efficacious, have perceived control of their own learning, adopt a mastery or multiple goal orientation, have interest in learning, and value their learning tasks tend to be strategic in their learning in terms of using effective cognitive and metacognitive strategies. Furthermore, such individuals are more likely to execute effort and persistence on their tasks, and to achieve better academic performance than others. In contrast, students who confront motivational problems (e.g., non-commitment associated with lack of study-related goals and low interest in current study) lack persistence in learning and are likely to abandon or prolong their studies (Maken, Olkinuora & Lonka, 2004).

2.3.1.3 Personality

Empirical studies that examined the relationship between personality and student learning have shown that personality variables explain differences in students’ learning strategy use (Busato et al., 1999; Geisler-Brenstein, Schmeck & Hetherington, 1996; Vermetten, Lodewijks & Vermunt, 2001), and academic achievement (Furnham, Chamorro-Premuzic & McDougall, 2003). In the cited studies, the analysis was focused on five personality traits, namely, neuroticism, extroversion, openness to experience, agreeableness, and conscientiousness.
The following description of the five personality traits is based on Demetriou (2000, p. 223) and Geisler-Brenstein, Schemecck, and Hetherington (1996, pp. 76-77).

Neuroticism is concerned with individuals’ emotional stability and the tendency of their reactions to psychological distress. Individuals with high neuroticism are nervous, anxious, moody, tense, self-centred and self-pitying; individuals with low neuroticism are confident, clear-thinking, alert and content. Extroversion is related to the quantity and intensity of interpersonal interactions, need for stimulation, activity level and capacity for joy. Individuals high in extroversion are sociable, active, talkative, optimistic, pleasure seeking, self-confident, warm and uninhibited; individuals low in extroversion are distant, inhibited and shy. Openness to experience refers to the extent to which individuals proactively seek and appreciate experience and tolerate and explore the unfamiliar. Individuals who are open to experience are curious and have wide interests, are inventive, original, imaginative, non-traditional and artistic; individuals who are not open to experience are conservative, cautious and mild. Agreeableness shows individuals’ interpersonal orientation which may range from compassion to antagonism in thought, feelings and actions. Individuals high in agreeableness are soft hearted, generous, kind, forgiving, sympathetic, warm and trusting; individuals low in agreeableness are suspicious, determined, argumentative and aggressive. Lastly, conscientiousness involves to what extent individuals are organised, persistent, and achievement and goal-oriented. Individuals high in conscientiousness are organised, ambitious, energetic, efficient, determined, precise, industrious, persistent, reliable and responsible; individuals low in conscientiousness are distractible, lazy, careless, impulsive, immature and defensive.

Personality was claimed to be an important predictor of academic performance (Furnham, Chamorro-Premuzic & McDougall, 2003). Specifically, conscientiousness was positively related to academic success while extroversion was negatively related. The researchers concluded that students who were careful, organised, hardworking, persevering, and achievement-oriented tended to succeed in academic settings. In contrast to this apparently straightforward relationship between
personality and academic performance, the association between personality and learning strategies is much more complex.

Conscientiousness suggests a strong tendency for students to invest effort in learning, which is considered to contribute to its positive influence on academic performance (Furnham, Chamorro-Premuzic & McDougall, 2003; Vermetten, Lodewijks & Vermunt, 2001). With regard to learning strategy use, conscientiousness has been found to be associated more frequently with the strategies which produce reproduction learning (Busato et al., 1999; Geisler-Brenstein, Schmeck & Hetherington, 1996; Vermetten, Lodewijks & Vermunt, 2001) than with the strategies which focus on meaning and application (Busato et al., 1999). Extrovert students have demonstrated a mixed use of learning strategies which are relevant to both deep and surface learning (Busato et al., 1999). Although it is related to the use of strategies focusing on application, agreeableness is, by and large, associated with the use of learning strategies which produce surface or reproduction learning (Busato et al., 1999; Vermetten, Lodewijks & Vermunt, 2001). This seems to be in accordance with the characters of this type of personality (e.g., trusting, uncritical). It is noteworthy that students who are open to experiences exhibit the strongest tendency to use the strategies which focus on meaning and application whereas they are very unlikely to use the strategies leading to surface or reproduction learning (Busato et al., 1999; Vermetten, Lodewijks & Vermunt, 2001). The researchers have attributed this tendency to the fact that individuals with intellectual openness are creative, interested, imaginative and autonomous. Finally, a strong positive relationship between neuroticism and undirected learning has been reported (Busato et al., 1999; Vermetten, Lodewijks & Vermunt, 2001). In undirected learning, learners have difficulty using effective learning strategies to manage their own learning, they are worried that they are not able to handle their studies, and they have problems in determining the importance of learning materials (Vermunt, 1996, 1998).
Given the significant influence of personality on students’ learning strategy use, it is argued that, “to understand differences in ways that students approach learning, educators should look at students not only as learners but as persons with certain … learning and personality characteristics” (Geisler-Brenstein, Schmeck & Hetherington, 1996, p. 89).

2.3.1.4 Educational experiences and prior knowledge

Educational experiences shape students’ conceptions of learning and perceptions of learning contexts (Marton & Saljo, 1997; Meyer & Boulton, 1999; Prosser & Trigwell, 1999), which, in turn, has an effect on how they approach learning in a new situation and eventually on their academic performance (Prosser & Trigwell, 1999). For example, students whose prior experiences only involve limited conceptions of learning and surface approaches may fail to recognise the situation where deep-level learning is required. Consequently, they tend to adopt a surface approach and end up with a low-quality learning outcome.

Furthermore, the level of education influences student use of learning strategies (Vermunt, 2005; Weinstein et al., 1979). Students at a higher level of education are likely to use more and varied learning strategies (Weinstein et al., 1979). Although prior educational level was not found to cause differences in the use of metacognitive strategies, it was associated with the strategies which generate deep or low-levels of understanding (Vermunt, 2005). Compared to those who came into university with only a secondary educational background, students with a higher level of prior education (e.g., higher vocational education, university education) were less likely to use the strategies which produce reproduction learning (e.g. memorising) (Vermunt, 2005). In line with this observation, research shows that, when students advance in their university education, they more frequently use the learning strategies which are representative of meaning-directed learning (Vermetten, Vermunt & Lodewijks, 1999).
Through their prior educational experiences, students accumulate certain content and domain knowledge, which is referred to as prior knowledge. In cognitive theories, prior knowledge is an important individual variable impacting on student learning strategy use (Biggs, 1984; Dochy, 1996; Lawless & Kulikowich, in press; Meyer & Boulton, 1999; Pressley, 1994; Schutz et al., 1998). The acquisition of prior knowledge of a specific domain positively relates to academic performance (Schutz et al., 1998) and to problem solving (Bransford, Brown & Cocking, 2000; Schunk, 2004). For example, people who have more extensive and well-organised domain-specific knowledge are more competent in problem solving than those who have less such knowledge.

Prior knowledge has been defined as:

> the whole of a person’s actual knowledge that (a) is available before a certain learning task, (b) is structured in schemata, (c) is declarative and procedural, (d) is partly explicit and partly tacit, (e) contains content knowledge and metacognitive knowledge, and (f) is dynamic in nature … and stored in the prior knowledge base.  

(Dochy, 1996, p. 460)

As the elaborated definition suggests, domain-specified prior knowledge can facilitate the understanding of new information received and the construction of meaning by providing a knowledge basis which possesses a structure (Jones et al., 1987; Weinstein, 1988).

It has been found that some learning strategies can be more feasible and effective than others when prior knowledge is acquired (Derry, 1990; Garner, 1990; Pressley, 1994). For example, prior knowledge provides a valuable basis for the application of elaboration strategies which enhance understanding by integrating new information into an elaborated knowledge network (Schutz et al., 1998). Such strategies are more effective than simple repetition or rehearsal strategies for most academic tasks (Weinstein & Mayer, 1986). In contrast, students who have relatively less prior
knowledge tend to more frequently use resourcing strategies than those who have well developed prior knowledge (Schutz et al., 1998).

### 2.3.2 Contextual factors

Contextual influences on student learning in general and learning strategy use in particular have been addressed by numerous researchers (e.g., De Corte et al., 2003; Entwistle, 1991; Marton, Hounsell & Entwistle, 1997; Ramsden, 1988, 1997; Richardson, 2000). Research shows that contextual factors relate to learning strategies both directly and indirectly (Meyer, Parsons & Dunne, 1990; Ramsden, 1988, 1997; Vermetten, Lodewijks & Vermunt, 1999), although sometimes the direct influence was ignored and only the indirect effect was emphasised (Entwistle, 1991; Vermetten, Vermunt & Lodewijks, 2002).

The choice of learning strategies is directly influenced by the inherent nature of context variables (Ramsden, 1988). For example, the studies edited by Marton, Hounsell, and Entwistle (1997) illustrated that different types of assessment (Entwistle & Entwistle, 1997), and the quality and method of teaching (Anderson, 1997; Hodgson, 1997; Laurillard, 1997) encourage or discourage students to adopt certain learning strategies. Vermunt (2003) further elaborated on how different types of learning environments (e.g., traditional teaching, assignment-based teaching, problem-based learning, project-centred learning) moderate students’ engagement in learning and the quality of learning. She observed that, after exposure to a particular learning environment for a period, students identify the strategies which are effective in this context and tend to stick to such strategies as long as the contextual features remain unchanged.

The indirect contextual effect on learning strategies is mediated by students’ perceptions of learning environments (Entwistle, 1991; Meyer, Parsons & Dunne, 1990; Ramsden, 1988; Schmeck & Geisler-Brenstein, 1989; Vermetten, Vermunt & Lodewijks, 2002; Vermunt, 1996). In other words, students formulate their learning
strategies in accordance with their personal interpretations of, and interactions with, the contexts, which vary with their learning experiences, their personal characteristics as learners (e.g., conceptions of learning and knowledge, determination to succeed, motivation), and the characters of the context (Prosser & Trigwell, 1999; Ramsden, 1988; Vermetten, Vermunt & Lodewijks, 2002).

The following sections will examine contextual influences on learning strategies in terms of several main variables, namely, teaching practices, disciplinary differences, tasks and assessment methods.

2.3.2.1 Teaching practices

Research on the teaching-learning relationship in classroom contexts suggests that teaching practices impact on students’ strategic behaviours (e.g, Boekaerts, 2002; Perry et al., 2002; Prosser & Trigwell, 1999; Trigwell & Prosser, 2004). For example, the teaching practices which emphasise memorising of facts and do not encourage students’ participation tend to result in students engaging in reproductive learning. In contrast, the teaching practices which encourage students to participate in activities and search for meaning are most likely to promote students’ engagement in constructive learning (Trigwell & Prosser, 2004; Wierstra et al., 2003).

Vermunt and Vermetten (2004) emphasised that it is desirable that teachers’ teaching strategies are compatible with students’ learning strategies, resulting in a state of congruence. Otherwise, friction will occur, which can be constructive or destructive. Constructive friction motivates students to develop new learning strategies and thus increases their use of such strategies. In contrast, destructive friction (e.g., teachers reject the learning activities that the students initiate) discourages students from adopting learning strategies. Nevertheless, the influence of teaching practices depends to some extent on students’ perceptions of control in class (Eshel & Kohavi, 2003) and learner characteristics (Vermetten, Vermunt & Lodewijks, 2002).
In the classrooms where students perceive that they have a high level of control while teachers have a low level of control, the use of self-regulated learning strategies is promoted (Eshel & Kohavi, 2003). In other words, the perception of control enhances students’ self-efficacy and motivates them to actively engage in the learning process, which promotes their use of cognitive processing strategies (e.g., elaborating and organising) and metacognitive regulatory strategies (e.g., planning, self-monitoring). Typical teaching activities which support students’ perception of control include: offering students choices in their in-class learning activities; offering them opportunities to control challenges; having them evaluate themselves and others; encouraging them to focus on personal progress and to learn from errors; providing instrumental support through questioning, clarifying, correcting, and elaborating; and embedding assessment in ongoing classroom activities (Perry et al., 2002).

Vermetten, Vermunt, and Lodewijks (2002) investigated how the instructional measures used in teaching (e.g., course outlines, manuals) influenced learning strategies. The researchers observed that students responded differently to the instructional measures and differed in learning strategy use. For example, students who focused on meaning and understanding and were self-regulated did not make use of detailed manuals and tended to apply their own learning methods, find answers on their own, and use provided instructional materials only as a reference. In contrast, students who were oriented to surface and reproduction learning and lacked self-regulation in learning tended to use detailed manuals more often. The analysis revealed that such differences corresponded to students’ appreciation of the learning environment and were consistent with their own habits, ideas and preferences of learning well. In consequence, Vermetten, Vermunt, and Lodewijks (2002) concluded that learner characteristics rather than the instructional measures themselves caused the observed differences in learning strategies.
2.3.2.2 Disciplinary differences

Research on cross-course learning strategy use (VanderStoep, Pintrich & Fagerlin, 1996; Vermetten, Lodewijks & Vermunt, 1999; Vermunt, 2005; Wolters & Pintrich, 1998) has shown that students adjust their learning strategies for different courses (Vermunt & Vermetten, 2004). In other words, student use of learning strategies varies across courses. Nevertheless, the differences were observed mostly in cognitive strategy use (e.g., VanderStoep, Pintrich & Fagerlin, 1996; Wolters & Pintrich, 1998) whereas metacognitive strategies appeared to be relatively consistent across disciplines (e.g., Wolters & Pintrich, 1998). The disciplinary differences in learning strategies have been attributed to the different cognitive demands inherent in each discipline (VanderStoep, Pintrich & Fagerlin, 1996; Vermunt, 2005), disciplinary cultural differences (Ramsden, 1988), and students’ varied course-specific motivational beliefs (e.g., interest, task value, and self-efficacy) (Wolters & Pintrich, 1998). Given their relevance to the present study, the disciplinary differences in cognitive demands and cultures will be focused on in the following discussion.

In terms of the influence of cognitive demands of different disciplines, the description by Vermunt (2005) is illustrative:

Subject matter within the natural sciences is often hierarchical, logical, and directed at rules and procedures. Such domains require more than other domains a thorough, analytical processing strategy to be able to reach understanding of the subject matter. In language learning students often use memorising word meanings as a learning strategy. Subject domains in which large amounts of texts should be processed call more for relating and structuring learning activities. Ramsden (1988) found empirical support for these assumptions in a study with British university students. Students from the Natural and Technical sciences [sic], for example, scored highest of all students on serialistic learning, while students from the Arts and Social Sciences scored highest on holistic learning. (p. 208)
These assumptions also found support in the observed differences in the variety of strategies used across science and social science subjects (VanderStoep, Pintrich & Fagerlin, 1996; Wolters & Pintrich, 1998), although the results of different studies were not always consistent with one another. For example, Wolters and Pintrinch (1998) found that students use more cognitive strategies in learning social studies and English than learning mathematics. In contrast, VanderStoep and colleagues (1996) found that students used more varied cognitive strategies in natural sciences courses than in humanities courses. The discrepancy in these results may be due to the nature of the tasks examined in different studies (VanderStoep, Pintrich & Fagerlin, 1996). Despite the discrepancy, these findings collectively provided evidence for the disciplinary differences in learning strategy use.

2.3.2.3 Tasks and assessment methods

The influence of tasks and assessment methods was revealed by the investigations focusing on differences in learning strategies among different learning tasks (Vermetten, Lodewijks & Vermunt, 1999). For Instance, Hadwin and colleagues examined, by means of self-reported questionnaires, students’ learning strategy use in three tasks: reading to learn, studying for an examination, and completing an essay (Hadwin et al., 2001). The researchers found that students showed consistency in using metacognitive strategies (e.g., planning) and social/affective strategies (e.g., asking peers for help) across all the tasks. However, task-specific variations were observed in their use of cognitive strategies. For example, to remember information, they used making examples and rehearsing for the tasks of reading for learning, creating glossaries for essay writing, and mental imagery for preparing for an exam. The variations in their strategy use indicated that different tasks demanded different strategies.

Nevertheless, the influence of tasks on learning strategies is mediated by students’ previous experiences (Ramsden, 1988) and their perception of particular tasks.
In other words, students select learning strategies in accordance with their interpretation of what is being required of them by the tasks and the learning strategies that they have possessed. In addition, the perceived difficulty of the tasks determines the strategies to be applied. Students are more likely to use metacognitive strategies (e.g., self-monitoring) when they perceive that the tasks are relatively difficult, in contrast to easy tasks (where monitoring may not be necessary) or very difficult tasks (where students may not know what to do or may quit studying) (Schunk, 2004). Lastly, as discussed in Section 2.3.1.2, students’ interest and perceived task value also impact on their learning strategies when they deal with specific tasks.

The review so far (Section 2.3) has revealed that learning strategies play a positive role in enhancing academic performance and achievement, when they are in congruence with varied personal and contextual conditions. More importantly, the effective use of learning strategies promotes learner autonomy in learning. As the “most salient cognitive processes mediating intellectual performance” (Pressley, 1994, p. 269), learning strategies reveal the interactions between different components of person, task, and context (Biggs, 1984; Pressley, 1994), and thus have been the focus of a considerable number of studies which have investigated students’ learning processes in classroom contexts (Pressley, 1994). However, little is known about the learning strategy use of research higher degree students in general and PhD students in particular and Chinese PhD students in a more specific sense, as the following discussion will reveal (Sections 2.4 and 2.5).
2.4 PhD students and learning strategy use

This section will focus on the studies that investigated the learning of local PhD students in Western countries while the studies that involved international (or non-English speaking) PhD students in Western countries will be covered in Section 2.5.8. This review will represent the learning context in which PhD students in Australia are situated. Furthermore, it will identify the research gap resulting from the lack of investigation into learning processes in general and learning strategies in particular at the doctoral level. This section consists of three subsections: disciplinary differences in PhD learning (Section 2.4.1), learning problems of PhD students (Section 2.4.2), and PhD student use of learning strategies (Section 2.4.3).

2.4.1 Disciplinary differences in PhD learning

Studies on PhD student learning have observed significant differences between the research cultures of laboratory-based science disciplines and of social science disciplines (Deem & Brehony, 2000; Delamont, Atkinson & Parry, 1997a; Delamont, Parry & Atkinson, 1997; Neumann, 2003; Parry, Delamont & Atkinson, 1994; Parry & Hayden, 1994; Walford, 1981; Whittle, 1992). In this study, social sciences are used in a broad sense, including such disciplines as education, humanities, economics, business, and the like. The disciplinary differences highlighted in the literature range from the choice of research topics, the nature of supervisory practices, to the environment in which postgraduate research is conducted (Deem & Brehony, 2000).

In the laboratory-based science disciplines, research activities are predominantly teamwork oriented. Students work in research teams that consist of a supervisor as chief researcher, research fellows, post-doctoral researchers and technicians. The research topic of PhD students is normally derived from a funded team-based project. Besides formal research training, the students may receive informal training from post-doctoral researchers in the group. Students and supervisors meet frequently in
the laboratory as well as in formal supervisory meetings. The thesis itself reports research already completed (Deem & Brehony, 2000; Parry, Delamont & Atkinson, 1994; Walford, 1981).

In contrast, the research activities in social sciences disciplines are more individualistic, with typical social science research students being portrayed as lone researchers (Deem & Brehony, 2000; Parry & Hayden, 1994; Phillips & Pugh, 1987; Whittle, 1992). Students usually define and structure their own research objectives that are not necessarily their supervisors’ main research interest or area of expertise. They are rarely attached to a research team. The students often only meet the supervisors at scheduled supervisory meetings. Therefore, they have limited formal and informal contact with their supervisors and other research postgraduates. Funding for full-time students is not usually tied to the research grants held by the supervisors. Thesis writing is typically seen as an integral part of research processes (Brown, 1994; Gottlieb, 1994; Torrance & Thomas, 1994).

Owing to the individualistic nature of postgraduate research in the social sciences, PhD students in these disciplines are more often than not expected to be autonomous, self-motivated, and independent researchers, compared with laboratory- or team-based sciences (Buckley & Hooley, 1988; Deem & Brehony, 2000). Doing research in a relatively isolated context (both socially and intellectually) has been shown to give rise to a variety of problems for social sciences RHD students (Delamont & Eggleston, 1983; Hockey, 1991, 1994; Neumann, 2003; Rudd, 1985; Winfield, 1987; Young, Fogarty & McRae, 1987). For example, one of the main concerns in the literature over the last decades across institutions all over the world is the significantly low completion rates and undesirably prolonged completion time of PhD students in general, and especially in the social sciences (AVCC, 1990; Buckley & Hooley, 1988; Golde, 1998; Kehrhahn, Sheckley & Travers, 2000; Lovitts, 2001; Lovitts & Nelson, 2000; Martin, Maclachlan & Karmel, 2001; Rudd, 1985; Tinto, 1993; Winfield, 1987). This is remarkable in the study of Martin, Maclachlan, and Karmel (2001). In their survey of the completion rates of PhD
students commencing in 1992 in Australian universities, the researchers found that 53% of the students completed after eight years of full-time equivalent study, and only 36% of these completed students finished within four years of full-time equivalent study.

The studies concerning completion rates have given rise to a number of recommendations at the policy level with regard to improving the quality of PhD education, in other words, to increase the completion rates, reduce the completion time, and produce high quality PhDs (Cullen, 1993). These recommendations tend to stress the responsibility of institutions, departments, and supervisors for providing their PhD students with help and resources. In addition, they typically put emphasis on training in generic and discipline-specific research skills and methodology at the early stages of candidature, improving the quality of supervision, and reforming administrative procedures such as being more selective in admitting students to the PhD programs.

These studies further suggest that it is of paramount importance for the departments of social sciences to foster a research community involving academics, PhD students, and scholars in the fields relevant to the students’ research. These options are believed to encourage and facilitate students’ involvement in a departmental or disciplinary research culture. Such involvement is argued to have multiple advantages, for example, to keep students motivated, to broaden their understanding of the issues of research in their disciplinary areas (Parry & Hayden, 1994), to promote their persistence in the PhD programs (Dorn & Papalewis, 1997; Golde, 1994; Tinto, 1993), and to stimulate students’ research and scholarly productivity (Weidman & Stein, 2003). However, Delamont and her colleagues (Delamont, Atkinson & Parry, 1997a; Delamont, Parry & Atkinson, 1997) caution that national or institutional policies responding to such suggestions should be sensitive to disciplinary cultures and departmental organisation. They argue that:
The research experience itself [in social science disciplines] is an individual, personal conversion process, accomplished through the socially (and often physically) isolated context of field research, experienced and celebrated as a personal rite of passage. This model of research training fosters intense loyalty, and is a powerful mechanism of academic enculturation. But unlike the stability of the natural sciences, it is not predicated upon dense academic and social relations between successive generations and research group members, but on a personal commitment to the discipline and its distinctive mode of knowledge, coupled with an individual relationship with one’s supervisor.

(Delamont, Atkinson & Parry, 1997a, p. 327)

Furthermore, Delamont, Parry, and Atkinson (1997) stress that the research culture in social sciences emphasises the individual research students and their individual supervisor, and thereby “the originality of doctoral research [in social sciences] is far more likely to be conceptualised in terms of novelty [original emphasis] rather than the progression of collective research problems” (p. 548).

The argument of Delamont and her colleagues indicates that the progress of PhD study in social science disciplines is, to a great extent, dependent on students’ personal commitments to their research and their interactions with their supervisors. This point of view is supported by the results of empirical studies which investigated the factors influencing the completion of doctoral degrees (Booth & Satchell, 1996; Buckley & Hooley, 1988; D’Andrea, 2002; Hockey, 1994; Rudd, 1985; Wright & Cochrane, 2000). The findings of these studies suggest that the factors impeding students’ completion are wide-ranging, lying in individuals, institutions, as well as the nature of the disciplinary culture. Furthermore, these factors interactively impact on students’ commitment to the study, and ultimately their successful completion of the degree. Hence, when the responsibilities of institutions, departments, and supervisors are stressed, individual students’ responsibilities for the improvement of the quality of their own doctoral study should not be neglected.
For example, D’Andrea (2002) found that the major obstacles to students’ completion of PhD degrees in Education are difficulties with planning and writing, working independently, financial problems, as well as personal relationship pressures. Apparently, these aspects are all internal to the individual rather than outside agents. It is “unlikely that an individual department can be held responsible for all these factors,” as Booth and Satchell remarked (1996, p. 55). Consistent with these viewpoints, Buckley and Hooley (1988) emphasise that PhD students are the ultimate stakeholders who are in the position to decide whether to complete the research within the stipulated time frame or to complete it at all. They further argue that although suggestions are made to have the research organisations, institutions, and supervisors provide help to “mitigate the problems of isolation, lack of motivation and lack of research skills,” it is the students’ own responsibility to ensure a good use of the resources available to them when the need arises (Buckley & Hooley, 1988, p. 119). It is worthwhile to note that the emphasis on students’ responsibility for their own study is not meant to devalue the significance of their “socialization into the culture of the discipline” (Delamont, Atkinson & Parry, 2000, p. 1), or to put less emphasis on the role of institutions or supervisors in the doctoral education process.

Although educational policies play an important role in doctoral education, this issue will not be elaborated herein, given that it is beyond the scope of this study which is concerned with the inherent learning processes leading to the completion of the degree. The discussion in this section illustrates that the different research cultures in sciences and social sciences require the PhD students in different disciplines to approach their doctoral research in rather different ways. Furthermore, the studies on learning strategies have provided evidence for the disciplinary differences in students’ learning (Section 2.3.2.2). To obtain a relatively coherent understanding of the nature of PhD students’ research-learning process, this study will focus on the PhD students studying in social science disciplines.
2.4.2 Learning problems of PhD students

Doing research in both socially and intellectually isolated contexts, PhD students in social sciences seem to have more problems impacting on their doctoral learning process than those in sciences (Delamont & Eggleston, 1983; Geake & Maingard, 1999; Hockey, 1991, 1994; Rudd, 1985; Ryan & Zuber-Skerritt, 1999; Torrance & Thomas, 1994; Torrance, Thomas & Robinson, 1992; Welsh, 1979; Winfield, 1987). These problems involve both institutional and personal factors (Golde, 1998; Goodchild et al., 1997; Wright & Cochrane, 2000).

With regard to institutional factors, discussions have tended to concentrate on issues such as the availability and sufficiency of funding assistance and facility support (e.g., working space and equipment), quality of supervision, integrating students into the departmental or disciplinary research culture, and reforming administrative procedures (e.g., PhD candidate recruitment and progress monitoring mechanisms). The influences of these factors on the doctoral process have been well addressed in the literature (Buckley & Hooley, 1988; Lovitts, 2001; Lovitts & Nelson, 2000; Moses, 1988; Stricker, 1994). With an attempt to improve the quality of doctoral education at the institutional and policy levels, a number of frameworks and guidelines have been suggested in this regard (Dinham & Scott, 1999; Lipschutz, 1993; Neumann & Guthrie, 2000, 2001; Wisker & Sutcliffe, 1999; Zuber-Skerritt, 1996). These understandings are important. However, given the focus of this study on the learning process at the doctoral level from the students’ perspective, the institutional factors will not be delineated here. The discussions in the following sections will concentrate on the issues pertaining to the students themselves.

The personal issues frequently emphasised in the literature can be discussed in four broad categories: 1) supervisory problems (Section 2.4.2.1); 2) academic problems (Section 2.4.2.2), such as methodological problems, and discursive problems; 3) psychological problems (Section 2.4.2.3), such as social and intellectual isolation; and 4) financial problems (Section 2.4.2.4), such as lack of financial support.
2.4.2.1 Supervision issues

As the highest academic degree, a PhD, as opposed to a Bachelor degree or a Master’s degree, emphasises the students’ full command of the field of study and original contributions to extending human knowledge (Phillips & Pugh, 2000). The general structure of PhD programs vary in different countries. PhD programs in Australia, following the British tradition and differing from the American tradition, do not generally contain a coursework component. The practice continues to rely almost solely on the student’s conducting of original research under supervision and the production of a dissertation after an extended period of study (Burgess, 1997; Hockey, 1991; Johnson, Lee & Green, 2000; Moses, 1992; Nightingale, 1992), although recent deviations in the program structure have appeared in some institutions (Neumann, 2003).

The supervisory relationship in social sciences disciplines is typically described as “a largely one-to-one, intense, highly privatised relationship between a student and a supervisor” (Green & Lee, 1995, p. 41). The role of supervisors is to help students to develop their intellectual structures in relation to the disciplinary content domain, to guide them towards a deeper understanding of the subject, and to lead them towards independence (Powles, 1992). It is widely acknowledged that effective supervision is central to improving the doctoral education quality (Cullen, 1993; Wright, 1992; Zuber-Skerritt & Ryan, 1994). Given the critical role that supervision plays in doctoral education, supervisory practices have been one of the major issues scrutinised by numerous researchers over the last few decades (Bartlett & Mercer, 2001; Bourn & Hughes, 1991; Cullen et al., 1994; Eggleston & Delamont, 1983; Frankland, 1999; Haksever & Manisali, 2000; Heath, 2002; Holbrook & Johnston, 1999; Johnston & Broda, 1995; Kandlbinder & Peseta, 2001; Lee & Green, 1998; Linden, 1999; Marsh, Rowe & Martin, 2002; Morgan & Ryan, 2003; Moses, 1984; Parry & Hayden, 1994; Ryan & Zuber-Skerritt, 1999; Wisker & Sutcliffe, 1999; Zuber-Skerritt, 1992; Zuber-Skerritt & Ryan, 1994).
The research on postgraduate research supervision has dramatically increased since the 1980s when government departments in Australia and other countries such as United Kingdom (UK) started to relate funding policies more closely to the outcome of PhD programs in institutions (Hockey, 1994; Neumann, 2002). The research in this regard heavily concentrates on supervisor/student relations and the quality of supervision (e.g., Burns, Lamm & Lewis, 1999; Cullen et al., 1994; Grant, 1999; Haksever & Manisali, 2000; Marsh, Rowe & Martin, 2002; Moses, 1984; Parry & Hayden, 1994; Zuber-Skerritt & Ryan, 1994).

Research has established the proposition that supervision is critical both to the students’ successful completion of the degree within the stipulated time and to the intellectual development of the students (Burns, Lamm & Lewis, 1999; Haksever & Manisali, 2000; Phillips, 1979, 1991; Whittle, 1992; Wright, 1992). Given the recognised importance of supervision, studies have assertively concluded that deficiencies in the supervision received are responsible for the unsatisfactory outcomes of PhD education such as low completion rates (Haksever & Manisali, 2000).

Central to the concerns of PhD students in social sciences are the quality and effectiveness of supervision received (Buckley & Hooley, 1988; Haksever & Manisali, 2000; Harman, 2002). Students perceive that receiving inadequate supervision is the main cause of their lack of enthusiasm for research, lack of clarity about the central research questions and in writing, and the poor completion rate (Burns, Lamm & Lewis, 1999; Hockey, 1991; Rudd, 1985; Wright & Lodwick, 1989). The inadequacy of supervision has frequently resulted from supervisors being too busy to commit adequate time when their students need help rather than supervisor lacking competence or supervisory skills (Harman, 2002; Neumann, 2003).
Other reported concerns include issues such as lack of emotional support from supervisors and insufficient social interaction with supervisors (Leder, 1995, 1998; Moses, 1984), mismatches between the research interests of the supervisor and the student (Hockey, 1991; Linden, 1999; Moses, 1984), personality clashes (Harman, 2002), and inadequate and delayed feedback (Burns, Lamm & Lewis, 1999; Linden, 1999). For example, to illustrate the concept of inadequate feedback, Linden (1999) provided an example of a supervisor “whose method of supervising involved writing a single word 15-16 times on each paper. This was the word ‘rewrite’” (p. 358). In addition, the personalities involved in the supervision process are found to significantly impact on the relationship (Haksever & Manisali, 2000; Parry & Hayden, 1994).

To gain an in-depth understanding of the students’ requirement for supervision, Haksever and Manisali (2000) classified the required supervisory help into three categories: personal help, indirect research-related help, and direct research-related help. Personal help includes support, motivation, socialising, help in organising accommodation and other things that may be required, but are unrelated to the research. Indirect research help covers providing industrial and academic contacts, providing equipment and initial help in locating references. Direct research-related help involves critical analysis of work, help with methodological problems, precise direction and help with the management of the project. In Haksever and Mainsali’s (2000) study, more than half of the respondents were unhappy with the supervision they received and the least satisfactory area was direct research-related help. Research shows that the students who require more guidance from supervisors on their research are less likely to complete their study in a timely fashion, and have more complaints about the competence of supervisors and more dissatisfaction about the supervision received (Powles, 1988).

Students’ dissatisfaction with supervision suggests that, in students’ perceptions, it is the supervisors who play a more important role than the students themselves do in the success of their own research. In other words, the students tend to relate their
completion of the degree to their supervisors’ interest in and commitment to the research that they are undertaking (Buckley & Hooley, 1988). Such perceptions apparently conflict with the supervisors’ viewpoint that the PhD students are independently responsible for their research, particularly in the social science disciplines (Parry & Hayden, 1994; Whittle, 1992). Hence, it is hardly surprising that supervisors are most concerned with their students’ personal and intellectual independence and confidence (D’Andrea, 2002; Linden, 1999), which are among the basic personal qualities demanded by PhD study (Dinham & Scott, 1999; Hockey, 1991, 1994; Wright, 1986).

Supervisors’ emphasis on students’ independence and autonomy is supported by the students who are satisfied with their supervisory experiences (Harman, 2002). The graduates interviewed by Burns, Lamm and Lewis (1999) generally recognised that they themselves need to be responsible for their own progress and stressed the need for independence. In the same research, a number of students who were still engaged in their PhD study “considered it important to achieve a balance between dependence and independence” but they saw too much independence as “anxiety provoking” (Burns, Lamm & Lewis, 1999, p. 68). Furthermore, Wright and Lodwick (1989) found that the students who worked independently of their supervisors and who planned their study were more likely to succeed in their doctoral studies.

The discussion above implies that PhD students’ ability to be independent and autonomous learners and to take responsibility for completing their dissertations is valued by both supervisors and students themselves. However, the literature on supervisory issues rarely probes into how the students in the PhD process learn as independent and autonomous learners. The reason is that the research has almost exclusively focused on how to establish effective supervisory relations, and on what supervisors can do to help the students to succeed (e.g., Cullen, 1993; Wisker & Sutcliffe, 1999; Zuber-Skerritt & Ryan, 1994), rather than on what the students are actually doing in their research-learning process. Consequently, such studies offer very limited insights into the student research-learning process.
It is unquestionable that the studies on supervision have significantly contributed to the understanding of the nature of supervisor practice in PhD education as well as to the improvement of supervision quality. This brings benefits to the quality of PhD education and ultimately enhances the completion rates. However, such an expected outcome is unlikely to be guaranteed if the other part is neglected. In other words, the students’ doctoral learning process needs equal attention, if not more.

### 2.4.2.2 Academic problems

*Methodological issues*

In the transition to the “new territory” (Hockey, 1994, p. 178) of postgraduate research studies, students are likely to encounter certain major changes in areas such as styles of work, intellectual, technical and organisational skills (Beasley, 1999; Delamont, Atkinson & Parry, 1997b; Hockey, 1994). It is noted that the highly directed and structured undergraduate curricula have poorly prepared students for the very open and negotiable work of postgraduate research, which requires relevant theoretical and methodological knowledge as well as a range of research skills and techniques (Phillips & Pugh, 1987, 2000). These requirements are very different from those required by coursework programs. Therefore, novice postgraduate research students, who are inexperienced in the research task and have insufficient knowledge of the research area, inevitably confront a range of methodological problems during the research process (Cone & Foster, 1993; Zuber-Skerritt, 1987).

At the initial stage of their research, students may find that the greatest difficulties are to define a research problem and to decide on a research topic (Jones, 1992; Knight & Zuber-Skerritt, 1992). Furthermore, at the design and execution stages, the most common problems confronting research postgraduates are methodological in nature. The problems are varied, ranging from those associated with insufficient knowledge of or skill in research methods to those related to statistics or computing
(Delamont & Eggleston, 1983; Faghihi, Rakow & Ethington, 1999). These methodological difficulties are considered to be responsible for the slow progress that students may experience in the research process (Faghihi, Rakow & Ethington, 1999; Knight & Zuber-Skerritt, 1992), and even for the students’ withdrawal from their doctoral study (Rudd, 1985).

In the light of the significant negative impact of the methodological problems, it seems crucial for students to overcome such obstacles to accomplish their PhD research. For example, in Parry and Hayden’s study (1994), it was suggested that the development of technical, methodological and communication skills was a desirable part of the general intellectual development of PhD students. This suggestion drew attention to the necessity of developing students’ methodological skills. However, it was not taken up seriously by researchers in this field. As in other studies (e.g., Delamont & Eggleston, 1983; Wright & Lodwick, 1989), instead of further exploring the procedures through which the students learn to obtain the research skills in demand, Parry and Hayden (1994) provided suggestions on what supervisors and institutions could do to help students. Their suggestions included how supervisors could help students to write, how important it was to introduce students to scholarly networks, and the like. Consequently, very little is known about how students can resolve all sorts of methodological problems apart from receiving guidance from their supervisors. In other words, the question of “How do the students learn the needed research skills and techniques?” has not been explicitly addressed in the literature. To answer such a question, it is desirable to conduct research examining what learning strategies the students use in their research process.
PhD students in Australian universities are required to produce a substantial dissertation that presents original research and ideas, and the award of the degree is almost entirely based on the assessment of this piece of writing (Johnson, Lee & Green, 2000). As the requirement indicates, to successfully complete the degree, it is essential to have the dissertation conform to the disciplinary discourse conventions (Parry, 1997; Torrance & Thomas, 1994; Torrance, Thomas & Robinson, 1992). The conventional language and style in doctoral dissertation texts reflect sophisticated key disciplinary norms governing the conception, production and reporting of knowledge in particular fields (Parry, 1998). Although disciplinary discourse knowledge is mostly tacitly shared by the expert members of a discourse community (Swales, 1990), doctoral students are expected to deliberately learn and master it (Parry, 1998).

The learning of disciplinary discourse appears to be especially needed in social sciences, given that the normative forms of expression tend to be less clearly defined in these disciplines than in science disciplines (Hockey, 1991; Parry & Hayden, 1994; Rudd, 1985). Lack of discourse knowledge has, at least partially, caused the writing problems encountered by an appreciable number of social science PhD students (Rudd, 1985; Zuber-Skerritt & Knight, 1992). For example, Rudd’s (1985) study suggests that students in arts and social studies were “held up, or stopped, by the difficulty of pulling together all their material” (p. 72). The same problem was encountered by the students in Torrance, Thomas and Robinson’s study (1992), where around 48% of the sampled population reported that it was “either quite difficult or very difficult to compose their ideas into text” (p. 161). These findings support the view that “non-completion of the thesis is the most important area of failure” (Buckley & Hooley, 1988, p. 111), although the difficulty in writing itself is not necessarily a decisive factor for the failure of completion (Torrance & Thomas, 1994).
These discussions about the discourse problems of PhD students shed light on the nature of the obstacles that they may encounter in writing. To help students cope with difficulties in writing, much emphasis has been put on training in academic writing skills (e.g., Caffarella & Barnett, 2000; Dinham & Scott, 1999; Torrance & Thomas, 1994). Nevertheless, when examining these problems, the existing studies have not paid much attention to how the students actively react to the problems confronted. As a result, the following questions remain to be answered: How do the students master the disciplinary discursive knowledge? How do they acquire the high-level language skills required by the research task? How do they use this knowledge and skill to help them to write up their dissertation? To answer these questions, it is necessary to look into the learning strategies that the students use in their learning processes.

2.4.2.3 Psychological problems

The PhD experience can be both stimulating and challenging, which may generate “a sense of achievement and personal fulfilment” (Powles, 1988, p. 32). However, it also heavily taxes the students psychologically (Phillips & Pugh, 2000). Furthermore, successful completion of the study demands the students’ ability to tolerate the ambiguity adhering to the endeavour, given the uncertainty inherent in the PhD process (Phillips & Pugh, 2000).

A diversity of psychological factors has been found to adversely impact on the completion of PhD studies, such as isolation, boredom, frustration and potential loss of enthusiasm (Phillips & Pugh, 2000), as well as procrastination and perfectionism (Green, 1997). Of these factors, social and intellectual isolation is considered to be a most serious problem in social science disciplines (Delamont & Eggleston, 1983; Hockey, 1991, 1994; Rudd, 1985; Welsh, 1979; Winfield, 1987; Young, Fogarty & McRae, 1987).
The intellectual and social isolation of PhD students in social sciences has been discovered to contribute to the lack of confidence and motivation, and in turn, the failure to complete the research project within the stipulated time frame, or students’ withdrawal from the programs (Burns, Lamm & Lewis, 1999; Deem & Brehony, 2000; Delamont & Eggleston, 1983; Hockey, 1991, 1994; Parry & Hayden, 1994; Tinto, 1993). For example, Young, Fogarty, and McRae (1987) contended that isolation is one of the factors responsible for “mismanagement and non-completion of social science doctorates” and a potential cause for the attrition of students’ interest in and commitment to their studies (p. 35).

Although it is considered necessary to reduce the social or emotional loneliness, some researchers (Delamont, Atkinson & Parry, 1997a, 2000; Delamont, Parry & Atkinson, 1997; Johnson, Lee & Green, 2000; Phillips & Pugh, 2000) emphasise that intellectual isolation is inherent in the role of social science PhD students. The students have to be intellectually responsible for an individual original research project, to develop expertise in their chosen field, and to make original contributions to knowledge. As Johnson, Lee, and Green (2000) put it:

> The experience of isolation and abjection often appears so widespread as to be structural and endemic, a seemingly ‘necessary’ feature of the doctoral programme for many, rather than an accidental and ameliorable problem. Indeed, it may in some senses be a condition of the production of independence and autonomy, which is the goal of the pedagogy and practice of the PhD. (p. 136)

Nevertheless, the negative impact of the experience of isolation on students’ motivation and perseverance does need attention. Styles and Radloff (2000a; 2000b) have found that students’ feelings or emotions crucially impact on their motivation, their willingness to persist and to work consistently to complete their theses in time. In line with this finding, they suggest that supervisors help PhD students develop strategies to manage negative feelings, which may enhance their positive feelings towards their studies and thus maintain their motivation to do the research (Styles &
However, little research has investigated what initiatives the students take to diminish these feelings, with the notable exception of Welsh (1979). The majority of the literature indicates that isolation is an unsolvable problem (e.g., Delamont & Eggleston, 1983) whereas Welsh (1979) observes that most of the students who had the problem of social loneliness in the early stages successfully overcame their initial loneliness through their own efforts or by participating in university clubs and social activities.

With regard to the intellectual isolation, relatively little is known about how the students themselves react to and deal with it, although a number of authors suggest integrating PhD students within specific social and intellectual networks through activities such as research seminars or workshops (Buckley & Hooley, 1988; Deem & Brehony, 2000; Hockey, 1994; Moses, 1988; Parry & Hayden, 1994; Salmon, 1992).

2.4.2.4 Financial problems

PhD students in social science disciplines have fewer opportunities than those in sciences to receive research funding from various sources (Harman, 2002; Neumann, 2003). Although the importance of funding should not be overemphasised (Neumann, 2003), research has found that “completion rates, and the mean durations of their time-to-completion and to dropout are all sensitive to the types of financial support the students received” (Ehrenberg & Mavros, 1995, p. 581). The students who receive financial support have higher completion rates and shorter time-to-degree than those who are self-supported (Ehrenberg & Mavros, 1995; Harman, 2002; Sheridan & Pyke, 1994).

Since students have to support themselves throughout the duration of their doctoral study, the availability of financial support has been identified as a source giving rise to concerns (Dinham & Scott, 1999; Gillingham, Seneca & Taussig, 1991; Kluever, 1997; Martin, Maclachlan & Karmel, 2001; Powles, 1988; Syverson, 1982). For
example, Dinham and Scott (1999) found that financial difficulties are the most common factor hindering the undertaking of the doctorate. This is followed by problems related to family life, such as having to support others in the family while studying, or having children to care for. These two factors are closely related and mutually reinforcing.

### 2.4.3 Doctoral student use of learning strategies

As has already been mentioned, in contrast to the extensive research on supervision and the problems of PhD students, there is a paucity of research investigating PhD students’ experience of undertaking postgraduate research in its own right from a learning perspective. As Lee and Green (1995) remarked, the experiences of students in their postgraduate research have been collected, by and large, to provide information for the development of guidelines about good supervisory practices or for the development of national or institutional policies for doctoral education (e.g., Cullen et al., 1994; Delamont, Atkinson & Parry, 1997b; Neumann, 2003; Parry & Hayden, 1994), with an intention to improve the efficiency and effectiveness of PhD education (Cullen, 1993).

The lack of research on PhD learning processes leaves us with an inadequate knowledge of the nature of learning at the doctoral level, where the students are expected to develop as autonomous and independent researchers in their specialised fields (Johnson, Lee & Green, 2000; Phillips, 1994; Ryan & Zuber-Skerritt, 1999) and to make a significant original contribution to knowledge (Phillips & Pugh, 2000). The inadequate understanding of the processes of doctoral study makes it “difficult adequately to interpret the findings” of inquiries on other issues relating to PhD students (Winfield, 1987, p. 86). Therefore, to gain further understanding of the nature of doctoral students’ learning, it is necessary to conduct empirical studies which explore the research learning process; more explicitly, the means by which PhD students learn to do postgraduate research.
The inadequacy of research on the learning processes of PhD students was identified as early as 1987 by Winfield. He recommended that research in this regard would be of promising significance for “tackling some of the outstanding issues in respect of the critical period of the postgraduate process, such as topic choice, data analysis and writing up” (Winfield, 1987, p. 86). However, in the following decades, study in this respect remained very limited, although scattered discussions focusing on the doctoral students themselves have appeared in recent literature. These discussions are concerned with what the students learn (e.g., Pearson, 1996) and what factors obstruct or contribute to the successful completion of their theses (D'Andrea, 2002; Goodchild et al., 1997; Green, 1997; Lovitts, 2001; Lovitts & Nelson, 2000; Wright & Cochrane, 2000). These cited studies have revealed that, to fulfil their responsibilities for their own research, PhD students need to develop relevant research-related skills and to learn domain-specified knowledge (Pearson, 1996). Furthermore, it is crucial for them to successfully handle the factors or issues (as discussed in Section 2.4.2) which may impede their progress. Nevertheless, none of the studies probed into how the students learn what they need to learn or how they deal with the factors influencing their learning, although evidence shows that PhD students do rely on their own resources to cope with the situations (Delamont & Eggleston, 1983; Wright & Lodwick, 1989).

With a genuine interest in obtaining a greater understanding of the learning of doctoral students, Wright and Lodwick (1989) conducted a longitudinal study on the process of doctoral research at Reading University, commencing in 1985, and found that the students most commonly had to learn to do research by themselves despite the fact that they did turn to various sources for help, such as their own supervisors, other staff, technicians and peers. This finding is consistent with the observations of Delamont and Eggleston (1983) that most of their respondents worked through problems relying on themselves.

Both of these studies (Delamont & Eggleston, 1983; Wright & Lodwick, 1989) lend support to the belief that the learning at doctoral level is inherently independent.
However, neither of them probed into how the independent learning is carried out. In other words, they did not further investigate how the students “learn and think by him/herself” in the research process, or how they “possess [the] independence as a learner” (Wright & Lodwick, 1989, p. 34). Without examining these aspects of the students’ learning, it is hard to explicitly or convincingly interpret why “some Ph.D. [sic] students were more active, confident and effective than others” (Pearson, 1996, p. 306).

The review in Section 2.3 suggests that investigations of learning strategy use are robust enough to reveal individual differences in academic performance and to understand the interactions between learners and learning contexts. Nonetheless, up to now, little research has been done in this regard with PhD students (see Denzie & Pulos, 2000 for an important exception). Identifying “the issue of graduate student learning to be a neglected topic” (Denzine & Pulos, 2000, p. 15), Denzine and Pulos examined learning motives and learning strategies of Master’s and doctoral level students by means of the Study Process Questionnaire (Biggs, 1987), an instrument which was designed for, and has been widely applied to, scrutinising undergraduate student approaches to learning (e.g., Biggs, 1991; Gow et al., 1996; Kember & Leung, 1998; Matthews, 2001; Tweed & Lehman, 2002; Zeegers, 2001). The researchers (Denzine & Pulos, 2000) found that the primary differences between Master’s and doctoral students were motivational rather than strategic. Moreover, Master’s student approaches to learning were similar to those of undergraduate and even high school students. Regardless of the contextual validity of its instrument, the study by Denzine and Pulos (2000) is significant in that it explicitly focuses on the learning strategy use of doctoral students.

The discussions so far have clearly identified the research gap resulting from the lack of investigation into PhD students’ use of learning strategies. As a subgroup of the PhD student cohort in Australian universities, Chinese PhD students’ learning strategy use has been subjected to even less scrutiny. This topic will be addressed in the next section.
2.5 Chinese students and learning strategy use

Personal variables have a significant influence on student use of learning strategies, as reviewed in Section 2.3. Therefore, it seems necessary to first consider the characteristics of Chinese students before discussing their learning strategy use (Section 2.5.8). In this section, the characteristics of Chinese students will be presented in terms of moral development (Section 2.5.1), teacher and student relationships (Section 2.5.2), causal attributions for achievement (Section 2.5.3), motivation for learning (Section 2.5.4), approaches to learning (Section 2.5.5), adaptation to the learning environment (Section 2.5.6), and variations among ethnic Chinese groups (Section 2.5.7). This review focuses on Chinese students at a cultural level. However, it is worthwhile to note that significant individual variations exist, which will be considered in the data analysis of the present study.

2.5.1 Moral development

The moral development of Chinese students is closely related to the emphasis on moral education in China. In contemporary China, Confucianism “remains a defining characteristic of the Chinese mentality,” despite the historical and political developments in China over the last centuries (Tu, 1990, p. 136; see also S. Chan, 1999; Cleverley, 1991; Smith, 1991). Confucian educational thought has fundamentally influenced educational thought in China. As Smith (1991) stated, Westerners acquire ethical and moral substance from religious institutions and dogma, while Chinese learn values, morals, and ethical priorities from the school (see also Stevenson & Lee, 1996). The central goal of Chinese educational thought is concerned with the development of morality (Li, 2003a; Stevenson & Lee, 1996; Tu, 1990; Tweed & Lehman, 2002, 2003), which profoundly underlies the curricula (Cleverley, 1991; Li, 1990; Yuan, 2001), examination systems (Zeng, 1999), and teaching practices (Biggs & Watkins, 2001; Chan, 2001; Cortazzi & Jin, 2001; Gao & Watkins, 2001). This centrality plays an important role in the formation of
Chinese students’ characteristics, as indicated by student behaviour in the classroom (S. Chan, 1999; Ho, 2001; Li, 2003a) and their fear of failure in learning (Gordon, Cantwell & Moore, 1998; Smith & Smith, 1999; Smith, Miller & Crassini, 1998).

Moral education is the basic component of the curricula at all levels of education in China (from kindergarten to university), and is related to ideology, politics and morality (Cleverley, 1991; Li, 1990; Yuan, 2001). To maintain social harmony, moral education in modern China is a blend of traditional Confucian ethics and political orthodoxy, emphasising moral cultivation. It aims at training the students to be polite, honest, active, patriotic, industrious and disciplined, and ideologically correct.

In conjunction with the moral cultivation embedded in school curricula, the educational emphasis on morality is also manifested by the competitive examination system in China. Zeng (1999) analysed the exam systems in East Asia which were influenced by Confucianism and originated from the Chinese imperial examination system. He concluded that these exams measure “not only intelligence, but also character, determination, and the will to succeed” (Zeng, 1999, p. iv), and convey the symbolic message that “learning is a long journey of ordeal. Without pain, one can hardly attain it, and there is no short cut” (p. v). In other words, to cope with the exams, students are expected to not only have competence in knowledge acquisition, but also have the moral qualities which are promoted by Chinese educational practices.

Not only Chinese society but also the teachers themselves view teachers as role models who have the responsibility to nourish moral and ethical views in their students (Ballard & Clanchy, 1991; Cortazzi & Jin, 2001; Smith, 1991). Research on Chinese teachers’ conceptions of teaching reveals that teachers value the moral and personal dimensions of their responsibilities in guiding students’ development (Cortazzi & Jin, 2001; Gao & Watkins, 2001; Ho, 2001; Watkins, 2003). Teachers in the West tend to perceive their professional responsibility as restricted to the
activities in class such as instruction and classroom management of discipline, or to institutional roles in working hours (Ho, 2001; Pratt, Kelly & Wong, 1999). By contrast, teachers in China conceptualise their role as not only cultivating their students’ cognitive and intellectual development but also promoting positive attitudes towards learning and good personal conduct (Gao & Watkins, 2001; Ho, 2001). In consequence, Chinese students are less likely to generate negative attitudes towards learning than their counterparts in the West, as found in a number of empirical studies (Smith & Smith, 1999; Smith, Miller & Crassini, 1998).

Biggs and Watkins (2001) emphasise that the moral dimension is very important in Chinese teaching. In the Chinese holistic view of teaching, teaching involves not only educating the whole person, affective and moral as well as cognitive, but also teaching students their role in society, with collectivist obligations to behave in socially acceptable ways (Biggs & Watkins, 2001; Cortazzi & Jin, 2001). In accordance with Confucian values, teachers in the Chinese culture perceive that ideal students have the characteristics of being honest, self-disciplined, respectful, responsible and healthy; and other desirable traits are being diligent, unselfish, humble and obedient (Lam, 1996, cited in Salili, 2001, p. 79).

This discussion reveals that Confucian morals underpin all aspects of the educational system in China and are inculcated in students through diverse mechanisms. In consequence, Chinese students are cultivated to remain humble, and to exhibit diligence, endurance of hardship, steadfast perseverance and concentration (Li, 2002, 2003b).
2.5.2 Teacher and student relationships

This section will consider the characters of Chinese students from the perspective of teacher-student relationships in the Chinese culture. It will focus on three aspects: respectful learning (Section 2.5.2.1), attitudes towards teachers’ feedback (Section 2.5.2.2), and perceptions of the responsibility of learning (Section 2.5.2.3).

2.5.2.1 Respectful learning

Learning in Confucian societies has been characterised as “respectful learning” (Tweed & Lehman, 2002, p. 92), where learners are expected to respect and obey authority figures such as teachers and printed texts, the perceived authoritative sources of knowledge (Pratt, Kelly & Wong, 1999). The concept of “respectful learning” appears to be consistent with the observation that Chinese teachers are authoritarian in the classroom context (S. Chan, 1999; Ho, 2001; Pratt, Kelly & Wong, 1999). Moreover, it seems to cause the passivity and obedience of Chinese students observed in Western classrooms (Ballard & Clanchy, 1991, 1997; Samuelowicz, 1987).

Researchers suggest that Chinese students’ respectful learning is rooted in the Chinese academic culture (e.g., Cortazzi & Jin, 1997). Specifically, Chinese academic culture is believed to be collectivist in orientation, defining a strong hierarchical relationship between teachers and students. Transmission of knowledge is paramount in this culture. Students are expected to understand and master what they are taught, which is perceived as the premise of the development of an independent mind or creativity (Cortazzi & Jin, 1997).

However, recent studies of Chinese teachers’ teaching practices provide evidence that “a high degree of teacher control does not necessarily imply passive students” (Mok et al., 2001, p. 173). Based on the findings of recent research into the teaching practices in Mainland China and Hong Kong (Watkins & Biggs, 2001b), Biggs and
Watkins (2001) argue that the Western notion that teacher-centred teaching produces passive learners does not apply in the Chinese culture. Chinese students come to class with an eagerness to learn and have been taught to listen actively and attentively to others (Biggs & Watkins, 2001; Cortazzi & Jin, 2001; Li, 2003a; Mok et al., 2001). Moreover, they are educated to question only after they understand others or the knowledge presented (Biggs, 1994; Li, 2003a; Pratt, Kelly & Wong, 1999). Therefore, they tend to be quiet in classrooms and to accept whatever is taught by teachers. Nevertheless, it has been observed that Chinese students tend to seek interactions with their teachers after classes both in their own countries (Gao & Watkins, 2001; Ho, 2001; Pratt, Kelly & Wong, 1999; Salili, 2001) and overseas (Biggs, 1994).

In line with this observation, Li’s interpretation of respect (2003a) seems to be more relevant to respectful learning. According to Li (2003a), respect is an important concept in Chinese learning, and the belief in respect in the Confucian culture does not derive from the notion of obedience but from the concept of humility associated with self-perfection. To cultivate self-perfection, Chinese are expected to be open and ready to learn from anyone. The modest attitude underlying the belief in humility is frequently taken as a sign of obedience by the West.

2.5.2.2 Attitudes towards feedback

In the Chinese culture, praise is perceived to weaken character while punishment is believed to benefit it (Ho, 2001; Salili, 2001; Watkins & Biggs, 2001a), as conveyed by the sayings “children are spoiled if praised” and “scolding builds character” (cited in Watkins & Biggs, 2001a, p. 4). Influenced by such a cultural belief, Chinese students rarely obtain praise for their performance (Gow et al., 1996). What they expect is to receive “specific and critical” feedback rather than praise from their teachers (Pratt, Kelly & Wong, 1999; Salili, 1996a, 2001). The feedback mainly focuses on weaknesses or errors in students’ thinking with the purpose of correcting their understanding of what is learned.
The harsh environment where “praise is withheld, and criticism is frequent” (Biggs & Watkins, 2001, p. 282) appears also relevant to the reported high level of fear of failure. However, it does not seem to demotivate Chinese students to learn. Rather, Chinese students are found to possess strong positive attitudes towards schooling, and high achievement motivation (Boekaerts, 2003; Gow et al., 1996; Lee, 1996; Li, 2002, 2003b; Niles, 1995; Ramburuth & McCormick, 2001; Salili, 1996b; Smith, Miller & Crassini, 1998; Watkins, 2000; Yu, 1996) (see Section 2.5.3 for further discussion).

2.5.2.3 Perceptions of the responsibility for learning

It is argued that the attribution of responsibility for learning in a society is related to the cultural norms governing the roles, relationships and responsibilities of teachers and students (Pratt, Kelly & Wong, 1999). Chinese culture values students’ qualities of diligence, persistence, and hard work, while teachers are authorised to decide what to teach and how to teach, as well as being responsible for the development of students’ morality, as discussed in Section 2.5.1. This phenomenon leads some Westerners to reason that in the Chinese cultural context, it is the teachers who are responsible for the students’ academic performance rather than the students themselves (Ballard & Clanchy, 1991), as the following extract illustrates:

The teacher presents the necessary material and the student learns it, thoroughly and in depth. … According to the logic of the relationship [emphasis added], if the student has performed his [sic] side of the bargain faithfully and studied all the material thoroughly, then the reason for his [sic] failure must lie with the teacher. Either the teacher has not performed her [sic] work adequately, or she [sic] has deliberately failed this student out of malice. Even if the student had shown earlier signs of laziness, it would have been the teacher’s responsibility to ensure he [sic] worked harder, maybe by setting him [sic] additional work or by calling on his
family and the community to exhort and shame him into studying more conscientiously. (p. 20)

However, this position is supported neither by the findings of empirical studies (Pratt, Kelly & Wong, 1999; Salili, 1996a; Smith & Smith, 1999) nor by the Chinese traditional norms. It is the Chinese tradition that students are responsible not only for their own learning but also for the effectiveness of their teachers’ teaching (Wong, 1995, cited in Pratt, Kelly, & Wong, 1999, p. 251). Chinese students tend to perceive that “if I am a good student, it is because I had a good teacher; if I am a poor student, it is because I have not tried hard enough” (Pratt, Kelly, & Wong, 1999, p. 251).

The emphasis on diligence and persistence as well as the students’ duty towards their parents, who substantially support their children’s study and have high expectations of their academic success (Lee, 1996), fundamentally contributes to Chinese students’ tendency to take more personal responsibility for their academic performance (Salili, 1996a). Likewise, Smith and Smith observe that, when experiencing failure in their study, Chinese students engaged in great self-criticism of their own study methods rather than complaining about their teachers. This tendency is, by and large, also related to the effort attribution for academic achievement.

2.5.3 Causal attributions for achievement

Causal attribution of achievement is concerned with the perceived underlying causes of success (Crittenden, 1996; Salili, 1996a; Weiner, 1985, 1986, 2001). Perceived causality critically influences students’ goal expectations, effort investment, choice of learning activities, and affective states (see also discussion in Section 2.3.1.2). Furthermore, attributions possess cultural, contextual, and personal features (Biggs, 2003; Crittenden, 1996). At the cultural level, differences in causal attribution between the West and the Chinese have been identified (Alderman, 1999; Salili, 2001; Salili, Chiu & Hong, 2001a). Most distinctively, Chinese students frequently
attribute their academic achievement to their efforts and study methods, whereas their Western counterparts are more likely to attribute it to ability (Biggs, 1994, 1996; Biggs & Watkins, 1996; Lee, 1996; Li, 2002, 2003a, 2003b; Salili, 1996a; Tweed & Lehman, 2002; Watkins & Biggs, 2001a).

In the Chinese culture, effort is closely associated with the commitment to the process of self-perfection (Li, 2003a). The attributions to effort are consistent with the Chinese value of perseverance and endurance (Biggs & Watkins, 1996; Hong, 2001) and the Chinese belief that effort is virtuous (Salili, 1996a). The Chinese appreciate the success attained through hard work more than that by attained by high ability. Furthermore, Chinese students’ perception of ability is different from Westerners’ (Biggs & Watkins, 1996; Lee, 1996; Li, 2002, 2003b). For the West, ability is an inherent, stable, and uncontrollable character; and it enables people to learn. In contrast, the Chinese believe that ability can be enhanced in the process of learning. In other words, for the Chinese, ability is controllable and modifiable through working hard and expending effort. This perceived positive relationship between effort and ability is prevalent in the Chinese culture. Nevertheless, alternative views of this relationship exist among individuals in the culture (Hong, 2001). Hong stresses that students who hold a fixed ability belief have little confidence that greater investment of effort would lead to success. Consequently, their effortful study can be seen as fulfilment of role obligations as a student rather than a function of expectation of enhanced ability.

It is argued that effort attributions are more adaptive than ability attributions (Biggs, 1994; Heyman & Dweck, 1996; Li, 2003b; Salili, 1996a, 2001). Belief in effort promoting success can not only protect students’ self-esteem but also minimise learned helplessness when experiencing failure. It encourages students to improve their performance by putting in more effort, adopting more appropriate study methods, and working longer hours. Since students with this belief tend to consider that success is in their own hands (Watkins & Biggs, 2001a), they are likely to
accept more responsibility for their success and failures, as discussed in Section 2.3.1.2.

Besides the positive effects of effort attribution on academic success, its negative effects have also been noted (Biggs, 1994; Biggs & Watkins, 1996; Salili, 2001; Watkins & Biggs, 2001a). To pursue academic success, students are encouraged by this attribution to work harder and to execute persistence in the face of difficult learning tasks. However, when the greater effort invested ultimately results in failure, students are likely to feel overwhelmed, and experience immense stress, anxiety and feelings of shame. In extreme cases, some of them may take undesirable actions such as suicide (Biggs, 1994; Watkins & Biggs, 2001a). These possible consequences suggest that a balanced view of attribution might be beneficial.

### 2.5.4 Motivation for learning

Research has established that motivation to learn in a cultural context is a multi-faceted concept (Niles, 1995). It varies in accordance with not only individual differences but also cultural and contextual variables (Salili, Chiu & Hong, 2001b). In the West, motivation is categorised as intrinsic, extrinsic, and achievement motivation (Biggs, 1987; Biggs & Watkins, 1996). Intrinsic motivation typically refers to an inherent interest in the learning itself rather than to external factors such as satisfaction or challenge. In contrast, extrinsic motivation is in operation when students learn for external reasons such as “praise, grades, special privileges, and certificates or material rewards” (Alderman, 2004, p. 247). Although recent literature about motivation sees an emergence of the position that intrinsic and extrinsic motivation “are not incompatible and can coexist”, it is a traditional view that these two categories of motivation are “polar opposites” (Alderman, 2004, p. 248). Furthermore, intrinsic motivation is perceived to evoke the use of deep learning strategies which focus on understanding rather than reproduction (Biggs, 1987; Biggs & Watkins, 1996; Boekaerts, 2003). This supports the conventional
expectation in the West that students ought to be intrinsically motivated (Alderman, 2004).

Achievement motivation is construed as “individual competition by those whose need for success dominates their need to avoid failure” (Atkinson, 1964, cited in Biggs & Watkins, 1996, p. 274). It is “a highly individualistic, and ego-enhancing concept” in Western culture (Watkins, 2000, p. 167). This motivation is congruent with the Western conception of Self which encourages students’ self-efficacy, and consequently the attainment of their academic achievement, wellbeing, and self-esteem (Boekaerts, 2003). By focusing on these positive characteristics of Self, self-criticism is discouraged. On the contrary, Chinese culture values effort investment, self-criticism, and attention to weaknesses and imperfections (Boekaerts, 2003). These practices are believed to contribute to self-perfection and to prepare students for their role in hierarchical social relations.

Given different cultural values and varied perceptions of Self, the notions of motivation developed in the West do not seem equally applicable in non-Western cultures such as the Chinese (Biggs & Watkins, 1996; Boekaerts, 2003; Niles, 1995; Watkins, 2000; Watkins & Biggs, 2001a). In Chinese collectivist society, motives to learn are a combination of such factors as personal ambition, family expectations, pragmatic benefits, and expectation of positive social appraisal (Biggs & Watkins, 1996; Li, 2001, 2002, 2003b; Stevenson & Lee, 1996; Tweed & Lehman, 2002). There is considerable evidence to show that, with Chinese students, intrinsic and extrinsic motivation can function concurrently (Salili, Chiu & Hong, 2001a; Smith & Smith, 1999; Volet & Renshaw, 1996).

The primary achievement of education in Chinese culture is to attain self-perfection, the realisation of “the moral self and the familial self” (Yu, 1996, p. 246). Other perceived outcomes of education involve the possibilities of upward social mobility and economic advancement, which are considered to benefit not only the individual but also the family (Li, 2002, 2003b; Smith, 1991; Stevenson & Lee, 1996). In
relation to these expectations, the high academic achievement observed in Chinese students (Gow et al., 1996; Stevenson & Lee, 1996; Sue & Okazaki, 1990) should be interpreted within the collectivist framework (Watkins, 2000; Watkins & Biggs, 2001a). Contrary to the “individual-oriented” achievement motivation in the West (Yu, 1996, p. 229), striving for academic success in Chinese society is relevant both to the individual and to significant others (e.g., teachers), the family, the group, or the society, with a more dominant social orientation (Yu, 1996).

This discussion reveals a general cultural pattern of motivation for Chinese students but is not intended to indicate a static viewpoint. Recent cross-cultural studies of motivation suggest that motivation is a context sensitive process (Salili, Chiu & Hong, 2001b; Volet & Jarvela, 2001; Zusho & Pintrich, 2003), and dynamic changes in Chinese students’ motivation patterns appear likely when they study abroad.

2.5.5 Approaches to learning

Anecdotal evidence in the West more than frequently stereotypes students from East Asia as passive, reproductive, obedient and uncritical learners. These students are described as having a tendency not to speak out in class, to rely heavily on rote learning rather than understanding, to adopt a surface approach to learning, and to readily accept whatever is taught (Ballard & Clanchy, 1984, 1991, 1997; Barker et al., 1991; Bradley & Bradley, 1984; Burns, 1991; Kelly & Bennoun, 1984; Phillips, 1988; Samuelowicz, 1987). These characteristics all disagree with Western conceptions of “good learning” (Biggs, 1994, p. 40). However, Asian students have been found to demonstrate consistently high academic achievement in their academic studies as well as in international assessments (Biggs, 1994; Stedman, 1997; Stevenson & Lee, 1996; Sue & Okazaki, 1990). In addition, empirical findings challenge the stereotyped and static views of Asian students (Biggs, 1994, 1996; Chalmers & Volet, 1997; Kember & Gow, 1991).
Cross-cultural studies on student approaches to learning have found that the overall approaches to learning are comparable between Chinese students and their Western counterparts, and no significant differences are identified (e.g., P. S. C. Chan, 1999; Ramburuth & McCormick, 2001; Sadler-Smith & Tsang, 1998), whereas important similarities and differences do exist (Smith, Miller & Crassini, 1998). Ample evidence has consistently shown that Chinese students score higher on achieving approaches than their Western counterparts (Kember & Gow, 1990; Smith & Smith, 1999; Volet & Renshaw, 1996; Volet, Renshaw & Tietzel, 1994; Watkins, Reghi & Astilla, 1991). This is argued to be related to the high value that Chinese people place on education, and their pragmatic view of learning. However, with regard to surface and deep approaches, the findings are sometimes contradictory. Some researchers found that there were no significant differences between Chinese and Western students in using surface approaches (Sadler-Smith & Tsang, 1998; Smith & Smith, 1999) while some others found that Chinese students demonstrated higher (Ramburuth & McCormick, 2001; Volet, Renshaw & Tietzel, 1994) or lower (Biggs, 1994; Kember & Gow, 1991) use of surface approaches. Some revealed that Chinese students were more likely to use deep approaches than Western students (Kember & Gow, 1991; Smith & Smith, 1999; Watkins, Reghi & Astilla, 1991). However, this position may not be supported by others (e.g., Ramburuth & McCormick, 2001).

The diversity in the results can be attributed to the varied instruments employed and the selections of participants, and it represents the complexity of the learning process. Regardless of the inconsistencies in the results, all the cited authors have claimed that their research does not support the anecdotal view that Chinese students are surface learners who heavily rely on reproductive learning. The findings of these comparative studies strongly support the argument that “educators should pay more attention to both similarities and subtle differences between students from different cultures or countries, rather than assuming that students from certain countries behave in certain ways” (P. S. C. Chan, 1999, p. 9).
2.5.6 Adaptation to the learning environment

Chinese students have been observed to be highly adaptive to their learning environments (Chan, 2001; Dion & Dion, 1996; Volet & Renshaw, 1996), which supports a contextualised approach (Biggs, 2003) to researching Chinese students’ learning in cross-cultural contexts. Some researchers (Cortazzi & Jin, 1997) are concerned that, in a context of diverse cultures, misunderstanding may be caused by cultural discrepancies between the students and their teachers, which can be rather destructive and may obstruct the teaching-learning interactions. To reduce such an impact, some researchers suggest that it is critical for both the teachers and students to be aware of the cultural variations (Aspland, 1999b; Cortazzi & Jin, 1997).

However, there are different voices arguing that mutual cultural understanding is important but not sufficient (Biggs, 1997, 1999, 2001, 2003). Biggs asserts that it is more constructive to focus on what the students do within the context than on how they are different from the locals. In support of Biggs’ position, the recent literature of cross-cultural studies of Asian students strongly argues for contextualised approaches to investigating learning behaviours of these students (Chan, 2001; Gordon, Cantwell & Moore, 1998; Gow et al., 1996; Ninnes, Aitchison & Kalos, 1999; Ramburuth & McCormick, 2001; Sadler-Smith & Tsang, 1998; Smith & Smith, 1999; Volet, 1999; Volet & Renshaw, 1996). The findings of the cited studies collectively demonstrate that Chinese students’ choice of specific learning actions is more a response to the contextual demands than a function of their stable personal characteristics or cultural preferences. As Gordon, Cantwell, and Moore (1998) concluded, when studying abroad, students “adjust their learning and their search for understanding within the parameters … within which they must operate” (p. 9). It is believed that contextualised investigations are powerful means to improve the understanding of Asian students’ learning in the West.

The proposed contextualised approaches are further substantiated by the changes observed in the cultural values (Matthews, 2001) as well as in the learning goals,
approaches to study and even conceptualisations of learning (Volet & Renshaw, 1995, 1996) of Chinese students studying in Australian universities. Furthermore, the longer they have stayed in Australia, the greater the changes (Guan & Dodder, 1998, cited in Matthews, 2000). These findings were echoed by available data from the United States which established that Chinese students in America demonstrated a relatively rapid acculturation process, compared to non-Chinese student groups (Dion & Dion, 1996). However, not all the changes are perceived as positive (Chalmers & Volet, 1997). For example, Chinese students adjusted their approaches to learning from a deeper level to a more surface level after one semester studying in Australia (Volet & Renshaw, 1995).

Values mediate the behaviour of members of cultures (Bond, 1996; Matthews, 2001). Alteration in values observed by Matthews (2001) seems relevant to explain the changes in the learning of Chinese students discovered by Volet and Renshaw (1995, 1996). Their comparative studies provide evidence that the patterns of change in Chinese students’ learning are identical in nature and direction to those of local Australian students. The major factors impacting on the adjustment of students’ learning behaviours include staff approaches to teaching, the nature of interactions between students and teaching staff, and the nature of interactions between students and students (Zhang, Sillitoe & Webb, 1999). The observation that Chinese students strategically modify their learning behaviours to meet academic requirements in a different educational system manifests the impact of contextual influences on students’ learning (Volet & Renshaw, 1995, 1996). It lends further support to the position that “Chinese students are highly adaptive and attuned to the contexts” (Chan, 2001, p. 198), but disputes the view that Chinese students’ approach to learning is culturally defined and unchangeable across educational contexts, as Volet and Renshaw argue (1996).

Nonetheless, the adoption of a contextualised approach does not mean to ignore the students’ personal characteristics. Rather, it is necessary to take personal characteristics into consideration to explain the differences identified in learning
among different student groups, and to interpret the idiosyncratic differences within a given context (Biggs, 1994, 1996; Boekaerts, 1998, 2003; Chalmers & Volet, 1997; P. S. C. Chan, 1999; Kember & Gow, 1991; Marton, Dall'Alba & Tse, 1996). Volet and Renshaw (1995, 1996) observe a kind of continuity in Chinese students’ characteristics as learners such as the preservation of high achievement motivation, along with their strategic adaptability. These findings demonstrate dynamic interactions between personal and contextual factors (Volet & Renshaw, 1995). To reduce biased understanding of the learning of students from Confucian heritage cultures, it is desirable to conduct longitudinal research which adopts a situated view of learning and a differentiated view acknowledging the diversity of students’ prior educational and cultural experiences (Volet & Renshaw, 1995).

2.5.7 Variations among ethnic Chinese groups

The literature contains voluminous investigations of Asian students’ learning from varied perspectives. An overwhelming majority of the studies have been done with Hong Kong Chinese (e.g., Kember & Gow, 1990; Marton, Watkins & Tang, 1997; Sadler-Smith & Tsang, 1998; Watkins & Biggs, 1996, 2001b), and a relatively small portion involved mixed groups of ethnic Chinese from Hong Kong, Singapore, Malaysia, China, Taiwan or other parts of the world (e.g., Smith & Smith, 1999; Smith, Miller & Crassini, 1998; Volet, 1999), or from other countries of Confucian heritage cultures (e.g., Ramburuth & McCormick, 2001). The term “Asian (or East-Asian) students” refers almost exclusively to students from the Confucian heritage cultures (e.g., China, Hong Kong, Taiwan, Japan, Korea, Singapore and Malaysia) (Biggs, 1994). Another term “Chinese students” has been used to include students from different ethnic Chinese groups, and more often, it is used in place of Asian or East-Asian students. The usage of these terms indicates a tendency in the literature to consider Asian students as a homogeneous group and largely ignores the apparently different ethnicity among them, as remarked by Smith. However, Biggs and Watkins (2001) emphasise that “the ‘Confucian heritage’ is not a monoculture” (p. 297).
While Asian students share some commonalities in their learning which can be traced to the same cultural heritage (Biggs & Watkins, 2001), important differences in their learning have also been observed (Leung, 2003; Smith, 2001; Wong & Wen, 2001). For example, Wong and Wen (2001) compared the conceptions of learning held by university Chinese students in Hong Kong and Nanjing (Mainland China), using Marton and colleagues’ classification (Marton, Dall’Alba & Beaty, 1993). This classification comprises six qualitatively different conceptions: learning is viewed as (1) increasing one’s knowledge, (2) memorising and reproducing, (3) applying, (4) understanding, (5) seeing something in different way, or (6) changing as a person. The last two were identified as skill oriented, the most advanced and sophisticated conceptualisation of learning. The results of Wong and Wen’s study (2001) showed that, regardless of similarities, differences were identified in the conceptions of learning among Hong Kong and Mainland Chinese students. Specifically, Hong Kong students held diverse beliefs and no clear pattern was identified in their conceptions of learning. In contrast, Mainland Chinese students showed a more consistent and more sophisticated view of learning. They emphasised the view of learning as *applying* and highly valued the conceptions of learning as *seeing things differently* and *improving self*. This appears to be in harmony with the ultimate goal in Chinese learning, that is, personal reform (Li, 2002, 2003a, 2003b; Tu, 1990; Tweed & Lehman, 2002, 2003).

Significant differences in approaches to learning were also observed among different ethnic Chinese groups. Smith used the Approaches to Studying Inventory (Entwistle & Ramsden, 1983) to compare approaches to learning among Chinese students from three national groups, namely, Malaysia, Singapore and Hong Kong. All the students were newcomers to two Australian universities. The validity of this inventory for examining Chinese students’ approaches has been verified by a number of studies (Kember & Gow, 1990; Kember & Leung, 1998; Smith, Miller & Crassini, 1998). The major findings of Smith’s survey (2001) demonstrated that Malaysian Chinese were more dependent in their learning, and Singaporean students
were more proficient in clearly and systematically presenting ideas and concepts. Hong Kong students had a significantly high level of fear of failure, which indicated they were more anxious in their learning than the other two groups.

The differences observed in the learning of different ethnic groups are attributed to the noteworthy variations in the political, social, or sometimes religious ideology in these countries, as well as in their history, educational systems, and wealth (for detailed discussions about these differences, see Altbach, 1991; Chan & Drover, 1997; Smith, 2001; Zeng, 1999). Based on the differences observed, Smith (2001) asserted that “caution must therefore be taken against forming fixed conceptualisations of cultural characteristics and considerable care [must] be given in sample definition and selection in cross-cultural research” (p. 429). Furthermore, generalisation of results obtained from one group to others must be approached with care (Smith, 2001).

Responding to Smith’s suggestion (2001), and taking into consideration the fact that few studies, if any, have specifically focused on Mainland Chinese students studying overseas, this study will restrict its participants to Mainland Chinese students studying in Australian universities. In addition, the debates on Asian or Chinese students’ learning have concentrated on school and university students; consequently, there is a dearth of research on PhD students. This study is particularly designed to fill this gap in that it will focus on the learning of Mainland Chinese PhD students in Australian universities.
2.5.8 Chinese PhD student use of learning strategies

The preceding sections (Sections 2.5.1 -2.5.7) have discussed the characteristics of Chinese students in general; this section will focus its attention onto Mainland Chinese PhD students studying overseas, with an intention to examine the current understanding of their learning strategy use in the existing literature.

A review of the literature showed that little research has explicitly investigated the learning processes of overseas Mainland Chinese PhD students (see McClure, 2003 for an exception), despite the significantly increased number of this group of students in English-speaking countries. Nevertheless, the literature has seen a growing interest in research higher degree (RHD) students from non-English speaking backgrounds (NESB) in recent years. The scrutiny has mainly concentrated on two interrelated dimensions of their learning. One is their general learning experience, such as the degree of their satisfaction with the course experiences (Harman, 2003); and the effects of cultural, emotional and social factors on their experience (Bryce, 2003; Ingleton & Cadman, 2002; Myburgh, Niehaus & Poggenpoel, 2002). The other is the relationship between NESB RHD students and their supervisors (Aspland, 1999a; Aspland & O'Donoghue, 1994; Cadman, 2000; Chen, Absalom & Holbrook, 2003; Hird, 1997; Ryan & Zuber-Skerritt, 1999). This body of literature may have implications for understanding the learning experience of overseas Mainland Chinese PhD students. Hence, the following discussion will draw on studies of NESB RHD students.

The studies cited above have collectively revealed that, with their distinct linguistic and cultural backgrounds, the learning experience of NESB RHD students tend to be problematic. The problems confronting them range from the difficulties associated with English language deficiencies to the adaptation to an academic culture emphasising critical thinking, analytical skills, and independent learning to the problems of living away from home. First of all, researchers were concerned that NESB students were not skilled enough to conduct independent postgraduate
research in a Western academic context (Ballard & Clanchy, 1997). Second, NESB students were observed to encounter discourse problems both in their writing (Parry & Hayden, 1994) and reading (Smith, 1999). For example, Smith (1999) contends that, even though most NESB research postgraduates’ English is competent enough to overcome the purely linguistic demands of the text, “much of the critical edge is lost because they are unfamiliar with the discursive context of the language used” (p. 156). However, some researchers noted that NESB RHD students’ difficulty with academic English at the postgraduate level may not be much different from that of native English speaking students (Geake & Maingard, 1999). For example, “academic terminology is a potential source of alienation” even for English speaking postgraduates (Aspland & O'Donoghue, 1994, p. 71).

Further, a number of researchers have addressed the misunderstandings or difficulties in communication between NESB RHD students and their supervisors and the consequent adverse impact on their learning experiences (Aspland, 1999a, 1999b; Bryce, 2003; Chen, Absalom & Holbrook, 2003). Concerns have been raised about the cultural differences (see Cryer & Okorocha, 1999 for detailed discussions); the language barrier, cultural influences on the individual’s perspectives and ways of thinking, and NESB students’ heavy dependence on their supervisors (Bryce, 2003); and the discrepancies in mutual expectations (Chen, Absalom & Holbrook, 2003). While some researchers strongly advise that it is essential to enhance supervisors’ cultural sensitivities through supervisor training (Harman, 2003), others argue that it is important to develop mutual cultural understanding (Bryce, 2003; Cryer & Okorocha, 1999; McClure, 2003). Nevertheless, there is evidence showing that, acknowledging the challenges of studying in a new academic environment, NESB students essentially appreciate the learning experiences of developing new learning styles and critical thinking abilities, and assimilating into the host culture (Cadman, 2000).

Last but not least, NESB RHD students are found to experience more serious problems of social and intellectual isolation, compared to their local counterparts.
(Hockey, 1994; Ingleton & Cadman, 2002; Wright & Lodwick, 1989). In a state of isolation, NESB students encounter greater difficulties in accessing peer and academic cultures than local students (Deem & Brehony, 2000; Friedman, 1987). Moreover, they tend to suffer from feelings that they are unknown and unrecognised in the new learning environment, and do not have nearby family support. This challenges their self-confidence in achieving academic success (Ingleton & Cadman, 2002).

It appears that researchers are inclined to view NESB RHD students as much disadvantaged in pursuing their goals in a culturally different academic context. However, in contrast to local students, NESB RHD students, especially PhDs, were found to have a higher degree of satisfaction with their courses (Harman, 2003) and were more likely to successfully complete their studies within the time frame (Wright & Cochrane, 2000). In addition, they were observed to better develop the personal characteristics (e.g., determination, persistence) which are demanded by postgraduate studies (Wright, 1986).

More significantly, NESB RHD students were discovered to develop coping strategies to deal with the isolation and academic challenges that they confronted in the course of studying abroad (McClure, 2003; Myburgh, Niehaus & Poggenpoel, 2002). The coping strategies involved relying heavily on their support systems back home and making use of local support networks (e.g., making new friends with locals and fellow international students) (Myburgh, Niehaus & Poggenpoel, 2002), exerting self-determination, participating in collegial support groups, seeking clues of assessment criteria, and working long hours on academic tasks (McClure, 2003). The studies on NESB RHD students’ coping strategies demonstrate that both positive and negative experiences contribute to the students’ motivation to adjust to the new learning environment (McClure, 2003) and to their self-development as individuals and learners (Myburgh, Niehaus & Poggenpoel, 2002).
As NESB RHD students, Mainland Chinese PhD students of social sciences studying in Australia are likely to confront the challenges reviewed in this section. However, to what extent they share these similarities and how they carry out their doctoral studies remain to be investigated. The present study is designed to address this research gap by finding answers to the following two questions:

1) What learning strategies are used by Mainland Chinese PhD students of social sciences in Australian universities?

2) What are the factors which contribute to their learning strategy use?

### 2.6 Summary

The critical review of the literature on learning strategies (Sections 2.2-2.3), PhD students’ learning (Section 2.4), and Chinese students’ learning (Section 2.5) has profoundly justified the research focus of this study. The framework derived from the studies on learning strategies will be applied to interpret and analyse the data collected. It consists of two dimensions: learning strategies (Section 2.2) and the factors pertaining to learning strategy use (Section 2.3).

The learning strategy dimension contains three categories: metacognitive strategies, cognitive strategies, and social/affective strategies. Each strategy category encompasses a number of specific strategies which can be grouped into different subcategories (see Table 2.2). The factor dimension comprises two domains: the personal domain and the contextual domain. The use of learning strategies empowers learners to take responsibility for their own learning and thus promotes learner autonomy (Clifford, 1999; Weinstein, 1987; Zimmerman & Schunk, 2001). When students’ learning strategy use conforms to the factors in the personal and contextual domains, the efficiency of their learning can be optimised (Biggs, 1984; Vermunt, 2005; Zimmerman, 1990).
Given that the existing studies on learning strategies have been done almost exclusively with coursework students in classroom contexts, the conceptualisation of learning strategy use developed in these studies may be modified when the investigation is focused on the process of research-learning at the doctoral level. In other words, the specific components in the learning strategy and factor dimensions may be altered as a result of this focus.

In the next chapter, the methodology applied in this study will be delineated, in terms of data collection methods and the procedures of data collection and analysis.
Chapter 3 Research Methodology

3.1 Introduction

As justified in the preceding chapter, this study seeks further understanding of the nature of the learning processes of Chinese PhD students of social sciences in Australian universities, by tackling the following research questions from the students’ perspective:

1) What learning strategies do Chinese PhD students of social sciences use in their doctoral studies in Australian universities?
2) What are the factors which contribute to their learning strategy use?

The exploratory nature of this study required the collection of time- and context-sensitive data, and an emphasis on giving participants a public voice. To meet with this requirement, research methods in the qualitative paradigm were considered to be the most appropriate (Lincoln & Guba, 1985; Merriam, 1998; Patton, 2002; Yin, 2003). It is critical to match the research methodology with the nature of the study so as to ensure that “the results [are] understandable, credible, and relevant” (Patton, 1990, p. 149).

The choice of adopting qualitative research methods is strongly supported by the existing investigations of learning strategies used in other learning contexts (Askell, 2001; Bereiter & Bird, 1985; De Groot, 2002; O'Malley & Chamot, 1990; Oxford, 1990; Styles, Beltman & Radloff, 1999; Vermunt, 1996). The literature has shown that the most effective way to examine students’ use of learning strategies is to probe their understanding and perceptions of various aspects of learning through processes ofintrospection and retrospection (Faerch & Kasper, 1987; Garner, 1988; Nunan, 1992). Qualitative research methods which involve such processes include interviewing (Minichiello et al., 1995; Seidman, 1998), stimulated recall (Gass &
Mackey, 2000; King & Tuckwell, 1983), think-aloud protocols (Garner, 1988; Gass & Mackey, 2000), focus group interviews (Greenbaum, 1998; Krueger & Casey, 2000; Morgan, 1997; Vaughn, Schumm & Sinagub, 1996) and observations (e.g., Gass & Mackey, 2000). These methods are powerful in their provision of in-depth and detailed description, understanding and knowledge of particular phenomena from the participants’ perspective (Merriam, 1998; Patton, 1990).

The analyses of the pros and cons of the qualitative methods suggested by the literature on learning strategy research, as well as the development of the present inquiry, indicated that the methods of individual interviews were most suitable for this study. The methodological issues will be discussed and justified in the successive sections.

First, the selection of research methods will be discussed to show that the research approach adopted has a strong theoretical basis and that it is valid to investigate the phenomena of interest in real-life situations (Section 3.2). Second, following the discussion of participant recruitment (Section 3.3), justification of the data collection methods will be presented to further illustrate the strength and validity of the methodology adopted in this study (Section 3.4). Next, the genuine and rigorous nature of this study will be demonstrated through the description of the data collection procedures (Sections 3.5 and 3.6) and the establishment of trustworthiness (Lincoln & Guba, 1985; Patton, 2002) (Section 3.7). Finally, the discussion of data analysis processes will firmly establish the position that this study is grounded within the students’ perspective on their learning strategy use (Section 3.8). The strengths and weaknesses of this study will be fully and critically acknowledged in these discussions.
3.2 The selection of research methods

Various qualitative research methods have been used to investigate students’ learning strategies, as mentioned in Section 3.1. However, when the characteristics and nature of learning contexts and tasks of social science PhD students (discussed in Section 2.4) were taken into consideration, some of these methods appeared inapplicable to this study. Such methods included focus group interviews, observation, think-aloud protocols, and diary studies, although they have been widely employed to examine the learning strategy use of students in classroom contexts. The reasons for the unsuitability of these methods are discussed below.

The method of focus group interviewing was the researcher’s first choice for this study. However, when the attempt at finding participants to form focus groups failed, the method was abandoned for two basic reasons. First, having a group of students who are working at a similar stage of their research is the basic requirement to form a homogeneous focus group (Krueger & Casey, 2000; Morgan, 1997). Nevertheless, social science PhD students are rather isolated, both socially and intellectually, as discussed in Chapter Two (Section 2.4.1). This made it hardly possible to find them in groups. It was especially so when students from a certain background were focused on, for example, Mainland Chinese studying social sciences. The second reason was that only a small number of students, insufficient to form focus groups, were willing to participate in this study (see Section 3.3 for a detailed discussion).

The methods of observation and think-aloud protocols have been widely used in the research on learning strategies and cognitive processes (see Yang, 2000 for a review of their application in the field of language learning strategies). However, the difficulties of examining invisible cognitive strategies by observation have been reported by a number of researchers (Chamot, 1987; Rubin, 1981). In addition, it was shown that observation was not suitable for researching subjects at tertiary level due to the variety of teaching and learning activities (Samuelowicz, 1999).
Taking into consideration the pitfalls of the observation method discussed, the researcher reasoned that it was not applicable to this study, although the method was used in other studies where PhD students were involved (e.g., Dong, 1996). To investigate the doctoral students’ learning process by means of observation, at least two settings should be observed. One is the *supervisory* meeting, which normally happens in a supervisor’s office. The other is the *individual* study, which takes up a great portion of doctoral students’ learning time (Cullen et al., 1994). However, the flexible and non-public nature of these two processes (Kandlbinder & Peseta, 2001), especially the individual study, can make it very difficult to arrange an observation. Furthermore, even if the observation was able to be arranged, the researcher was concerned that the “observer effect” (Gay & Airasian, 2000, p. 233) introduced by close-distance observation would, to a great extent, reduce the validity of observational data. Given these disadvantages, the method of observation was not employed in this study.

With regard to the method of think-aloud protocols, it was theoretically suitable for this study but not practically feasible. The researcher understood that, when this method was successfully conducted, think-aloud protocols could be a very powerful method to produce rich “live” data about the learner’s cognitive or metacognitive processes that otherwise might not be accessible (Ericsson & Simon, 1993; Gass & Mackey, 2000, p.17). However, this method requires the participants to have a high level of ability to automatically articulate their thoughts when they are working on a task. It is especially so when the method is applied in a natural context where no researcher is present. On the other hand, the performance of think-aloud protocols can demand a high frequency prompts from the researcher, for example, “what are you thinking?” (Gass & Mackey, 2000). It is impossible to meet this requirement when the researcher intends to collect data that is naturally generated.

Diary studies are another qualitative method frequently used in research on learning strategy use (Halbach, 2000). Although this method has its strengths in collecting data about students’ reflections on their own learning, its application would impose
an extra time-consuming responsibility on the participants. Given that PhD students are all busy people, the researcher was concerned that the requirement to keep a learning diary would discourage students from participating in this study. As a result, this method was not employed in this investigation.

After studying a wide range of qualitative research methods and in conjunction with the recruiting of participants, the researcher finally adopted a methodology which combined different types of individual interviews. According to De Groot (2002), using qualitative interviewing as the sole method for gathering data was appropriate for the purpose of this study. It attempted to gain an in-depth understanding of the PhD learning process from the students’ perspective, which means that participants’ “subjective view is what matters” (Marshall & Rossman, 1999, p. 110).

The overall methodological framework that emerged from the inquiry process (Lincoln & Guba, 1985; Patton, 1990, 2002) is presented in Table 3.1. It was theoretically based on the narrative inquiry method (Flick, 1998, pp. 98-127; Lieblich, Tuval-Mashiach & Zilber, 1998; Wengraf, 2001, pp. 111-151). The narrative inquiry method normally comprises three interrelated “subsessions” (Wengraf, 2001, p. 119) or “stages” (Flick, 1998, p. 99) of interviews; each later session or stage is based upon the former one. The foci of the first two stages are concrete and general descriptions of the phenomenon investigated. When it is considered necessary, based on the initial analyses of the information collected in the first two stages, the third stage is carried out to gain a further understanding of the phenomenon studied. Compared with the first two stages, this final stage is more interviewer-controlled, where the interviewer may ask questions about “topics not mentioned” (Wengraf, 2001, p.120) as well as theory-generating questions, which are more abstract or theoretical.

Detailed discussions of the narrative inquiry and the rationale of the interview methods used in this study are presented in Section 3.4.
Table 3.1 The methodological framework of this study

<table>
<thead>
<tr>
<th>Stage</th>
<th>Purpose</th>
<th>Research method (Instruments)</th>
<th>Content/focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Collect background information on participants</td>
<td>Biodata questionnaire</td>
<td>Previous educational experiences, study experiences in Australia, present study status, research experiences, gender, age, etc.</td>
</tr>
<tr>
<td>2</td>
<td>Obtain information on doctoral learning experiences and form the basis of next stage’s investigation</td>
<td>Storytelling (Storytelling instruction)</td>
<td>Concrete and general descriptions of students’ doctoral study experiences</td>
</tr>
<tr>
<td>3</td>
<td>Have participants elaborate on the topics mentioned in the storytelling and obtain further information about their learning experiences</td>
<td>Stimulated recall interview (Interview guides)</td>
<td></td>
</tr>
</tbody>
</table>
| 4     | 1) Fill up gaps identified in the data collected by means of storytelling and stimulated recall  
2) Verify the researcher’s interpretation of data collected in the first two stages | Semi-structured interview (Semi-structured interview guides) | Complementary accounts of students’ doctoral learning experiences  
Further investigation of topics suggested by analyses of the first two stages’ data, or informed by the literature |

3.3 Participant recruitment

In accordance with the qualitative nature of the study, the sampling strategy of selecting “homogenous samples” was purposefully employed to find “information-rich cases” (Patton, 1990, pp. 173, 169). By means of this strategy, participants were recruited in order to gain an in-depth understanding of the phenomena in question, rather than representing the population (Charmaz, 2002). Because this study was to explore the learning strategies used by Mainland Chinese PhD students of social sciences in Australian universities, all the participants needed to meet these four criteria: that they originally came from Mainland China, that they have obtained at least their undergraduate degrees in China, that they are studying in a social science discipline (for example, humanities, social sciences, education,
business, and the like), and that they are currently undertaking a PhD in an
Australian university. These criteria were proposed to ensure that the participants
possessed shared perspectives and experiences that were related to the present
research topic. The following is a description of how the participants were recruited.

The ethical approval for this study was obtained from the Griffith University
Behavioural Sciences Ethics Sub-Committee (GUBSESC) in 2002 (Protocol number
CLS/07/02/hec) before the researcher started seeking participants. To recruit the
participants, the researcher first approached the Griffith University Postgraduate
Student Association (GUPSA) and Griffith University Postgraduate Office (GUPO).
GUPO could not help in any way because of the issue of privacy, but GUPSA was
able to help the researcher by putting a short notice (Appendix 1) on its weekly
email and in its hardcopy publication, Grad-Chat, which was sent to postgraduate
students.

The response rate to the call for participants notice through GUPSA was extremely
poor. In fact, only one student contacted the researcher after reading the notice. The
emergence of the difficulties in finding participants indicated that the method of
focus group interviewing was not feasible. After one month’s waiting, the researcher
decided to change the research method from focus group interviews to individual
interviews. Meanwhile, an alternative approach was adopted to look for participants,
which was to contact the relevant individual schools and academic staff at two
universities in Queensland. These two universities (for confidentiality reasons, the
names of the universities are not given here) were chosen because they had a
relatively large overseas student cohort, comprising a large proportion of Chinese
students. Additionally, the researcher made use of personal contacts.

On the basis of the information provided by the researcher, the helping agencies
forwarded potential participants the introduction of this study. It included the topic
of the study, the aim, the methods used and the researcher’s contact details. When
the students who were interested contacted the researcher for further information,
the details of how the study would be conducted, what would be involved in their participation, and how their identity and privacy would be protected were first given on the phone and then sent to them by email (see Appendix 2 for the detailed information given to the students when required).

In the end, four PhD candidates from Mainland China expressed their willingness to participate in this study. This process took about three months in total. After the interviewing started with the first four students, another two students joined the research program, one three weeks later and the other two months later. None of the six students was personally known to the researcher prior to the commencement of this study. The Informed Consent Package (Appendix 3) approved by the GUBSESC was presented to each participant at the first interview and, after reading the Information Sheet, he or she signed the Informed Consent Form, together with the researcher.

The process of participant recruitment was terminated after the sixth student joined this study. The six participants consisted of five female students and one male student, with ages ranging from mid-twenties to forties. All six students obtained their Bachelor degrees in China; five of them had an overseas Master’s degree and one received a Master’s degree in China. They were from a range of disciplines, including education, linguistics, economics, marketing and management. The length of time that they had been in Australia varied largely, with an average of 5.9 years. They had different experiences in doing research (experienced vs less experienced) before the commencement of the doctoral study. This is a general description of the participant group; detailed profiles of each participant are presented in Appendix 18, including age range, educational background, length of residence in Australia, research experience, and other relevant information. In addition, discussions about their backgrounds and doctoral experiences will be included in Chapter Four.

Responding to the fact that only six students participated, this study turned out to be a kind of multiple case study, involving “collecting and analysing data from several
cases” (Merriam, 1998, p. 40). This outcome was considered as valid for the present research purposes. The rationale was delineated as follows.

First, a relatively small number of participants is one of the basic characteristics of qualitative research (e.g., Merriam, 1998; Patton, 1990). The underpinning logic is that qualitative researchers do not intend to “search for universal laws and generalizations across time and space” (Patton, 1990, p. 486). Rather, they aim to gain a holistic understanding of the phenomenon, which, specifically in this study, is the learning strategy use of Mainland Chinese social science PhD students. Based on the understanding, “context-bound extrapolations” will be generated (Patton, 1990, p. 491). Therefore, neither the number of participants nor the imbalance of gender gave rise to concerns.

Second, the data collection methods (three types of interviews, see Sections 3.4 and 3.6) employed in this study have the potential to generate a large amount of data. The small number of participants was helpful in keeping the data to a manageable size. Furthermore, according to the case study method (Merriam, 1998; Stake, 1995, 2000), six was a big enough number of cases to allow “variation” (Stake, 2000, p. 437) to emerge across the cases, including similarities and contrasts, and thus to generate “compelling interpretation” (Merriam, 1998, p. 40).

Finally, the case study method facilitated the realisation of the purpose of this investigation, which was to discover the learning strategies used by these students in their doctoral study and thus gain a further understanding of their doctoral learning processes in the Australian educational context. The case study design enabled the researcher to collect data in “real-life situations” (Merriam, 1998, p. 41), which would “retain the holistic and meaningful characteristics” of the phenomenon investigated (Merriam, 1998; Yin, 2003, p. 2). Consequently, the analyses of the data collected by this method were able to fulfil the goal of this study.
3.4 Data collection methods: Theoretical basis and justification

The method of narrative inquiry provided the theoretical basis of this research design, as briefly mentioned in Section 3.2. In line with the method, this inquiry consisted of three stages of interviews for data collection, which will be discussed in the following sections.

3.4.1 Narrative inquiry

Narrative studies have been widely applied to many fields, such as education, psychology and linguistics, since late last century (see Lieblich, Tuval-Mashiach & Zilber, 1998 for a review). In the field of education, one of the popular applications of narrative studies is to investigate people’s educational experiences to gain an understanding of the meaning and nature of the processes from the individual’s perspective (Anderson, 2001; Kelchtermans, 1999; McSheffrey, 1992). Following such an orientation, this study employed the narrative inquiry method to explore the learning experiences of the six Chinese PhD students, with the focus on investigating their learning strategy use. It was expected that this exploration would provide improved knowledge of the nature and process of these students’ doctoral learning.

As briefly mentioned in Section 3.2, the narrative inquiry method adopted in this study was basically informed by the works of Wengraf (2001), Flick (1998, pp. 98-127) and Lieblich, Tuval-Mashiach, and Zilber (1998). More specifically, Wengraf’s (2001) model of Biographic Narrative Interpretive Method (BNIM) structured the data collection procedures of this study, whereas Lieblich, Tuval-Mashiach, and Zilber’s (1998) model of Life Story Interviews (LSI) guided the interaction between the interviewer and the interviewees.

According to BNIM (Wengraf, 2001), the main data collection process consisted of three stages of interviews and each stage had its own features, as shown in Table 3.1.
In stage one, storytelling was used to elicit descriptions of the students’ PhD learning experiences, providing the basis for the next stages of investigation. In stage two, the method of stimulated recall interview was applied to seek further elaboration, clarification or comments on the topics raised by the interviewees in storytelling. These first two stages together not only served the function of providing concrete and general descriptions of the phenomena of interest (Flick, 1998; Wengraf, 2001), but also made initial interpretations possible. Based on the analyses of the data collected from the first two stages, the third stage of semi-structured interviews was performed to explore the topics not covered previously and to collect more information relevant to the learning strategy use of these doctoral students.

In the BNIM model, interviewers are constrained to keep intervention to a minimum level in the initial session, given that they are supposed to facilitate the interviewees to “complete their spontaneous gestalt” (Wengraf, 2001, p. 122). However, Wengraf acknowledges that the BNIM interview, especially the first session, might not be suited to every participant. When this type of interview does not work with certain participants, Wengraf suggests the use of “a more conventional narrative or other semi-structured depth-interviewing” (2001, p. 136). This alternative allows more interactions between the interviewer and the interviewee, and is supported by Lieblich, Tuval-Mashiach, and Zilber (1998). They agree that, in narrative studies, the types of interactions can be very different in each interview because of the “normal individual differences among the interviewers as well as the narrators” (Lieblich, Tuval-Mashiach & Zilber, 1998, p. 26).

In narrative studies, researchers can expect either a “monological” interview, which provides an “uninterrupted narrative”, or a “more dialogical” interview, which consists of many question-answer transitions (Lieblich, Tuval-Mashiach & Zilber, 1998). Regardless of the circumstances, the principle is that the interviewer needs to have an “open and flexible” attitude toward the interviewee’s line of narrative to obtain authentic stories (Lieblich, Tuval-Mashiach & Zilber, 1998, p. 26; Wengraf, 2001, pp. 122-126). The stances of Wengraf and of Lieblich, Tuval-Mashiach, and
Zilber are consistent in nature. However, the positions of Lieblich and colleagues appear to be more flexible and pay more explicit attention to individual differences. Therefore, their approach primarily guided the interactions between the interviewer and the interviewees in this study (see Section 3.6.2 for a detailed discussion).

The discussion so far has established the theoretical basis of the methodology in general; the following sections will consider the three interview methods used, namely, storytelling, stimulated recall interview, and semi-structured interview. In this section, only the theoretical aspects of each method will be discussed to justify the adoption of these methods, while the application of each method and the instruments used in this study will be presented in the section on data collection procedures (Section 3.6).

### 3.4.2 Storytelling

Storytelling is a commonly used technique in narrative studies. It is also known as narrative interview (Riessman, 1993). The underlying theory is that humans, by nature, are storytelling creatures who “think in story form, speak in story form, and bring meaning to our lives through story” (Atkinson, 1998, p. 1; Connelly & Clandinin, 1990; Cooper, Collins & Saxby, 1994).

However, there is not a uniform definition of story (Leitch, 1986). In this study, the term *story* was used as a metaphor, referring to “the essence of what has happened to a person. … It includes the important events, experiences, and feelings of a lifetime” (Atkinson, 1998, p. 8). It shares the basic characteristics of a story as discussed in the literature:

- It was chosen to be told by the storyteller (Atkinson, 1998, 2002; Brunner, 1994).
- It was not a pure representation of the reality but involved reflection and interpretation (Abma, 1999; Atkinson, 2002; Lyons & LaBoskey, 2002).
● It was a way of knowing and transmitting (Livo & Rietz, 1986; Lyons & LaBoskey, 2002; Witherell & Noddings, 1991).
● It had coherence and sequence (Leitch, 1986; Livo & Rietz, 1986).
● Its meaning was context-bounded (Riessman, 1993; Young, 1987). The context is “three-dimensional,” joining time, place and person together (Clandinin & Connelly, 2000, p. 54).

The listed characteristics of the story guaranteed that the storytelling effectively served the purpose of the present inquiry, which intended to investigate the learning strategy use from the students’ perspective. Because the stories told were chosen by the students themselves and integrated their reflections on and interpretations of their own experiences, they would sufficiently reveal how the students perceived the phenomenon under investigation. As Mishler (1990) argues:

This is not a weakness, but rather a hallmark of … research in which the key problem is understanding how individuals interpret events and experiences, rather than assessing whether or not their interpretations correspond to or mirror the researchers’ interpretive construct of “objective” reality. (p. 427)

The criterion of validity relies on whether the researcher’s interpretation of the stories eventually makes sense to the participant (Mishler, 1990). Similarly, as suggested by the literature on qualitative research, it is the participants’ perspectives on the phenomenon of interest that is more valued than the ultimate truth “in any fundamental sense” (Patton, 1990, p. 484; Taylor & Bogdan, 1998).

As a means of knowing and transmitting, the stories that were told provided direct access to the world of the students’ doctoral learning. The stories were rich in detailed information on the events, experiences and feelings of the PhD process. This information constructed the context to facilitate the understanding of the students’ perspectives and thus reveal the nature of their learning strategy use.
The coherence and sequence of the stories were defined within a context. The references to time, place and people made the holistic interpretation possible. This information contained answers to the questions of how and why certain learning strategies were developed or adopted, as well as of how and why things happened in a certain way. Furthermore, they provided information not only for investigating the changes of perceptions within or across the cases, but also for examining issues such as consistency or conflicts in the data.

In keeping with the aim of this investigation, the participants in this study were asked to focus on the stories of their PhD study rather than on their life stories (Atkinson, 1998; Wisniewski & Hatch, 1995). However, the open-ended nature of the method empowered the students to narrate, alongside their experiences of doctoral learning, their educational and working experiences prior to the doctoral study, how and why they embarked on the study, and their personal characteristics. This information was crucial to interpreting their doctoral learning experiences on a holistic level. The stories collected allowed the researcher to interpret “the situatedness [sic], the contexts, the complexities” (Lyons & LaBoskey, 2002, p. 3) of the students’ experiences in their doctoral learning. In addition to this, the stories taken together helped to provide a platform for further exploration.

3.4.3 Stimulated recall interview

The stimulated recall interview is a retrospective method used to gain access to the teachers’ and/or students’ thoughts underlying the teaching and learning process, in the field of educational research. Typically, it involves “replaying a videotape or audiotape of a teaching [or learning] episode to enable the viewer (usually the teacher [or the students] of the episode) to recollect and report on his or her thoughts” simultaneously occurring during the viewed episode (Clark & Peterson, 1986, p. 259). The subsequent interviews are normally conducted as soon as possible after the events in order to enhance the reliability of the participants’ recollections (Nunan, 1992). In the interview, the role of the researcher is to facilitate the
comparison of the participants’ cognitive processes (De Grave, Boshuizen & Schmidt, 1996; King & Tuckwell, 1983; Marland, 1984).

Compared with other methods such as the questionnaire survey, the outstanding advantage of the stimulated recall interview is its ability to provide “the most fine-grained lens” for investigating the participants’ thinking (Jensen & Winitzky, 2002, p. 14). This advantage empowers the stimulated recall interview to complement other methods (for example, storytelling in this study), and thus to “contribute to a more balanced and realistic investigation” into the teaching-learning process (King & Tuckwell, 1983, p. 1).

Since the middle of the twentieth century, the stimulated recall interview has gained great popularity in the field of educational research for a variety of research purposes, including studies on teacher education (Cunliffe, 1996; Ethell, 1997; Ethell & McMeniman, 2000; Schempp, 1995), the teaching process (Marland, 1984; Meade & McMeniman, 1992; Peterson & Clark, 1978), the learning process (Edwards & Marland, 1984; Geiger et al., 2002; Nuthall, 1999), and learning strategies (G Anthony, 1994). The reviews of Keith (1988) and Clark and Peterson (1986) showed that the application of this method has been modified to serve particular research purposes. The major differences fall into the categories summarised by Clark and Peterson (1986) as:

replaying only researcher-selected portions of recording versus replaying the complete tape; researchers asking prespecified questions each time the tape is stopped versus soliciting open-ended commentary from the teacher [or student]; and researcher control of when to stop the tape versus teacher [or student] control or shared control. (p. 259)

Despite the divergence in the use of this method, the studies cited above have consistently acknowledged its strengths in the collection of quality data. The stimulated recall interview is viewed as a “sensitive” (De Grave, Boshuizen &
Schmidt, 1996, p. 321) and “effective” (Meade & McMeniman, 1992, p. 1) method to examine the thoughts involved in teaching or learning processes, and to scrutinise the strategies used in the contexts examined.

However, generating data of the thinking process is not the only role that the stimulated recall interview has played in educational research. In 1978, an alternative interpretation of stimulated recall data was put forward by Peterson and Clark in their study of teachers’ cognitive processes. They observed that these data possibly combined the “veridical recall of the cognitive processes” in teaching and the results of the teachers’ “thinking and reconstruction” in the interview (Peterson & Clark, 1978, p. 560). By “veridical”, Peterson and Clark mean the recall is accepted as truthful. Taking this point further, Keith (1988, p. 17), after critically reviewing 12 studies on teachers’ thoughts during interactive teaching, stated that stimulated recall protocols may better serve the research which intended to have these data as “retrospective reports of teachers’ professional craft knowledge” than as “interactive thoughts”.

The position that the stimulated recall interview can actually offer reflection, explanation, interpretation or justification of teachers’ actions in the class was adopted by Cunliffe (1993; 1996) in her PhD research on beginning teachers’ conceptions. Cunliffe (1996) carried out the stimulated recall interview to “elicit explanation and reflection about the lesson, … rather than recall of the thoughts occurring during the lesson itself” (p. 73). The results of the study confirmed that the application of the method in this orientation was valid.

Informed by the literature reviewed, the stimulated recall interview in this study was used to obtain elaborations, explanations and reflections on the topics that emerged from the storytelling interview, as well as to elicit supplementary stories and related comments. However, the stimulated recall interview was not intended to elicit the recall of the thoughts taking place during the storytelling session itself. Rather, this method was employed jointly with storytelling to provide further concrete and
detailed information of the participants’ doctoral learning experiences (see Section 3.6.3 for a detailed description of the application of the stimulated recall interview in this study).

For studies which focus on the thoughts simultaneously occurring during the recorded performance, in order to enhance the validity and reliability of the data collected it is crucial to conduct the stimulated recall interview as soon as possible after the performance. Moreover, it is essential to provide “sufficient contextual information” on the recorded performance (which is why, in the literature, videotaping is preferred to audio taping) (Nunan, 1992, p. 124). However, these issues, the timeliness of the stimulated recall interviews and rich contextual information (on the storytelling), were less relevant to this study because it did not intend to examine the thoughts underpinning the storytelling processes.

In this study, to ensure the validity of the stimulated recall data, certain measures suggested in the literature were taken to reduce researcher-introduced bias and to avoid distortions in the participants’ recall. These measures included keeping the interview interaction as general and open-ended as possible (Keith, 1988; Marland, 1984); and focusing more on eliciting open-ended commentary from the participants than on asking prespecified, especially structured, questions (Clark & Peterson, 1986; Meade & McMeniman, 1992).

3.4.4 Semi-structured interview

Interviewing as a research method has long been used in educational research. Nevertheless, owing to the increase of small-scale educational studies in the last few decades, interviewing in general, and semi-structured interviewing in particular, has become one of the essential methods utilised in this area (Powney & Watts, 1987; Tierney & Dilley, 2002). This expanded application of the semi-structured interview is due to its greater flexibility (Minichiello et al., 1995; Nunan, 1992, p. 149), and its potential to encourage interviewees to articulate their own viewpoints (Flick, 2002).
These advantages can be illustrated by the characteristics of this form of interviewing:

[It] has predetermined questions, but the order can be modified based upon the interviewer’s perception of what seems most appropriate. Question wording can be changed and explanations given; particular questions which seem inappropriate with a particular interviewee can be omitted, or additional ones included. (Robson, 2002, p. 270)

The predetermined questions, which are intentionally open-ended, provide a general framework within which the research topic is explored in greater depth (Kvale, 1996; Minichiello et al., 1995; Patton, 1990). Normally, the questions are organised in an interview guide, in more or less detail, to indicate the topics or issues that will be investigated. The topics covered in the guide can be informed by the relevant literature, the researcher’s own knowledge and experience of the area, and/or the preceding investigations within the study (King, 1994).

Since the questions in the guide serve only as a check list, the researcher retains the freedom of making changes to it, depending on the real interviewing context. This enables the researcher to explore and probe into participants’ responses to gather in-depth data about their experiences, perceptions and context more than is possible with other approaches (Gay & Airasian, 2000). The open-ended questions allow the interviewees to communicate their own experiences and understandings in their own words, which allows different perspectives to emerge (Jones, 1985; Patton, 1990) and generates “a more valid explication” of the interviewees’ perception of the reality (Minichiello et al., 1995, p. 65).

There are a few advantages of using an interview guide. First, it preserves a certain degree of “systematization in questioning”, which is necessary in multiple case studies (Marshall & Rossman, 1999, p. 108). The boundaries established by the interview guide allow the interviews with a number of participants to be more
“systematic and comprehensive”, as Patton mentions (1990, p. 283). Furthermore, it enhances the “comparability of the data” collected across the interviews (Flick, 2002, p. 93), which otherwise may be reduced by the flexibility of the semi-structured interview (Minichiello et al., 1995; Robson, 2002).

Taylor and Bogdan (1998) suggest that the semi-structured interview is most appropriate for research which has a “relatively clear and well defined” interest (p. 90). The knowledge and understanding gained from other means such as the primary interviews will facilitate the development of the interview guide (Taylor & Bogdan, 1998, p. 106). This point is well demonstrated by the use of the method in this study.

Consistent with its wide-ranging application in educational research, semi-structured interviewing has been extensively applied to the studies on learning strategies. It has been successfully employed to examine the learning strategies used

- by diverse groups of learners, such as school students (Campbell et al., 2001), university students (Chapple, 1999; Phakiti, 2000; Saljo, 1981), and adult students (Ross, 1988).
- with different learning tasks such as science learning (Chin & Brown, 2000), and language learning (Hosenfeld, 1976; Lamb, 2002; Pearson, 1988); and
- in various learning contexts, such as in the classroom (Askell, 2001) and in distance learning (Li, Lee & Kember, 2000; Small, 1986).

The semi-structured interview can be used either as a sole data-collecting method or in conjunction with other methods (Tierney & Dilley, 2002). Studies on learning strategies demonstrated varied application of this method. It was used either independently (Pearson, 1988; Ross, 1988; Zimmerman & Martinez-Pons, 1986), or jointly with other methods, such as quantitative methods (Campbell et al., 2001), qualitative methods (Vann & Abraham, 1990), or both (Phakiti, 2000). Nevertheless, the literature on language learning strategies shows that the majority of the methods used at the initial exploratory stage are qualitative methods such as observation,
interviews, think-aloud procedures, and diaries (see Oxford & Crookall, 1989 for an extensive review). This indicates that the in-depth understanding of students’ learning strategy use largely relies on obtaining their descriptions of and reflections on their learning processes. Interviewing is a powerful means to realise this purpose (De Groot, 2002).

There is a dearth of systematic inspections of learning strategies used by doctoral students in a research-learning context. However, the literature on learning strategies in general convincingly verifies that a qualitative design employing interview methods is adequate and appropriate for investigating the current problem, that is, the learning strategies used by Chinese PhD students of social sciences studying in Australian universities.

Semi-structured interviewing was employed in this study to fulfil a number of purposes. Firstly, it was designed to elicit more detailed accounts of the issues that were only broadly or insufficiently discussed in the stages of storytelling and stimulated recall interview. Moreover, it was intended to seek further interpretations of the topics which were suggested by the analyses of data collected in the first two stages, or informed by the literature. Finally, it served to verify the researcher’s interpretations of the data collected in preceding stages.

In accordance with these purposes, different types of questions were asked in semi-structured interviews (Appendix 12). For example, to bridge the gaps identified in the data collected previously, two types of questions were asked. First were the questions to elicit facts about the participants’ learning experiences which were not given in the first two rounds of interviews. Next were the questions derived from perceived issues that emerged from the initial analyses of the data collected. To verify the researcher’s interpretations of the data collected in the first two stages, opinion-seeking questions were asked.
3.4.5 Limitations of the study

It is acknowledged that each specific data collection method used (i.e., storytelling, stimulated recall interview and semi-structured interview) has its advantages and disadvantages. These have been extensively discussed in the preceding sections, and are therefore not reiterated here. This section will focus on the limitations or pitfalls of the overall methodology, and how they were dealt with in this study.

The interview is a method producing verbal reports through personal interaction between interviewer and interviewee (Kahn & Cannell, 1957; Marshall & Rossman, 1999). In consequence, the context of the students’ learning was reconstructed merely by their own accounts in the data collection process of this study. It was especially so in the case of the students with whom the interviews were conducted outside their offices (see Section 3.6 for details) because the lack of direct observation of their daily study life may have denied the researcher the opportunity to achieve an otherwise richer understanding of the students’ perspectives (Minichiello et al., 1995; Taylor & Bogdan, 1998).

This disadvantage, generated by the lack of formal direct observation, was, to a certain degree, compensated by the social contact established between the researcher and individual interviewees. This was attributed to the shared educational and cultural backgrounds of the interviewer and the interviewees. For example, they were all originally from Mainland China; all were doing PhD study in Australia, and all spoke Mandarin Chinese as the mother tongue and English as the second language. These commonalities facilitated the development of mutual trust between the researcher and the participants, which was critical for the quality of data collected.

The social activities that the researcher attended together with each participant varied from friends’ gatherings, seminars where one participant gave a presentation, to frequent communications by phone or email. These social interactions enabled the
researcher to understand more about the participants as students and individuals, and
to know more about the contexts in which they studied and lived. The conversations
and observations in these social settings were not used as data in this study.
Nevertheless, this information assisted the researcher to achieve a better
understanding of the participants’ accounts in the interviews. Furthermore, this
prolonged engagement in fact contributed to the building of “trustworthiness”
(Lincoln & Guba, 1985, p. 290) or “authenticity” (Lincoln & Guba, 2000, p. 180)
within this study.

The concern about the quality of interviewees’ verbal reports has been widely
discussed in the literature with regard to studies which use interviewing as the sole
method. For example, the verbal reports collected may be biased by participants’
psychological or emotional condition, or simply by memory failure. These biases are
“difficult to rule out” (Robson, 2002, p. 273) and can lead to reports that are
incomplete or possibly lacking in truth (Brenner, Brown & Canter, 1985;
Minichiello et al., 1995; Powney & Watts, 1987). These disadvantages are critical
and threaten the validity of the data collected; however, in this study, they did not
give rise to concern, for the reasons delineated below.

First, this study respected the students’ perspectives and interpretations of the reality
that they experienced, which might not exactly reflect what actually happened. In
the process of interviewing, “people develop new insights and understandings of
their experiences. … From this perspective, informants are not merely reporters of
experience, but … may construct meanings of events and experiences” (Taylor &

Furthermore, this study gathered data by three different forms of interviewing,
which were conducted at three different time-points of the participants’ learning
process with relatively long intervals in between. This provided “triangulation of
data sources” to build up trustworthiness and authenticity (Patton, 2002, p. 556). In
addition, during the data analysis, the “strategy of cross-checking” (Minichiello et al., 1995, p. 72) was used to locate inconsistencies or conflicts in the data within or across the cases. The reasons for the anomalies were investigated to generate more profound interpretations.

In addition to the problems discussed, interviewing, by its nature, is a time-consuming activity (Brenner, Brown & Canter, 1985; King, 1994). This feature has the potential to discourage people from participating, and thus causes difficulties in finding subjects, which in turn may produce biases in the sample available (Brenner, Brown & Canter, 1985; King, 1994). Such a problem was experienced in this study, as illustrated by the small number of participants. However, this did not invalidate the data collected because, in qualitative research, the participants are not selected for representativeness but rather for multiple perspectives to provide insights into the questions under investigations (Charmaz, 2002).

Given the small number of participants, interpretation of the data and conclusions drawn from them must be carried out with caution. Even though the results may be transferable to other situations which are identical to the cases in this study, it was not intended to generalise the findings to a larger more diverse population.

Before presenting the actual data collection procedures, the pilot studies will be discussed. In this study, pilot studies were conducted for a number of purposes: to test the validity of the storytelling guides developed; to examine the applicability of the stimulated recall interview; and to foster the researcher’s interview skills.
3.5 Pilot studies

The pilot studies involved four students studying social science disciplines. Two of them were doing their Master’s degrees which consisted of a research element, and the other two doing their PhD. Three of them were at the stage of writing up the thesis and one was developing a research proposal. One of the Master’s students was ethnic Chinese and the other three were from different countries. These four students were invited to undertake the pilot studies based on accessibility, and therefore they did not meet all of the criteria for selecting participants of this study (see Section 3.3 for the criteria). This mismatch was not considered to be a problem for three reasons.

First, the pilot studies were carried out to test the feasibility of storytelling and stimulated recall interviews. Next, they reinforced the validity of the instrument developed for storytelling. Lastly, the interview data of the pilot studies were not used for the data analysis in this study.

Upon the agreement of the four students, three rounds of the pilot study were conducted for storytelling. Initially, the storytelling guide (Appendix 5), based on Lieblich, Tuval-Mashiach, and Zilber’s model (1998), was tested. The one-page guide contained two sections. The first section was a grid, which asked students to identify the different stages of their research-learning process, and to write down the duration and a name of each stage. Underneath the grid was the second section of seven questions, for example, “What was the target you aimed at in this phase of your research?”, “What made you decide to learn in the described way?”, “What did research mean to you in this phase?” and “What was the relationship between your perception of research and your research activities in this phase?”. The students were asked to answer these questions when telling their stories of each stage.

The first pilot study revealed that, following the instructions on the guide (Appendix 5), the students were able to identify the stages of their research processes, such as
reviewing the literature, developing a research proposal, collecting data, and so on. However, when they were telling the stories of each stage, the questions listed were ignored. For this, the students explained that they told stories in line with their own consciousness, rather than being guided by the questions. This result suggested the pitfalls of the design.

To solve the problems disclosed by the first pilot study, another guide was developed (Appendix 6), derived from the same logic underpinning the first guide. The only difference was that it combined the two separated parts in the first guide into one form. The form was composed of four major columns: “research stage,” “time period,” “performance and achievement,” and “new things I learned”. The last two columns consisted of a number of sub-columns of questions to elicit information on their learning experiences and learning strategy use. It was assumed that the visibility of the questions would enhance the participants’ awareness of answering them when talking about each research phase.

Nevertheless, the guide (Appendix 6) invited more criticism than cooperation from the four students in the second pilot. The first criticism focused on its physical appearance. The large form presented an overwhelming task, which discouraged their willingness to participate. Furthermore, it was criticised for changing the storytelling into a kind of highly structured interview, which diminished the openness of the storytelling.

This feedback was critical because the theoretical standpoint of this study emphasised an in-depth understanding of doctoral students’ learning strategy use from the students’ perspective. This emphasis respected students’ freedom to construct their learning experiences within the framework defined by the research focus. In line with this, the data collected by open-ended questions were more desirable.
As a result of the first two pilots, a set of instructions for the storytelling session (Appendix 7) was compiled. Its contents concentrated on, first the restatement of the objects of this study and the methods adopted, then the purpose of the storytelling session, and, finally what the participants and the researcher were expected to do in the session. The instructions functioned as the “initial question” in Wengraf’s BNIM model to elicit narratives on a “specific biographic strand” of the interviewees’ life (Wengraf, 2001, pp. 119-121), that is, their PhD study.

To examine the validity of the storytelling instructions (Appendix 7), the third round of the pilot study was conducted. It confirmed that the instructions were open in nature, which allowed the students to narrate their stories in their own way, and to start from any point they felt comfortable with. Moreover, it verified that the instructions had a clear focus, which enabled the students to construct their stories within the research-learning context. These two basic features guaranteed the elicitation of meaningful information on their research-learning experiences. With confidence built up in pilot studies, the method of storytelling was adopted and the storytelling instructions (Appendix 7) were applied in this study.

As only one of the students authorised the researcher to audio-tape the storytelling session, stimulated recall was piloted once and it worked well. When the student was listening to the tape, she stopped it several times and said, “Oh, yeah, here I have something to add …”. In the process, more detailed information was provided on different issues.

By means of the pilot studies, the researcher not only found an appropriate way to conduct the interviews, but was also trained in interview skills. She became more capable of avoiding leading questions and was more comfortable with probing and prompting the participants by using their words in a less mechanical way. In addition, she learned to jot down notes while listening to the interviewees in a more reflective way. Although these points seemed very trivial, they were crucial to a successful interview (Patton, 1990).
3.6 Data collection methods: Procedures and instruments

This study involved three main stages of data collection by means of three types of interviewing, as discussed in Section 3.4. Prior to the first interview, general background information about each participant was collected by a biodata questionnaire. In this section, the biodata collection, the three stages of interviews (see Table 3.2 for a summary of the date, length, venue and language of the interviews) and the instruments used will be presented in turn. The issues on the transcripts will also be considered.

3.6.1 Collection of biodata

Prior to the interviews, the participants were asked to fill out a biodata questionnaire (Appendix 4), which was compiled by the researcher. To protect the participants’ privacy, basic information such as name, gender and age was put on a separate page. The remaining pages collected background information on previous educational experiences both in China and in Australia, discipline and present study status, as well as previous research experience.

After the students expressed their willingness to participate in this study, the biodata questionnaire was emailed to them as an attachment. When filled out, the questionnaire was emailed back to the researcher also as an attachment. The data collected were used to introduce the characteristics of the participants and to provide information for their profiles.
3.6.2 Stage one: Storytelling

Two identical copies of the storytelling instructions (Appendix 7) were prepared, one for the researcher and the other for the interviewee. When the session commenced, the researcher read out the instructions to the participant who was looking at his or her copy. After the participants confirmed that they clearly understood what to do, they started telling the stories in either Chinese or English or both, whichever they preferred. Except for F1 who told her stories in English (see Section 4.2.1 for reasons), all the other students narrated mainly in Chinese, occasionally using some English words or phrases.

The frequency of interaction between the researcher and the interviewee varied among the participants because of individual differences. F4 was an autonomous narrator and gave a monological narrative. In comparison, all the others demanded more questions from the researcher, and thus their stories were more or less dialogical.

The questions were asked on the basis of the stories told and aimed at encouraging the interviewees to tell more. For example, in F1’s case, she started her stories with how she commenced her PhD study, and within five minutes she finished. The possible reasons for such a short narration included either that she was not comfortable with talking on her own, or that she did not know how to proceed with the story, or both. Regardless of the reasons, to facilitate her telling of stories, the researcher saw a need to ask probing or prompting questions. For probing, “immanent questions” (Jovchelovitch & Bauer, 2000, p. 73) were asked, such as “what was your experience in that stage?”, or “during designing your questionnaire, what happened?”. The techniques for prompting involved both using simple interpretation, and repeating the interviewee’s words, as respectively shown in the following two extracts. First, “so you did your data collection and analysis at the same time” (F1:ST:Para46). Second, “F1: … that was a big relief. R: A big relief. F1:
Yeah, but you didn’t realise that …” (F1:ST:Paras113-115). The same techniques of questioning were used with other participants when needed.

With regard to the venues of the interviews, four of the six were conducted in the participant’s office. Of the other two, one was done at the researcher’s home, which was the principal working place of the researcher. This session was with F4. Since she and the researcher lived far away from each other, F4 kindly offered to drive to the researcher’s home. The other was carried out with M1 at a quiet outdoor spot on his campus, where he used to have lunch with friends. When the interviews were conducted, only the participant, the researcher and the audio-recorder were present. As research students, the participants seemed very comfortable with the presence of the recorder. It did not appear to have any influence on their talking. In fact, some of them reminded and/or helped the researcher to test the recorder before the session started. The average length of the storytelling sessions was 55 minutes, with a range from 35 minutes to 90 minutes (see Table 3.2 for the summary of details).

Table 3.2 The summary of the date, length, venue and language of the interviews

<table>
<thead>
<tr>
<th>Interviewing</th>
<th>Participants</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
<th>M1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Storytelling (ST)</strong></td>
<td>Date</td>
<td>27/06/02</td>
<td>03/07/02</td>
<td>21/06/02</td>
<td>29/06/02</td>
<td>14/09/02</td>
<td>13/07/02</td>
</tr>
<tr>
<td></td>
<td>Length</td>
<td>65 mins</td>
<td>40 mins</td>
<td>35 mins</td>
<td>45 mins</td>
<td>90 mins</td>
<td>65 mins</td>
</tr>
<tr>
<td></td>
<td>Venue</td>
<td>F1’s office</td>
<td>F2’s office</td>
<td>F3’s office</td>
<td>R’s room</td>
<td>F5’s office</td>
<td>Lawn outside M1’s office</td>
</tr>
<tr>
<td></td>
<td>Language</td>
<td>English</td>
<td>Chinese</td>
<td>Chinese</td>
<td>Chinese</td>
<td>Chinese</td>
<td>Chinese</td>
</tr>
<tr>
<td><strong>Stimulated-recall (SR)</strong></td>
<td>Date</td>
<td>18/07/02</td>
<td>10/07/02</td>
<td>19/07/02</td>
<td>13/07/02</td>
<td>18/10/02</td>
<td>23/07/02</td>
</tr>
<tr>
<td></td>
<td>Length</td>
<td>100 mins</td>
<td>80 mins</td>
<td>50 mins</td>
<td>130 mins</td>
<td>70 mins</td>
<td>65 mins</td>
</tr>
<tr>
<td></td>
<td>Venue</td>
<td>R’s room</td>
<td>F2’s office</td>
<td>F3’s office</td>
<td>R’s room</td>
<td>F5’s office</td>
<td>A seminar room in the library of M1’s university</td>
</tr>
<tr>
<td></td>
<td>Language</td>
<td>English</td>
<td>Chinese</td>
<td>Chinese</td>
<td>Chinese</td>
<td>Chinese</td>
<td>English</td>
</tr>
<tr>
<td><strong>Semi-structured interview (SSI)</strong></td>
<td>Date</td>
<td>13/07/03</td>
<td>24/07/03</td>
<td>23/07/03</td>
<td>20/07/03</td>
<td>12/07/03</td>
<td>05/09/03</td>
</tr>
<tr>
<td></td>
<td>Length</td>
<td>30 mins</td>
<td>45 mins</td>
<td>30 mins</td>
<td>85 mins</td>
<td>80 mins</td>
<td>85 mins</td>
</tr>
<tr>
<td></td>
<td>Venue</td>
<td>R’s office (Telephone interview)</td>
<td>F2’s office</td>
<td>F3’s office</td>
<td>R’s room</td>
<td>F5’s home</td>
<td>Lawn outside M1’s office</td>
</tr>
<tr>
<td></td>
<td>Language</td>
<td>Chinese</td>
<td>Chinese</td>
<td>Chinese</td>
<td>Chinese</td>
<td>Chinese</td>
<td>English</td>
</tr>
</tbody>
</table>
The recordings were transcribed verbatim in the original language on the following day by the researcher (see Section 3.6.5 for details of transcribing and transcripts). The transcripts were read to identify the topics raised by the participants. A form (Memo of Data Reading, see Appendix 8 for an example) was developed to organise the topics and relevant contents. The data presented in the form directed the next stage of data collection. As shown in Appendix 8, the form consisted of three main columns: topic, contents, and comments. In the topic column, the topics raised by the participant were listed in the order of their first appearance in the stories. The contents column presented the extracts related to each topic. The comments column recorded the researcher’s remarks on and questions about each topic, generated from reading the stories.

The questions recorded in the comments column provided the basis for some of the questions asked in stimulated recall interviews. After the deletion of the content from the comments column, the memo of data reading (Appendix 8) was changed into a new form labelled “Extract of the stories” (see Appendix 9 for an example). The extract form (as shown in Appendix 9), together with the complete transcripts and original recordings, was used as a stimulus in the second stage of data collection, the application of which will be described in the following section.

3.6.3 Stage two: Stimulated recall interview

The interview guide (see Appendix 10 for an example) for each participant was composed based on the respective memo of data reading and the research questions of this study. The second interview sessions were scheduled during the process of developing the interview guides. To fit it into the individual student’s timetables, the interval between the first interview and the second interview varied among the participants, with an average of 2.75 weeks. The shortest interval was one week while the longest was five weeks.
When the researcher and the interviewee met for the stimulated recall interview the researcher, as in the storytelling, first explained the purpose of the session, how it would be conducted, and what the interviewee and the interviewer were expected to do (Appendix 11). The interview commenced after the participant’s questions about the session were answered.

As mentioned at the end of Section 3.6.2, the stimuli used in this study were the extracts of the stories (as shown in Appendix 9), the complete transcripts of the first interviews and the original recordings. The extracts were employed as the principal stimuli while the other two served as auxiliary resources which were referred to when confusion occurred or when the information in the extract did not make sense to the participant. The rationale underpinning this practice was that the extracts provided easier retrieval of information than audio-recordings. The line numbers in the brackets at the end of each extract show its origin in the complete transcripts. When the participants had any question about the extract, they were able to easily track it in their transcript. In comparison with the audio-recordings, the extract provided an easier review of the information when necessary. Furthermore, the extracts organised the stories according to each topic raised by the participants, which allowed a relatively focused and thorough exploration of the topics.

Stimulated recall interviews were employed to obtain further clarification, elaboration and comments on the topics raised in the storytelling. Besides the participants’ narration, additional questions were asked by the researcher, if necessary, after the interviewees talked about one topic and before they moved on to the next topic. The answers to the questions (see Appendix 10 for examples) were expected to be either a narrative or a response.

The venues for stimulated recall interviews were the same as for storytelling, except for the session with M1, which was done in a seminar room in the library of his university. The average length of the interviews was 83 minutes, ranging from 50 minutes to 130 minutes. Except for F1 and M1 who spoke in English, the other
participants talked mainly in Chinese, and occasionally used some English words or phrases (see Table 3.2 for the summary of details). The interviews were audio-recorded and the recordings were transcribed by the researcher on the following day (see Section 3.6.5 for details about the transcribing and transcripts).

### 3.6.4 Stage three: Semi-structured interviews

In the original design, the third stage of semi-structured interviews was to be conducted within three months of the stimulated recall. However, the preliminary analyses of the data collected in the first two stages revealed that sometimes it could take the students from a few months to one year to shift the focus of study from one step to another (for example, from reviewing literature to collecting data). To allow this shift of the main research tasks to take place, and thus to ensure that the data collected in the third stage reflected such changes, semi-structured interviews were finally conducted about one year after the stimulated recall interviews.

The year-long interval between the second and third stages of data collection benefited this study in a number of ways. During this period, detailed analyses of the data collected by means of storytelling and stimulated recall interview were carried out. The analyses raised issues for further investigation, and familiarised the researcher with the information of each case. Furthermore, during the year-long interval, the researcher kept in social contact with the interviewees and developed friendships with them, which enriched the mutual understanding and trust between the individual interviewees and the researcher. In qualitative studies, such understanding and trust make important contributions to the quality of data collected (Patton, 1990).

Based on the preliminary analyses of the data collected by storytelling and stimulated recall interview and in view of the research purpose (Wengraf, 2001), a set of semi-structured interview guidelines (Appendix 12) was composed to provide a framework or checklist for developing individual semi-structured interview guides.
The guidelines presented the issues which were further investigated in each individual interview. The individual interview guides covered shared topics as well as case-specific questions. If the issue listed in the guidelines had been well discussed in the first two interviews, it was not repeated in the individual interview guide. For example, the motivation for completing the PhD degree was not included in the semi-structured interview guide designed for F4 because she had given detailed accounts of it in the first two interviews and her additional letter to the researcher (Appendix 15).

Following the same procedure as in the last two stages, the semi-structured interviews started with the researcher’s explanation of how the session would be carried out. The venues for the interviews were the same as for the stimulated recall interviews, except for the session with F1. Because she had started her lectureship in a South Australian university by that time, a phone interview was conducted with her on a Saturday morning. In this round of data collection, all the participants spoke in Chinese, sporadically using some English words or phrases. The length of the interviews varied between 30 minutes and 85 minutes, with an average of 55 minutes (see Table 3.2 for the summary of details), and all the interviews were audio-taped (see Section 3.6.5 for information on transcribing and transcripts).

### 3.6.5 On transcribing and transcripts

All of the interviews were audio-recorded. The researcher listened and re-listened to the recordings on the day following the interview session (when possible; otherwise, on a later day) and transcribed them verbatim in the original language. All the transcripts were directly typed on to a computer disc as Microsoft Word documents and were labelled according to the method used, the interviewee’s code, the date, time and length. The transcripts of the first two interviews, namely, the storytelling and the stimulated recall interview, were printed out. The printouts were sent, together with the respective cassette tapes, to the individuals for member checking, a validity building process (see Section 3.7.2 for a detailed discussion).
The member-checked transcripts and the transcripts of the third interview were resaved in Rich Text Format and imported into the NVivo program, a computer software program for qualitative data analysis (Richards, 1999), to form the database for analysis (see more details in Section 3.8). To protect the data from loss if that computer should crash, hard copies of the documents from each source were kept in both the researcher’s office and home. Additionally, electronic copies were also saved at another place that was an email account.

The portions in Chinese were translated into English by the researcher at the data analysis stage and during writing up the thesis. The translation of the data bites cited in this thesis was presented in Appendices 25-42. To improve the “readability” of the quotes from interviews (Atkinson, 1998, p. 55), when the quotes selected from the transcripts were cited, minor editing was done if necessary, following the suggestion of Atkinson (1998, pp. 55-56) and Rubin and Rubin (1995, pp. 271-273) on editing transcripts. The principle is to “do it without misrepresenting the meaning of” the interviewees (Rubin & Rubin, 1995, p. 273). The process included the following aspects: using standard spelling and grammar; leaving out unnecessary words used as fillers, false starts, backing-and-filling, and tag questions such as “you know;” and adding a word or phrase (indicated by putting it in brackets) for clarity when the sentence was not complete or the meaning became unclear after being decontextualised from the complete transcripts.

A set of transcription notations (Appendix 13), which was adapted from Antaki and Widdicombe (1998) and Silverman (2000), was used to record the nonverbal information in the interviewing processes and the editions made when necessary. In this thesis, the location of the quoted interview protocols will be put in the brackets following the quotes, including the participant code, abbreviation of the data collection method, and the number of paragraph(s). For example, (F3:ST:Paras117-123) means that the quote is extracted from paragraphs 117-123 in the transcripts of storytelling interview with participant F3.
3.7 Establishment of trustworthiness

Defined by the nature of qualitative research, the quality of a narrative study does not rely on the criteria of validity, reliability or generalisability (Connelly & Clandinin, 1990, p. 7) but on trustworthiness, authenticity and fairness which are tested by the criteria of “credibility, transferability, dependability and confirmability [sic]” (Lincoln & Guba, 1985, p. 189; Patton, 2002). These criteria demand a high level of vigilance of inquiry. In this study, measures were taken to ensure that the establishment of trustworthiness, authenticity and fairness was built into the study process, from designing the research throughout to drawing the conclusions. Discussions in the following sections will systematically illustrate the rigorous nature of this study.

3.7.1 Three stages of data collection

The research design of this study was constantly modified and refined, responding to the evolution of the inquiry process, as discussed in Sections 3.4 and 3.6. The three stages of data collection not only generated rich data from lengthy interviews but also provided opportunities for reinterviewing the same participants. This prolonged engagement, together with the frequent social interactions between the interviewer and the interviewees, strengthened the participants’ trust in the researcher. The trust, accompanied by enhanced mutual understanding, ensured that distortions did not creep into the data or the findings (Lincoln & Guba, 1985, p. 302).
3.7.2 Member check

Member check is an important measure taken for establishing credibility (Lincoln & Guba, 1985; Patton, 2002). In this study, the member check is the process whereby the data are reviewed by the participants (Lincoln & Guba, 1985). The complete interview transcripts of the first two stages were returned, together with copies of audio-tapes of the interviews, to the participants to check for accuracy of transcription (see Appendix 14 for a summary of the procedure and comments made by the participants). In this procedure, participants were encouraged to comment on, add further reflections or elaborations, and make additions and changes to the transcripts. This process resulted in the following changes:

- Corrections of spelling, grammar and sentence structure to clarify meaning.
- Addition of extra comments. For example, F4 wrote a one-page letter (Appendix 15) to explain in depth why she was determined to complete the degree, in addition to her accounts in the interviews. This suggested that the participant enjoyed and valued the process.
- Deletion of one or two sentences regarding the participant’s previous working experience (F5), or negative comments on teaching high school students (F4). The information deleted was not related to their PhD learning experiences so it did not harm the usefulness of the data.

The checked transcripts were used for the data analyses. The member-check process further improved the clarity of the data, and added value to data reconstruction and analysis.

The transcripts of the third stage interviews were not sent back to the participants for a member check. At the end of each interview, the researcher asked the participants whether they would be able to do a member check of this data set. Three of the participants agreed to do it but the other three were too busy to undertake it. They entrusted the accuracy to the researcher. To carry out the study in a consistent
manner, the researcher, instead of the participants, checked the accuracy of all six sets of transcripts against the audio-tapes.

It is worthwhile to mention two participants’ responses to checking the transcripts, with reference to the tapes. One of the participants, F4, commented that the tape recordings were very clear (except for one short section at the beginning of her second interview). She told the researcher when she read the transcripts she was very shocked by her own stories, “it was such a difficult process. … I laughed and cried” (personal conversation, 01/10/2002). Upon her request, a copy of the transcripts and the tapes were sent to F4 for her own records. Another participant, F5, also asked to retain the tapes when the researcher went to collect the checked transcripts, so that the copies of tapes were left with her. At the third interview, F5 wished to have a set of the transcripts, which were sent to her when the transcribing of the semi-structured interview was done. These invaluable responses verified the participants’ openness in the interviews and the credible value of the data.

3.7.3 Negative case analysis

In qualitative research, a negative case is defined as “a case, event, setting, person, experience, story, etc. that apparently contradicts a theory, explanation or understanding generated earlier in the analysis (or derived from the literature)” (Gibbs, 2002, p. 243). When the data were analysed, any cases that did not fit the patterns identified were further examined for underpinning reasons in order to make sure that the findings were representative. These investigations of negative cases in the course of the data analyses offered a “thick description” of the data, and thus ensured a comprehensive interpretation (Patton, 1990, p. 430).

As a result of continuous analysis of negative cases, the identified patterns, themes or theories were modified and refined while biased interpretation was bracketed out and a valid conclusion was reached (Gibbs, 2002; Lincoln & Guba, 1985; Miles & Huberman, 1994, p. 271; Patton, 1990, 2002).
3.7.4 Triangulation of data sources

Triangulation of data sources is one of the rigorous strategies adopted in data analysis to enhance the credibility of the inquiry (Lincoln & Guba, 1985; Patton, 1990, 2002). The information of what a particular participant said about the same thing at different stages of the interviews and what different participants said about the same issue was compared and cross-checked for consistency. When differences were identified, efforts were made to examine and understand when and why they occurred. This process guaranteed in-depth and detailed analysis and identification of different perspectives.

3.8 Data analysis: Methods and processes

The data analyses were done with the assistance of the NVivo program, computer software for qualitative data analysis (Gibbs, 2002; Richards, 1999). It was chosen because of its outstanding features. NVivo is designed specifically for qualitative data analysis, applying the concept of grounded and inductive analysis. More importantly, it is capable of handling data in languages other than English, such as Chinese. Furthermore, in comparison with other computer-assisted qualitative data analysis software, such as NUD•IST, NVivo is better at managing relatively small-sized data sets and performing “very fine-grained analyses. For instance, the minimum text unit for analysis is one character” (Gibbs, 2002, p. xxiii). It is also a program that is easy to learn if the researcher is familiar with Microsoft Windows.

The researcher was aware that the application of NVivo was only to facilitate the mechanical tasks of the analyses, such as storing data, coding, data retrieving, and database auditing, while the analytic and interpretive tasks were left to the researcher herself.
To address the focal research question – What learning strategies are used by Mainland Chinese social science PhD students in Australian universities? – qualitative analyses were performed on the data collected from the three stages of interviewing. The data analyses were conducted simultaneously with the collection of data and involved both “within-case analysis” and “cross-case analysis” (Merriam, 1998, p. 194; Miles & Huberman, 1994; Patton, 1990). Within-case analysis aims to understand each case as “a unique, holistic entity” (Patton, 1990, p. 387) and to draw “descriptive conclusions” (Miles & Huberman, 1994, p. 90). Cross-case analysis serves to “build abstractions across cases” (Merriam, 1998, p. 195), to seek explanations (Miles & Huberman, 1994), and to reveal different perspectives of the central phenomena (Patton, 1990).

The analyses done at different stages of data collection served the study from different perspectives. In the following sections, the performance of the analyses will be discussed with reference to three stages: the first stage dealt with the data collected from the storytelling; the second stage was concerned with the data of both the storytelling and the stimulated recall interviews; and the last stage carried out comprehensive analyses on the data generated from the three data collection methods. The first two stages are concerned with within-case analysis while the last stage focuses on cross-case analysis.

3.8.1 Stage one

The initial analysis of the storytelling data was conducted upon the completion of the transcriptions. The basic purpose was to identify topics which were raised by the participants in their stories (Wengraf, 2001). Given the simplicity of the analysis at this early stage, it was done manually.

This process identified several types of topics in the students’ stories, most of which were descriptive in nature. The first type was of research phases, including “started the PhD,” “decided on a topic,” “literature review,” “data collection,” “data
analysis” and “thesis writing”; another type was of interpersonal relationships, including those with “supervisors” and “peers”; yet another type was more conceptual, such as “perception of PhD”. The topics of other academic activities, such as “seminar,” were raised as well. The identified topics and relevant stories were organised in the memo of reading storytelling data (see Appendix 8 for an example), and used as the basis for the second stage of data collection (Section 3.6.3).

3.8.2 Stage two

The second stage involved analysing the data generated from the first two interviews. To prepare for the analysis, the member-checked transcripts of the storytelling and the stimulated recall interviews were imported from Microsoft Word into the NVivo program to form the database (see Section 3.6.5 for detailed information on transcripts and Section 3.7.2 for member checking). The analysis performed at this stage focused chiefly on the within-case analysis as in the first stage, but was much more complex, involving coding, categorising and interpreting. Based on the results of this process, a set of narratives was preliminarily constructed to introduce the participants (Chapter Four).

The analysis at the second stage was initially carried out using NVivo. In NVivo, the data were first coded at “free nodes” (Gibbs, 2002, p. 31), which was the simplest way to indicate a group of materials sharing a basic meaning, idea or concept (Appendix 16 presents a small portion of the node report of free nodes generated by NVivo). Subsequently, the connections or relationships among the nodes were examined to generate categories. The free nodes which appeared to express a more general concept were organised by a “tree node” (Gibbs, 2002, p. 31), which displayed the nodes in a hierarchy to show their relationship. As the analysis proceeded, the relationships were refined and the nodes were altered or re-organised as many times as necessary until the categories were consolidated (see Appendix 17 for the report of tree nodes generated from the second stage of data analysis).
When the second stage of data analysis was completed, the narratives of each participant were constructed (Chapter Four). In order to make it available for the readers to form their own interpretation, the narratives were intentionally more descriptive than interpretive, providing a “thick description” (Patton, 1990, p. 430) of each student’s background, their PhD learning experiences and their learning contexts. The narratives were then given to my supervisors for comments, which resulted in more discussions about the interpretations. The narratives were then modified to reflect these new insights. The second stage of analysis and the composition of the narratives identified gaps in the data as well as issues which demanded further investigation. This information was used to develop interview guides for the third stage of data collection.

3.8.3 Stage three

On the completion of data collection, the data from all three rounds of interviews were drawn together for further analysis. The method of analysis at this stage was identical to that used at the second stage; however, with a different focus. The second stage of analysis was intended to develop narratives of each participant’s doctoral learning processes, and to prepare for the semi-structured interviews. Therefore, the within-case analysis was learning-process oriented, as revealed by the notes reported in Appendix 17. Comparatively, the third stage of analysis exclusively concentrated on answering the focal research questions by means of cross-case analysis:

1) What learning strategies are used by Mainland Chinese PhD students of social sciences in Australian universities?
2) What are the factors which contribute to their learning strategy use?
Hence, this analysis identified categories or themes which were able to provide answers to these questions. The analysis method described by Gibbs (2002, pp. 165-174) was employed, which was derived from grounded theory (Strauss & Corbin, 1998). The analysis procedures of this method were specified as open coding, axial coding, and selective coding.

At the stage of open coding, the transcripts were carefully read to identify meaningful segments. The passages or sentences which exemplified the same concept were coded at a particular node. The nodes constructed at this stage were recorded as free nodes in the NVivo program (see Appendix 15 for examples). These free nodes were further examined for overlaps or repetitions. The nodes which represented identical concepts were then merged into one node. Here are two examples: node “attitudes towards feedback” and node “feedback evaluating” were both about how the students dealt with the feedback received from others. They were merged into the node “handling feedback”. Node “being selective”, node “comparing”, and node “discriminating” were about how the students made selections among alternatives. They were merged into the node “discriminating.” The texts coded at a particular node were also re-examined for accuracy. When a discrepancy between the text and the node at which it was coded was identified, the original coding was deleted and the text was re-coded. These examination processes further clarified the concept represented by each node.

In axial coding, the analysis explored the relationship of nodes constructed in open coding, and on making connections between them. The free nodes which connected to a more general concept were organised under a tree node that represented hierarchical relationships between the nodes. According to grounded theory (Strauss & Corbin, 1998), this process is able to identify six types of category (called ‘nodes’ in NVivo), which are presented in Table 3.3.
As Table 3.3 illustrates, each category in turn causes the next to take place (Gibbs, 2002). More specifically, “the causal conditions produce the phenomenon which in turn causes the strategies in the contexts. These are mediated by intervening conditions and produce actions and interactions that result in consequences” (Gibbs, 2002, p. 171).

Following the procedures described by Gibbs (2002, pp. 171-173), the axial coding made a combined use of sets of nodes and tree nodes to organise the analyses. First, sets of nodes (as shown in Figure 3.1) were created for each category listed in Table 3.3 to draw together the nodes relevant to each category. Next, root nodes for each central phenomenon identified were created to construct tree nodes. In each tree node, the categories of nodes relevant to the particular phenomenon were moved from the sets to the tree node as child nodes (see Figure 3.2 for an example). During the construction of tree nodes, the nodes were further explored to confirm the causal linkages in the text, and theories were expected to emerge. In the process, particular attention was paid to locating possible exceptions which did not fit into the causal
linkages or the theories that emerged. This was one of the measures taken to establish the validity and credibility of this study (see Section 3.7.3). As a result, the theories were modified or extended to reflect the identification of exceptional cases.

In line with the approach of grounded theory, the nodes created at the stage of free coding and the early stage of axial coding were basically data-driven. At the late stage of axial coding, the classification scheme of learning strategies discussed in Chapter Two (Section 2.2) was applied to further organise the nodes in the category of "strategies" (as shown in Figure 3.2). This adoption of the scheme made it possible to compare the results of this study with the existing literature.
A number of phenomena emerged from the axial coding, such as “learning”, “problems”, “supervision”, and “other academic activities” (Figure 3.3). Although they all appeared relevant to the study, their centrality to answering the research questions was further examined by the procedure of selective coding.

Selective coding was the last step of the analysis. This was concerned with making choice among the themes that had emerged from the earlier analyses. The central phenomena which brought together most of the elements of the study were selected to develop the argument of the thesis. In comparison with open coding and axial coding, this process was more analytic and theoretical. To answer the research questions of this study, the themes of “strategies” and “intervening conditions” were selected to develop the final report (Chapter Five).

Besides organising the data by creating sets of nodes and tree nodes, matrices were employed to display the relationships between the categories, which were not entirely captured by the node tree structure (Gibbs, 2002; Miles & Huberman, 1994). Furthermore, the learning strategies used by the participants were also counted to facilitate the identification of patterns, avoid bias, and thus ensure the credibility of the analysis (Miles & Huberman, 1994).
3.9 Summary

This chapter describes the methodology of this study. First, the selection of research methods in the qualitative paradigm was discussed in relation to the research questions. Second, further justification of the adoption of the three interviewing methods were provided, including critical discussions of the strengths and limitations of this design. Finally, the procedures of data collection and analysis were delineated and are summarised in Figure 3.4.

The findings of this research process will be presented in the next two chapters. Specifically, Chapter Four, as a result of the within-case analysis (Section 3.8.2), will introduce the participants in the form of narratives. Chapter Five will present the findings of the cross-case analysis (Section 3.8.3), and explicitly discuss the findings in relation to the focal research questions:

1) What learning strategies are used by Mainland Chinese PhD students of social sciences in Australian universities?
2) What are the factors which contribute to their learning strategy use?
Figure 3.4 A summary of the data collection and analysis process
4.1 Introduction

In this chapter, the learning experience of the six participants will be recounted on the basis of within-case analysis described in Chapter Three (Section 3.8.2) and the data collected by the biodata questionnaire (Section 3.6.1). This chapter focuses on introducing the participants as individuals with regard to their backgrounds, their doctoral learning experiences, and their perceptions of the learning contexts. To protect the participants’ identity and privacy, codes rather than their names were used. The five female participants were randomly coded as F1, F2, F3, F4 and F5; the only male participant was coded as M1. Appendix 18 presents a profile of the participants, including their age range, length of residence in Australia, previous degrees, research experience, candidature status, and completion year of the thesis.

The participants were studying at two universities in Queensland, Australia. The structures of the PhD programs in which they enrolled were identical, reflecting the tradition of Australian PhD programs discussed in Chapter Two (Section 2.4.2.1). Specifically, the programs did not generally contain a course work component but relied almost solely on the student’s conducting of individual and original research under supervision and the production of a dissertation after an extended period of study (Burgess, 1997; Hockey, 1991; Johnson, Lee & Green, 2000; Moses, 1992; Nightingale, 1992). Against this general background, the narratives of each participant will be developed in the following sections. The participants’ own words are used as the headings of the narratives to highlight the main themes of their stories.

As indicated above, the narrative of each participant consists of three parts: the first involves their personal and educational backgrounds. The second concentrates on their experiences in doing the PhD. The last presents their perceptions of the learning contexts, with a focus on their interactions with supervisors and peers.
4.2 F1: I can’t thank my supervisor enough for giving me encouragement.

4.2.1 Personal and educational background

Upon her completion of the Bachelor degree of business in China, F1 worked in a company for about one year before she came to Australia for her postgraduate education in 1998. Immediately prior to her full-time PhD study in marketing, F1 obtained her Master’s degree in business with honours at another Queensland university. The years studying and living in Australia rewarded her with assimilation into the host academic and social culture.

F1 was in her late twenties when the researcher first met her for the purpose of this study in 2001, the year F1 commenced her PhD endeavour. Impressively, unlike other Chinese students, F1 greeted the researcher in English rather than in Chinese, although the casual conversations gradually changed into Mandarin. Nonetheless, F1 still chose to speak English when the interviews were conducted in 2002. F1 maintained that she expressed herself better in English than in Chinese, especially when talking about her academic experiences. F1 explained that, ever since she came to Australia, she had been mainly associating with the locals and hardly had any friends who were from China.

When F1 was doing the Bachelor degree in China, the curriculum was purely coursework based and the courses were delivered in Chinese. To cope with the challenges of the Master’s study in Australia, F1 made efforts to learn to write academically in English and to do research. By the time she completed the honours degree, F1 realised that she enjoyed researching and exploring the field which she studied. Her enhanced interest in doing research, together with her supervisor’s encouragement, motivated F1 to move on to PhD study. F1’s accounts showed that the experiences, skills and knowledge that she gained from her honours study significantly contributed to her doctoral study. Prior to the PhD, F1 also had experience of doing research as part of her employment in Australia, which further contributed to her development as a researcher.
F1’s first conception of the PhD was introduced by her supervisor when she was doing honours: “With honours you’re doing a bigger project than your bachelor’s, and with the PhD you’ll do an even bigger one. That’s it, you know, nothing too significant about it” (F1:SR:Para23). However, having undertaken the PhD herself, F1 found that the PhD was at a higher level than the honours “in terms of the depth of knowledge you have in a certain area and also the research skills that are required” (F1:SR:Para23). In her perception, doing the PhD was a process of developing expertise in an area as well as an opportunity to be trained in doing research (F1:SR:Para27). F1 emphasised that the PhD, a higher degree, was a learning process that further strengthened her research skills (F1:ST:Para179).

F1 completed her PhD in less than two years, which she attributed to her personality. “If I’m doing something, I want to do it well and I want to do it as efficiently as I can” (F1:SR:Para431). It appeared that F1 was a person who was self-determined and persistent. For example, “I have to be very focused and commit myself to my research, which involves sacrificing my personal life and not having much fun” (F1:SR:Para429).

### 4.2.2 Doctoral experience

The honours study established a sound platform for F1 to launch her PhD study, in terms of topic identification, theoretical preparation, and development of research skills. By doing the honours study, F1 identified the areas in which she was interested and the research problems available for further exploration. Based on this, F1 proposed her PhD research and believed that her study would make both theoretical and practical contributions to the field (F1:SR:Para41). As the research progressed, F1’s understanding of the field became more advanced, guiding her to further narrow down the topic (F1:SR:Paras37, 47).

Furthermore, the honours study contributed to F1’s mastery of theoretical knowledge about the field. F1 confidently claimed that she had reviewed most of the literature by the time she commenced the PhD (F1:ST:Para23). Nevertheless, F1 suggested that

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3 As delineated in Chapter Three (Section 3.6.5), the information in the brackets shows the location of the data bite or quoted interview protocols. For example, (F1:SR:Para23) refers to paragraph 23 in the transcripts of stimulated recall interview with participant F1.
developing a theoretical framework for the PhD research was a demanding task, although it was easy to decide on the topic (F1:SR:Para37).

F1 also showed confidence in her methodological knowledge, research skills, and writing skills, which she had developed through the honours study. The mastery of data collection methods (e.g., interviewing) facilitated F1’s conducting of the PhD research (F1:ST:Para57). Moreover, the data collection done for her PhD study further enhanced her understanding of the methodology adopted (F1:ST:Para55). However, F1 recognised the need to learn a new data analysis method (F1:SR:Para181). To learn the method, F1 had expected to receive some formal training but it turned out to be a self-teaching process because she lacked financial support to attend the training course (F1:SR:Para185). F1 appreciated the significance of external help received from experts and supervisors in coping with the difficulties (F1:SR:Para187; F1:SSI:Para22).

Despite the fact that she understood the concept of English academic writing and developed good writing skills when studying for her honours degree (F1:ST:Para71), F1 maintained that writing a PhD thesis was “very intellectually challenging” (F1:SR:Para199). For her, the major difficulties were associated with synthesising and organising the large amount of information and knowledge obtained from the literature and the research project as well as generating new knowledge by internalising the information and knowledge obtained (F1:SR:Paras75, 199). To deal with the difficulties encountered, F1 paid close attention to how other people wrote in the published articles. It appeared that modelling well written articles contributed to her further learning of writing skills and solving of problems (F1:SR:Paras203-207). In addition, F1 emphasised that writing practice itself would lead to better writing skills, which was evidenced by her accounts of successful writing for publishing (F1:SR:Para211).

4.2.3 Perceptions of learning contexts

F1 suggested that the supervision she received, the help from other academics, and the interactions with other PhD students had all contributed to her academic success. According to F1, in addition to her experience in researching, the supervision that she received had played a significant role in her completion of the PhD study in less
than two years. Nonetheless, she had not neglected the contributions of other academics, as mentioned in Section 4.2.2. Despite her successful experiences, F1 appreciated the sense of isolation in the PhD learning process and described frustrations experienced now and then but she indicated that she minimised the effects of these affective conditions by networking with other PhD students.

F1 had been working with her principal supervisor, an Australian, since her honours degree. Although they were from different cultural backgrounds and the supervisor did “not have any interest in Chinese culture” (F1:SSI:Para145), F1 had enjoyed a “very trusting and close working relationship” with him (F1:SR:Para366). F1 attributed this to the factors: 1) that it was her supervisor’s personality to treat people equally, 2) that she and her supervisor knew each other very well and shared the same work ethic, and 3) that she had adapted herself to the host culture.

Having a high level of satisfaction with the supervision that she received, F1 provided rich evidence on how the supervisor had been guiding and assisting her to get involved in a broad academic culture and to achieve academic excellence. Furthermore, the supervisor took the initiative to organise external help for F1 when her problems were beyond his own expertise. Equally important, if not more, was that the supervisor kept motivating and encouraging F1 when she was frustrated with, for example, not being able to find participants or sponsorships for her survey.

The significant contribution of this kind of supervision were well illustrated by F1’s words: “Fifty percent of my success of my PhD [belongs to my supervisor], I have to say, if not more” (F1:SR:Para372); “I can’t thank my supervisor enough for giving me encouragement” (F1:ST:Para127); “I actually think anyone can do a PhD … if you have motivation and persistence to do it. … The motivation, apart from yourself, has a lot to do with your supervisor” (F1:SR:Para374).

F1 also emphasised the importance of the moral support between peers, especially those who were in the same area, using the same research methodology or at a similar stage of research (F1:ST:Paras161-163; F1:SR:Para417). F1 took the opportunity to attend conferences, seminars and postgraduate colloquia to network with other PhD students (F1:ST:Para163; F1:SR:Para309). The interactions included: exchanging literature resources, exchanging research and learning experiences, and
talking about the frustrations experienced (F1:SR:Paras 309, 419, 421). “[When] you know some people are sharing exactly the same issue with you and you are not the only loser in the world, you don’t feel isolated,” F1 said (F1:SR:Para419).

F1’s stories highlighted that her educational experiences and the supervision received were the keys to her academic success. Other invaluable factors that facilitated her timely completion of her PhD study appeared to be the assistance of other academics, interactions with other PhD students, and her own personality. Right after the completion of her PhD, F1 took up her lectureship at another Australian university.

4.3 F2: I’m doing it by trial and error.

4.3.1 Personal and educational background

More than ten years ago, F2 immigrated to Australia after graduating with a Bachelor of Arts degree in English. She commenced teaching at a university, where, for the sake of the job, she completed her Master of Arts degree. Following it, F2 embarked on part-time PhD study in her mid-thirties in 1998 at the same university.

For her Master’s degree, F2 was required to do a piece of research and to write up a thesis. This experience familiarised her with the academic practices in the university, such as how to write academically in English, which could be a problem for Chinese newcomers due to the very different practice in China (F2:ST:Para33). F2 further appreciated that doing the PhD in a familiar environment made things much easier, such as finding supervisors (F2:ST:Para33). Except for the research done for her Master’s degree, F2 had not done any other research prior to her PhD study.

From F2’s point of view, doing the PhD had at least two meanings. First, obtaining the degree would benefit her job. According to her understanding, a PhD was a prerequisite for promotion at universities and for research grant applications. Second, doing the PhD would improve her theoretical knowledge of language teaching and thus would benefit her teaching practice. F2 acknowledged that she lacked theoretical knowledge in this respect because her previous degrees were not in education. She considered that the PhD study would compensate for this weakness (F2:SR:Para28).
4.3.2 Doctoral experience

F2’s research topic emerged from her teaching practice. Her preference for dealing with practical issues rather than theories and her personal interest in computers had an influence on her selection of the topic. By doing this research F2 expected to solve certain problems encountered in foreign language teaching. She indicated that the close relationship between her PhD project and teaching practice would help her to remain interested in the study (F2:SR:Para28). Furthermore, she appreciated that the other advantage of the job-related topic lay in the fact that she profoundly understood the research problem so she avoided wasting time deciding on a topic, a problem that she believed many other students suffered from (F2:ST:Para33).

However, F2 admitted that she lacked theoretical preparation for researching a job-related topic in a discipline which differed from her previous degrees (F2:SR:Para28). Although she was aware of the need to build up the theoretical basis for her research before carrying it out (F2:SR:Para40), F2 failed to do so because she was not personally interested in theory (F2:SSI:Para30) and she did not have sufficient time to spend reviewing the literature before her experiment (F2:SR:Paras40,152). The impact of this disadvantage was evident in her research design (F2:SR:Para152) and thesis writing (F2:SSI:Para30). Specifically, F2 believed that her experiment design would have been more rigorous if she had read more theories. In addition, her weakness in theoretical knowledge, to a large degree, constrained the depth and strength of her arguments in the thesis.

As a part-time student who intended to complete the study as early as possible, F2 was studying under extreme time constraints. First, she had full-time work commitments and a family to look after, leaving her with little free time. Second, because her research involved the application of computing techniques, she was worried that her research could easily become out of date due to the rapid development of technologies (F2:SR:Para40). Accordingly, F2’s accounts revealed that for her the most important thing was how to use the available time most efficiently. This, together with her perceptions of the relationships between research tasks, essentially determined F2’s strategy of doing different tasks simultaneously, for example, writing while reading, and reading while experimenting. In addition, to
avoid her research being out of date, F2 published in-progress articles on it while writing the thesis (F2:SR:Para42).

F2 believed that reviewing the literature could take up to four years before she was able to do the experiment, thus impeding her progress, which was not what she wanted (F2:SR:Para40). Furthermore, from her experience at the early stages, F2 learned that it would be a good practice to write while reading because she noticed that the writing would help to sort out thoughts and keep her reading focused (F2:ST:Para15).

F2 also acknowledged that the reading would benefit her writing, especially in terms of writing skills. In her reading, besides the content itself, F2 also paid attention to the “how” of the authors’ writing, for example, how they structured their papers, how they applied the theories, how they presented their studies, and how they analysed the data (F2:SR:Para158). Consequently, F2 further improved her knowledge of English academic writing and her own writing skills. Moreover, she learned some data analysis methods which eventually shaped the method that she applied to her own study (F2:SR:Paras184-186).

F2 believed that the literature review and data collection were complementary and she carried out the two tasks in parallel. Strategically, she concentrated more on reviewing the literature in the first two years and then more on collecting data (F2:SR:Para148). F2 indicated that this approach had both advantages and disadvantages. The advantages were that the reading could be guided by the development of the data collection to meet the needs of her research and thus she would not waste time on irrelevant readings (F2:SR:Paras40, 148). However, the disadvantages were also recognised. F2 was concerned that her research design was not as rigorous as it should be and she considered that the quality of the design might have been improved if she had read more before designing the experiment (F2:SR:Para152).

F2 commented that the main factors which impacted on her study were her insufficient initial understanding of the field (i.e., theoretical preparation) and methodological knowledge (F2:SSI:Para223). The adverse influence of the lack of
theoretical preparation has been discussed (p. 150). The following will consider the methodological issues.

F2’s stories showed that the outstanding feature of her research was “doing by trial and error” and “by hit and miss” (F2:ST:Paras31-33). F2 tended to attribute this to her lack of knowledge about research methods, which appeared to be relevant to her educational background (see Section 4.3.1).

First, the undergraduate education that she completed in China did not provide F2 with the methodology needed for the research tasks undertaken in Australia (F2:ST:Para33). In F2’s perception, the research tradition in China was very different from that in the West. She acknowledged that her Bachelor’s experience did not involve collecting data systematically, although she did not know how the PhD students in China were required to do research.

Second, F2 received neither formal nor informal training on research methods when she was studying in Australia. When she commenced her postgraduate study here, F2 read a book on how to do research but it turned out to be too general to be helpful (F2:ST:Para33). Furthermore, the research done for her Master’s degree was more like a kind of laboratory work\(^4\) and did not foster her knowledge of the research methods required for her PhD study.

Although she tried to seek supervisors’ advice on methodological issues, F2 indicated that they were unable to help her with some of the problems, so she tended to find solutions on her own through trial and error (F2:SR:Para113). The accounts about her PhD experience showed that F2 had a strong tendency to be independent in the research process. Nevertheless, she suggested that she had a need for detailed guidance in learning specific research methods. For example, F2 conducted interviews in her study but “nobody told me how to do an interview or what particulars to pay attention to. I could only learn it by reading. I mean, I was not clear about what was missed out or not or how it should be done” (F2:ST:Para33).

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\(^4\) The reader would be more easily able to understand the problem if the research done for F2’s Master’s degree was explicitly mentioned. However, for confidentiality reasons, it can only be referred to in general terms.
Besides methodological issues, F2 faced two more major difficulties. One was to find participants for her research and the other was related to the tool that she used to collect data. Furthermore, there were other factors giving rise to concerns such as having insufficient financial resources for the project. Experiencing all sorts of problems, F2 remarked that, “for me, doing the empirical study is really hard because too many things are beyond my control” (F2:SR:Para99).

4.3.3 Perceptions of learning contexts

F2 asserted that, except for her supervisors, nobody else would understand much about her research (F2:SSI:Para38). Therefore, over the years, F2 discussed her project only with her supervisors (F2:SSI:Paras38, 184-187). She had little contact, social or academic, with other PhD students because she did not have time for that. However, F2 did not feel isolated at all. “If I could have one to one and a half days in a week for my research, it would be good enough. I don’t feel isolated but busy” (F2:SSI:Para219).

F2 had more than two supervisors. One of them was Chinese and the others were Australian. Prior to the commencement of her PhD, F2 had known her supervisors through her work and her Master’s study. She appreciated that her supervisors were all encouraging and caring (F2:SR:Para180). She did not find that cultural differences had any influence on her communication with the Australian supervisors (F2:SSI:Paras69-72). F2 had been meeting with her supervisors infrequently. For example, she had only three or four face-to-face meetings with her supervisors in the first two years (F2:ST:Paras35-37), although they were located on the same campus. F2 suggested that the reasons for infrequent meetings were: first, both she and her supervisors were busy (F2:SSI:Para76); and second, she preferred to work on her own (F2:SSI:Paras76-80). This appeared to be another indication of her independence.

F2 completed her PhD in about three years of full-time equivalent. Her accounts showed that theoretical and methodological preparations had a significant impact on her overall experience of the PhD study. Furthermore, time management appeared to be crucial to her timely completion of the study.
4.4 F3: I tend to be independent in doing research.

4.4.1 Personal and educational background

When the interviews were conducted in 2002, F3 had been in Australia for about four years and was in the early third year of her full-time PhD study. In her mid-twenties, F3 embarked on the PhD journey after the completion of a Master’s degree in business by research at another Queensland university. Before she came to Australia, F3 had obtained her Bachelor degree in economics and worked for a couple of years in the industry which was the focus of her PhD thesis.

By means of writing for her Master’s thesis, which was about 50,000 words, F3 built up her concept of methodology: “[When I started my Master’s,] I didn’t know what methodology was. Though I had a subject on it, I didn’t learn much from it. … Only until I wrote up the methodology chapter did I realise that, oh, that’s it” (F3:ST:Para148). The Master’s research experience, together with working as a research assistant, fostered F3’s confidence in her research skills (F3:ST:Paras43-45; F3:SR:Para58).

F3 held a realistic and instrumental view of the PhD degree (F3:SR:Paras115-117). Realistically, it was the highest academic degree. Instrumentally, the PhD degree would make her more competent to work as an academic. F3 conceptualised the PhD process as “doing the biggest exercise.” She maintained that doing a PhD demanded persistence and self-determination and would further develop her critical thinking and her knowledge of how to do research (F3:ST:Paras89-91). It appeared that F3 perceived persistence and self-determination to be prerequisites for doing the PhD while perceiving the skills of critical thinking and the accumulation of knowledge to be outcomes of doing the PhD.

4.4.2 Doctoral experience

F3 initially identified the field of interest for her PhD study based on her Master’s research and then went through a process of narrowing down the research focus. Doing multidisciplinary research in the early stages, F3 experienced frustration in deciding what to concentrate on and thus to carry out the literature review. The
process involved a great deal of independent critical thinking. “You had to puzzle it out on your own since nobody else was able to help you” (F3:ST:Para33), although supervisors provided general guidance (F3:ST:Para21). F3 indicated that she took pains to solve problems on her own because she “tend[ed] to be independent in doing research” (F3:ST:Para35).

F3 showed a high level of confidence in her research skills for conducting both the literature search and the data collection (F3:ST:Paras43-45; F3:ST:Paras113-115). She smoothly carried out the field work, despite the difficulties in finding participants (F3:ST:Para110). Nevertheless, analysing data appeared to be a process requiring more supervision than other tasks. F3 had acquired knowledge about how to analyse data through doing her Master’s degree (F3:ST:Para123). However, to avoid wasting time on doing things wrong, F3 preferred to seek advice from supervisors (F3:ST:Para123).

F3 developed her English academic writing skills through writing her Master’s thesis and publishing joint papers with her supervisors (F3:SSI:Para37). Despite this, she commented that writing the thesis was a very frustrating process (F3:SR:Para178). Writing up the literature review and the discussion appeared to be the most difficult part (F3:SR:Para50; F3:SSI:Para12). F3 explained that sorting out the literature was a theoretical task which she found demanding because she was not good at abstract thinking (F3:SR:Para54). Similarly, in the discussion, it was difficult to link the findings to the theories, especially when attempting to further advance the theories (F3:SSI:Para14).

4.4.3 Perceptions of learning contexts

F3’s accounts about the supervision received suggested a balance between dependence and autonomy, as summarised in Table 4.1. Furthermore, F3 had a harmonious and rewarding relationship with her Australian supervisors. F3 perceived that the extent to which cultural differences would impact on the communication between students and supervisors was related to the students’ personality and adaptation to the host culture (F3:SSI:Para70).
As far as she herself was concerned, F3 said:

My research touched on cross-cultural issues so I am aware of the cultural differences. As for myself, I have adapted to the Australian culture quite well so I have not experienced any problem in this regard. … I believe my supervisors do not feel that I am very Chinese. (F3:SSI:Para68)

Table 4.1 A summary of F3’s supervisory experiences

<table>
<thead>
<tr>
<th>Roles</th>
<th>Tasks</th>
<th>Parties</th>
<th>Supervisors</th>
<th>Writing</th>
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<tbody>
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<td></td>
<td>Narrowing down the topic</td>
<td>Literature review</td>
<td>Research design</td>
<td>Data collection</td>
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<td></td>
<td>Independent</td>
<td>Independent</td>
<td>Dependent</td>
<td>Independent</td>
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<td>F3</td>
<td>Autonomous</td>
<td>Autonomous</td>
<td>Dependent</td>
<td>Autonomous</td>
</tr>
<tr>
<td>Supervisors</td>
<td>Providing general guidance</td>
<td>Providing general guidance</td>
<td>Setting up strict &amp; explicit requirements; Providing feedback on design</td>
<td>Absent (principal supervisor)</td>
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</table>

A close examination of her supervisory experiences revealed that at different stages of her research F3 showed a varied tendency to be independent or dependent. Accordingly, the expected role of her supervisors changed during the course, as shown in Table 4.1. F3’s independence and autonomy were well illustrated by her comments on the infrequent meetings with her ex-principal supervisor:

He was very busy … so I contacted him mainly by emails. If there was a need for a meeting, I would ask him to suggest a time. We met at most once a month. Normally, I was doing it on my own. At that time, I actually met my associate supervisor a bit more frequently. When I had problems, I went to see him and he gave me some guidance. To some extent, that was helpful. Some students here would complain that the meetings [with the principal supervisor] are not frequent but I believe that you are doing it mainly on your own. (F3:ST:Para154)

Even when F3 indicated a tendency to depend on supervisors, she apparently was willing to take up the responsibility for her study. As has mentioned, F3 was concerned about analysing data and was expecting more supervision on this task. However, instead of asking her supervisor how to do it, F3 was prepared to do a rough analysis first and then to show the work to the supervisors and discuss with
them how to proceed (F3:ST:Para123). The word “discuss” suggested that F3 would actively participate in the meeting rather than passively seek solutions from her supervisors.

F3 appreciated that the process of doing a PhD was full of frustrations and PhD students were very isolated. To deal with the frustrations experienced, F3 emphasised that it was important to have moral support from peers. Although they might not know in detail about each other’s research, the exchange of personal research experiences and general suggestions could still be inspiring and helpful (F3:ST:Paras139-144; F3:SR:Para90).

Despite her appreciation of the isolation, F3 did not show any concerns about being isolated. She believed that it was common among PhD students and that doing a PhD, by its nature, was “a lonely journey of the soul” (F3:SSI:Paras92-94).

Before writing up her thesis, F3 commenced her lectureship at the school where she was doing her PhD and switched to part-time study. Nevertheless, F3 completed the PhD in about three and a half years of full-time equivalent. F3’s experiences strongly suggested a balance between dependence and independence in researching. In addition, her personal qualities (e.g., self-determination and persistence), experience in researching, and assimilation into the host culture appeared to be beneficial to her academic success.

4.5  F4: I don’t have strategies but just do not give up.

4.5.1  Personal and educational background

F4 completed her first degree, a Bachelor of Arts, in China. In the late 1990s, she commenced her part-time PhD study in linguistics nearly ten years after her completion of a Master’s degree in Education in Australia. Prior to her PhD study, F4 had undertaken research only for the Master’s degree.

When she was first interviewed in 2002, F4 was analysing data and writing the thesis. For her, the PhD journey was just like a long march. F4 indicated that doing the PhD was the most challenging experience in her life. Besides the challenges inherent in
the study itself, the process was interwoven with health problems and financial
difficulties. However, F4 believed that doing a PhD was not easy for anybody – no
pain, no gain. The only excuse for her to give up would be “it’s not good for me,”
She asserted that finishing the PhD would benefit her no matter what she would do in
the future. In addition, F4 believed that, since other people were able to overcome
their difficulties, she had no reason not to overcome her own. No matter what, F4
was determined to complete the PhD.

F4 further explained that her determination to complete the PhD was closely related
to her personality and motivation. With respect to her personality, F4 never liked to
readily accept existing conclusions; she enjoyed thinking and researching when
problems occurred in her teaching. F4 thought these were the personal qualities that
the PhD work would require. Moreover, she believed that it was always possible to
achieve results if the correct conditions for research were available⁵.

F4’s motivation for doing the PhD was both internal and external. It was her
ambition to obtain the highest academic degree. F4 belonged to the generation whose
school education was interrupted by the Great Cultural Revolution in China
(1966-1976). After the Revolution, F4 was among the very few of her schoolmates
who were able to go to university. She cherished the opportunity and said “since I’ve
followed the track of schooling, I think I must finish it at the summit and do well”
(F4:SR:Para67). Her external motivation for doing the PhD was her pursuit of a
position in an Australian university. In China, F4 had a professional career as a
university lecturer. Since her family immigrated to Australia, she wanted to continue
her university career inside Australia and the PhD degree was the boarding pass.
Therefore, F4 had stuck to her endeavour ever since she commenced it.

4.5.2 Doctoral experience

F4 started doing her PhD in linguistics with little theoretical and methodological
preparation (F4:ST:Para9). At the initial stage of her study, F4 experienced great
difficulties in understanding relevant theories because she was new to the discipline
and lacked the basic knowledge. For example:

⁵ This paragraph is mainly based on a letter F4 wrote to the researcher (see Appendix 15).
I started reading linguistic theoretical books … to teach myself the very basic theories. Though the books were for beginners, sometimes I couldn’t understand what I was reading at all, I didn’t know what they were talking about. It was so difficult and I found myself very ignorant. (F4:SR:Para93)

The reading was intended to allow F4 “to understand what they’re [researchers in the field] talking about” (F4:SR:Para119) and to learn the discursive language of the discipline, “when you write, you use their language. Otherwise, you won’t be understood” (F4:SR:Para95).

F4 experienced very slow progress especially in the first two years of her study. In addition to the theoretical challenges, there were other contextual impediments, including fulfilling the writing tasks suggested by the supervisor at an early stage, changing research topic, lacking literature searching skills, and lacking time. These factors will be briefly described in turn.

When she had just started to review the literature, F4 was advised to write and to hand in writings from time to time. At that time, F4 did not know what to write about because she had not done any research and had read only a little on linguistics. Nevertheless, F4 followed the advice and wrote down whatever came into her mind, which she believed did not have any research value at all. The supervisor did not make comments on her writing, but indicated that F4’s progress was too slow. F4 suggested that the supervisor’s requirement of writing at such an early stage was counter-productive because it did not match her needs.

From my viewpoint, in the first year, the students from the Mainland should learn how to use modern technologies, such as how to use the computer for searching the literature. As for me, when I did my Master’s in the 1980s [in Australia], we were all relying on the library catalogue while the computer was hardly used. … I was asked to write when I even didn’t know well how to search for the literature. I didn’t think it was effective. (F4:ST:Para9)

F4 seemed to be technically unsophisticated in using the facilities available, a characteristic which she generalised to all Mainland Chinese students. Given that the skills needed were not developed early in her candidature, this disadvantage persisted.
throughout F4’s PhD study. “Up to now, I use the computer to search the literature only once or twice a year at a very limited level. Normally, I read journals [in hard copy] for new articles” (F4:SR:Para184).

Changing the research topic was the another obstacle that F4 encountered. The first topic originated in her teaching practice and F4 was interested in it. However, the topic was vetoed by the supervisor after F4 had worked on it for more than half a year. According to the supervisor, it was too difficult to be feasible (F4:ST:Para9). Consequently, F4 dropped the topic and then picked up a new one by the end of the first year of her PhD. The second topic also emerged from her teaching practice and focused on a linguistic phenomenon (F4:ST:Para9).

As a part-time student having a young family to look after, F4 experienced severe problems of lack of time due to work and family commitments. In addition, F4 had suffered from health problems ever since she commenced the study (F4:ST:Para9).

After sorting out the research topic, F4 experienced methodological problems. These problems emerged as early as the stage of research design and persisted until the last stage of writing up the thesis. Although she did research for her Master’s degree, F4’s accounts indicated that her problem, by nature, was conceptual. In her own words, “when I’m doing the PhD, I don’t even have a clear concept of methodology” (F4:ST:Para9). F4 attributed the problem to the fact that she did not receive training in methodology. “When I first started, I should have sat in on classes of research methodology so as to at least have some ideas about what research methodology is and what it involves” (F4:ST:Para9). The Master’s research failed to develop her knowledge of methodology in that it only involved doing a library search to write a thesis of no more than 20000 words.

Although she designed her PhD research and carried it out, F4 had difficulties in justifying her methodology. Furthermore, she doubted the validity of her interpretations of the data (F4:SR:Paras259, 261). In addition to her lack of knowledge about methodology, these difficulties seemed to be relevant to her perceptions of the nature of knowledge and her self-confidence. It appeared that F4 believed that knowledge was either right or wrong and that she was not confident in her own ability to be creative or to construct knowledge. For example:
I don’t have a specific methodology. No ready-made methodology is out there telling you that you must do this and then you can come up with correct conclusions. … Without a reliable methodology to follow, I can only do it through trial and error. … If I could at least make some breakthrough in methodology after finishing the research, that would be good. But now I don’t know whether I can make the breakthrough. Anyway, what I can do now is only to write about how I have done it and why I have done it this way. I really can’t see it has any theoretical basis. (F4:SSI:Para103)

While she was concerned about the methodology, F4 showed confidence in her English academic writing. “In writing itself, I do not have language difficulties because I had experience of writing for the Master’s study and I had been teaching English. I do not have difficulties in expressing my opinions” (F4:SR:Para253). What caused her difficulties in writing up the thesis was justifying the research methodology, interpreting the data, and drawing conclusions from the analysis (F4:ST:Para9; F4:SR:Para253; F4:SSI:Para14). Furthermore, F4’s accounts revealed that, at the early stages of the research, she had difficulties with how to critically assess the literature. For example:

I didn’t agree with some researchers and believed their conclusions were wrong but I didn’t know how to support myself. At first, I criticised a lot but supervisors said it was not good to criticise others. However, in my opinion, I must criticise others to show that they were wrong. Otherwise, people would wonder why I was trying to be different. I must demonstrate that they were wrong so at least I had my reasons to do the research. My supervisors persisted that I should not criticise others. I didn’t know how to deal with it. (F4:ST:Para9)

It appeared that F4’s approach to criticising was consistent with her belief about knowledge, that is, it was either right or wrong. Nevertheless, as her research progressed to the advanced stage, F4 started to be able to appreciate different perspectives and in turn her approach to criticising changed accordingly (F4:SSI:Para42).
4.5.3 Perceptions of learning contexts

F4 emphasised the importance of mutual respect in supervisory relationships. She perceived that the students should do the research on their own and the role of the supervisor was to provide guidance and to keep the students on the right track (F4:SSI:Para136). This perception influenced the low frequency of her meetings with supervisors. Furthermore, F4 preferred working on her research in isolation. Therefore, she rarely talked about her study with others, although she did discuss methodological issues with peers and had social conversations with them (F4:SSI:Paras22, 168).

F4 was still in the process of writing up the thesis at the last contact in 2003. She intended to complete it by July 2003 but her progress was interrupted by unexpected family circumstances. Nevertheless, as discussed in Section 4.5.1, F4 is determined to complete her PhD. As she said, “I don’t have strategies but just do not give up” (F4:ST:Para9).

4.6 F5: I always enjoy being with others. This is my personality.

4.6.1 Personal and educational background

F5 completed her tertiary education in China with a Master’s degree in language teaching. The curriculum of this degree to some extent was modelled on the Western style (F5:SR:Para12). Although it was still in the “spoon-feeding” tradition, the students were required to do research for assignments and the dissertation. The practices involved selecting their own topic, and collecting and analysing data, which developed F5’s knowledge of research and research skills.

After her graduation, F5 worked as a university lecturer in China for a number of years before she went to an English-speaking country\(^6\) for her second Master’s degree in communications. This experience further developed F5’s confidence in researching and English academic writing.

\(^6\) For confidentiality, the name of the country is omitted.
Following the completion of her second Master’s degree, F5 was motivated to do a PhD with an interest in the same area. F5 perceived the undertaking of a PhD degree as a kind of self-fulfilment and had been intent on doing it. Shortly after the commencement of her PhD study, F5 received an offer of a scholarship from her current university so she relocated to Australia. Upon this transfer, F5 embarked on her PhD journey, on a full-time basis, with a fresh start in her late thirties.

4.6.2 Doctoral experience

F5 had no acquaintances in Australia when she arrived. In the first couple of weeks, she experienced a kind of culture shock and a strong sense of isolation. F5 attributed the culture shock to the failure of her expectations. She assumed that the social systems in Australia and the other country where she had lived were very similar so she would not have any problems. However, when she suddenly found that many things were different in the two countries, F5 was shocked. Because she did not suffer such a shock the first time overseas when she was doing her Master’s in the other country, F5 believed that she herself must be more shocked than the students who came directly from China and were consciously aware of the differences (F5:ST:Para42). It seemed that the unexpected culture shock and the absence of friends, together with the unfamiliarity of the academic environment, magnified her sense of isolation. It was with very bitter feelings that F5 talked about her experiences in the first two weeks after her arrival:

When I first arrived, I didn’t know anybody here. Everybody was busy and they didn’t know me so it was impossible to have somebody talk to me. … It made me feel there were only my child and I left on the world. … I felt we were so pitiable and so lonely that I didn’t want to do the PhD any more; I didn’t want to stay here any longer. I just wanted to go home. (F5:ST:Para42)

It took F5 about one month to find a house and to settle down. The settling in and making friends with people from China eased her feelings of isolation and restored her enthusiasm for study.

When she was first interviewed in 2002, F5 had been in Australia for less than four months and was at the stage of deciding on a research topic. The entirely new
environment, academically and socially, presented F5 with both excitement and challenges.

Studying in the new academic environment, F5 initially intended to be independent while she was aware of the challenges. “When I was working with my ex-supervisor, I could consult with him about many things. Now I’m doing independently. I want to find my direction on my own so it is difficult at the beginning” (F5:ST:Para22). The brief PhD experience in the other country seemed to cause F5’s confusion and uncertainty at this early stage of finding a topic. She was wondering whether to follow her original area of interest or to take up a new one. Furthermore, she indicated a need to take into consideration the factors of the available resources, library collections, and the supervisor’s expertise when deciding on a topic at a new place.

To clear up her thoughts and decide on the topic, besides reviewing the literature, F5 believed that it was important to have someone to talk with and to confirm her thoughts (F5:ST:Para34). F5 indicated that in the early stages of her enrolment, she felt more comfortable talking about her confusion with peers than with supervisors, who she did not know well (F5:ST:Para34). Therefore, instead of talking to her supervisor, F5 had a discussion with a peer who had nearly finished his PhD. She commented that the peer’s positive feedback greatly encouraged her to explore further.

F5’s accounts at the first two interviews indicated a great deal of confusion and uncertainty about her research topic. Going through such a process was frustrating. However, F5 appeared to have the ability to tolerate the ambiguity. “It’s good that now and then I tell myself that this is the stage for exploring so I don’t need to be clear about everything” (F5:ST:Para36).

F5 started to write after reviewing the literature for a couple of months. Although this initial writing was more or less in the form of note-taking, F5 believed that it would help to record what had been read and to provide a basis for further thinking, “I think the writing will guide me where to go next” (F5:SR:Para202)
Although F5 believed that she herself was experienced in researching, she indicated a tendency to depend on her supervisors because she believed that they could be very helpful (F5:SSI:Para61). For example, she tried to ask for their advice when encountering problems and respected their ideas. However, after she worked on the topic for about one year with her supervisors’ confirmation and encouragement, her supervisors did not approve her topic when the time was approaching for her confirmation seminar (F5:SSI:Para59).

With regard to the lack of approval of the topic, F5 attributed it partially to the principal supervisor’s inexperience in supervising students; for example, “I was his first student. … He had no experience and did not know how to supervise” (F5:SSI:Para61); and partially to her own responsibility that she did not provide a convincing research methodology (F5:SSI:Paras31-33).

When she was last interviewed in 2003, F5 had decided on a new topic and was reviewing the literature for it. As a recipient of a scholarship, F5 was very stressed and worried about her progress: “It would take another year to prepare for a new topic” (F5:SSI:Para15). Nevertheless, F5 regained her independence in researching: “I have not talked about the new topic with my supervisors. I’d like to write up a good proposal before seeing them. By then, if they were able to help me with it, it would be fine. If not, it wouldn’t matter” (F5:SSI:Para63).

### 4.6.3 Perceptions of learning contexts

Based on her experience, F5 emphasised that mutual understanding at the personal level was crucial for the supervisory relationship. Other factors included the personality of the supervisor, shared research interests, and cultural understanding. F5 indicated that not knowing her supervisors before she came to Australia was a great disadvantage (F5:ST:Para34; F5:SR:Para255; F5:SSI:Para81). For example, when F5 first started:

> I had no contact with my supervisor before I came. … He knew nothing about me and I knew nothing about him [laughs]. … As a Chinese student, I always wonder how much of his time I can take up or whether I can talk with him about anything
that is puzzling me. I don’t think we have known each other to such a degree that I can talk about anything with him. (F5:ST:Para34)

In contrast to this concern, F5 recalled that she felt free to discuss her thoughts with her ex-supervisor when she was studying in the other English-speaking country. She appreciated that the ex-supervisor had a rich knowledge of China and Chinese culture, shared the same research interest with her, and they knew each other very well. F5 contended that the lack of closeness to her current supervisor made it difficult to have free discussions with him (F5:SSI:Para91).

In her PhD study, F5 suffered from a sense of isolation. This appeared to be relevant to both her personality and experience, in addition to the structure of the PhD program. As F5 said, “I always enjoy being with others. This is my personality” (F5:SSI:Para146). Furthermore, as mentioned at the beginning of Section 4.6.2, she knew nobody here before coming to Australia. “I felt I was an isolated person after I came to the School” (F5:SSI:Para142). F5 maintained that the structure of the Australian PhD program was not good for the students’ development and was responsible for the high rate of dropout. She suggested that it was important to structure the PhD to include at least half a year’s coursework so that students were able to develop together, communicate with each other, and share their experiences (F5:SSI:Para135).

4.7 M1: I have no interest in doing research.

4.7.1 Personal and educational background

M1, in his mid-thirties, was the only male informant in this study. When the first interview was conducted in July 2002, he was in the early third year of his full-time PhD study. Prior to the PhD, M1 did not have any educational experience in Australia or other English-speaking countries. More than ten years ago, he completed his undergraduate and postgraduate education in China. The only research experience he had was for his previous degrees.

For his Bachelor and Master’s theses that were written in Chinese, M1 conducted a form of social study, but the research involved was not rigorous. Ever since
graduation, M1 had work in a Chinese government administrative department and his job did not involve research elements.

M1 commented that he himself did not have a strong academic background (M1:SR:Para56) or extensive research experience (M1:SR:Para165). Taking up the PhD research, which was initially suggested by the project that he coordinated at his last job, was a real challenge for M1. It meant that he had to give up his secure and promising job in China and to embark on a new career in Australia.

Nevertheless, M1 eventually decided to move to Australia (for reasons see Section 5.3.1.3) and started his PhD journey for which he lacked intrinsic enthusiasm. In M1’s perception, most of the PhD students expected to work in universities or research institutions after graduation, which he was not interested in. Instead, he preferred government jobs. Furthermore, M1 believed that he was, by nature, not a researcher: “I have no interest in doing research” (M1:ST:Para20). He found it truly boring to keep working on the same thing day in and day out, year after year (M1:SR:Para165). Despite the absence of interest, M1 successfully completed his PhD in three and a half years. For him, the PhD degree was a qualification needed for immigrating to Australia.

### 4.7.2 Doctoral experience

Given that his previous academic degrees were in economics, M1 was selected to do a PhD on a research problem initially identified in the project that he had coordinated in China, by a group of experts (including his current supervisor). Regardless of his background in economics, M1 indicated that he lacked theoretical and methodological preparation for the research.

M1 had no knowledge about economic analysis from the Western perspective. When he was doing his Master’s degree in China, Western economics had not yet been introduced. Furthermore, he had never had access to the results of international research in this field when he was working in China. To cope with this disadvantage, M1 spent one year reviewing the literature. Meanwhile, he attended courses on the data analysis methods used in his study.
In the initial stages, M1 encountered difficulties in understanding the literature. In addition to his theoretical deficiency, the jargon in English magnified the challenge of the task. “Reading also took an effort. I couldn’t understand it, you know. The articles were very technical and specialised. I couldn’t understand many things, honestly, didn’t understand” (M1:ST:Para12). The determination that he exhibited by spending the first year reviewing the literature rewarded him with an understanding of the industry and a clear idea about what he was going to do (M1:SR:Para122).

Given that M1’s research problem was inherently related to his last job in China, the location of his fieldwork was readily decided. Early in the second year of study, M1 travelled to China and did the fieldwork. However, after coming back from the field, he needed to do some follow-ups, which turned out to be a problem and impeded his progress. The difficulties were in communicating with the informants in China.

It is not easy to collect data from China. I mean, sometimes they are not very cooperative. In China, if you know the persons well, things are easier. However, the leadership of the site kept changing, which made it very difficult to contact them. Furthermore, the communication with them is not smooth because they rarely check emails. I had planned … to go back last month to collect more data, which had been confirmed by them earlier. But now, I am not sure whether I still can go there.

(M1:ST:Para16)

The fact that M1 was not able to collect supplementary data as scheduled caused him to worry about his progress:

I’m currently at the beginning of the third year of my study. It’s just like at the lowest point of a curve. I hope to recover from the lowest [point] as soon as possible. Otherwise, I’m worried about whether I can finish. It’s really hard. I wrote very, very slowly in the last couple of months, usually just a few words, or one or two paragraphs. … It’s because I lack data for one major chapter. … I must have mentioned that I would go back to China in the middle of this year [to collect the data] but until now I don’t have a clear idea about whether I can go back.

(M1:SR:Paras48-54)

M1 anticipated that he would have difficulties in carrying out quantitative data analysis because he lacked knowledge about the data analysis tool (M1:ST:Para14;
M1:SR:Para56). To prepare himself for the task, M1 attended relevant courses (M1:ST:Para20) and expected to seek help from his supervisor and one of his peers (M1:SR:Paras58-60). However, when he actually carried out the analysis, M1 found that it was not as difficult as he had perceived. “Gradually, I became accustomed to it. It’s a kind of tool. … I found it’s not too difficult” (M1:SSI:Para35).

With regard to writing in English, M1 appreciated that it was very difficult, which he generalised to all non-English speakers (M1:SSI:Para61). He indicated that he mainly had problems with grammar, although he used to believe he was very good at it. Nevertheless, M1 noticed that his writing skills had developed through the PhD study.

4.7.3 Perceptions of learning contexts

As indicated earlier, M1 knew his supervisor through work before commencing the PhD. Personally, M1 appreciated that his supervisor was a very kind person. He treated M1 in a friendly way and helped him a lot in his personal life. Nonetheless, academically, M1 perceived that there was a cultural effect on his interactions with the supervisor, especially in the first two years. In the third year of his study, M1 started to consider that the supervisor’s personality might have influenced his supervision style (M1:SSI:Para116).

Recalling his experience of the first two years, M1 was concerned that his supervisor was too busy to spare time for him or to give him feedback on his writing. Furthermore, meeting once a month was far less than adequate (M1:ST:Para26). M1 expected to meet his supervisor more frequently because he needed his encouragement and guidance, and in addition, talking with the supervisor would reduce his feelings of loneliness, which M1 thought “might be a [typical] feeling of Chinese students” (M1:SR:Para159).

When he did not meet with his supervisor as frequently as expected, M1 tended to use cultural differences to interpret the phenomenon:

It probably was a matter of the differences between the East and the West. For Westerners, such as the supervisor, if you did not ask him questions, he would think
you know everything. Only when you ask him does he explain it to you. He doesn’t take the initiative to ask you whether you have any difficulties in the study [laughs]. This could be a difference. It may have caused the problem that the communication was not very smooth. (M1:ST:Para26)

M1 considered that the most significant cultural difference was that Chinese students tended to be dependent on their teachers while Australian teachers tended to leave the students to work on their own.

Probably the most significant difference between us is that the Chinese students usually would like to be encouraged or driven by our supervisor. We are so accustomed to following the orders of our teachers. But in Australia, the teachers don’t give orders quite so often. They don’t push you as often as Chinese teachers do. In most cases, they would like you to design your work, your tasks on your own. (M1:SSI:Para114)

Aware that he was expected to be independent, M1 learned to take the initiative in his study (M1:SSI:Para120). Furthermore, M1 played a more active role in the supervisory relationship in the third year than in the first two years, when he realised that the supervisor’s personality might have influenced his supervision style. “He [the supervisor] is a person to be driven. You need to push him. Usually, he would leave the job until the last minute” (M1:SSI:Para116). For example, in the first two years, M1 tended to passively wait for the supervisor’s feedback which could take several months (M1:ST:Para26; M1:SSI:Para114). However, in the last year, with the intention to finish the PhD as soon as possible, M1 requested meetings more frequently, at least once a week; and suggested more timely feedback from the supervisor. He appreciated that his supervisor understood his intentions and managed to meet his needs. “In the third year, he was very responsible. Generally, if I submitted one chapter, he could finish the review in one or two weeks. That’s good” (M1:SSI:Para114).

During his PhD study, M1 did not feel very isolated, although he did not have many face-to-face conversations with others (M1:SSI:Para147). M1 attended a number of conferences and seminars, through which he built up connections with other researchers in the field. He indicated that he communicated with them mainly by
email or phone. Furthermore, the frequent meetings with his supervisor helped to diminish the feeling of isolation.

4.8 Summary

The narratives have introduced each participant in terms of their personal and educational backgrounds, their doctoral experience, and their perceptions of the learning environment. Comparison of their stories revealed that the participants were individuals with distinct personalities possessing diverse perceptions of their learning contexts and that they differed in theoretical and methodological preparation for their PhD studies. It was found that the participants’ theoretical and methodological preparation rather than their ethnic background had a significant influence on their overall doctoral learning experience. Nevertheless, the effect of cultural differences was apparent in some of the participants’ interactions with supervisors while others emphasised the functions of personal variables (see Section 5.3.2.2 for further discussion). In addition, the students (F5, M1) who had obtained their Master’s degrees in China showed a strong tendency to depend on their supervisors in the early stages of their candidature, although they gradually developed a higher level of independence when they understood that they were expected to be autonomous in learning. By contrast, the students who had completed their Master’s degrees in Australia (F1, F2, F3, F4) demonstrated a preference for independence and were able to keep a balance between dependence and independence.

Following these general descriptive accounts of the participants, the next chapter will focus on investigating how the participants learned and how they coped with the obstacles encountered in their doctoral studies, that is, their learning strategy use.
Chapter 5 Cross-Case Analysis: Findings

5.1 Introduction

The preceding chapter recounted the participants’ backgrounds, learning experiences, and perceptions of learning contexts in the form of narratives. Following these broad portraits of their doctoral endeavours, this chapter will explicitly and systematically present the learning strategies that the participants employed in the process of their doctoral studies and the factors which contributed to their learning strategy use. The discussions in this chapter will be based on the cross-case analysis described in Section 3.8.3, and will be structured in relation to the research questions raised in Chapter One:

1) What learning strategies are used by Mainland Chinese PhD students of social sciences in Australian universities?
2) What are the factors which contribute to their learning strategy use?

Guided by the focal research questions, the cross-case analysis reveals that the participants were highly self-motivated to complete the studies in a timely fashion. In the process of striving for a timely completion, they employed a range of learning strategies. Moreover, their selection of specific learning strategies was found to be influenced by a number of factors. In this chapter, first, the learning strategies which were identified in the analysis will be described (Section 5.2). To provide rich information about when, why and how the participants applied particular learning strategies, the discussions will be embedded in extensive examples selected from the interview protocols. Next, the factors which appeared to be relevant to their strategy use will be presented (Section 5.3). Finally, the chapter will conclude with a summary of the findings (Section 5.4).
5.2 Learning strategies used by the participants

Learning strategies are the systematically formulated processes of metacognitive, cognitive and/or behavioural activities which are intentionally employed by the learners to facilitate the accomplishment of the research tasks required by the degree of Doctor of Philosophy. This operational definition was developed for this study based on a critical review of the literature on learning strategies (Section 1.4). The cross-case analysis of the interview data (Section 3.8.3) discovered that the participants exploited a variety of learning strategies in their doctoral learning processes. To assist in the discussion, the strategies were classified into three general categories, namely, metacognitive strategies, cognitive strategies, and social/affective strategies. The classification of these categories was adopted from the work of O’Malley and Chamot (1990), as discussed in Section 2.2.

The three strategy categories consisted of 24 subcategories which encompassed 52 specific strategies (see Appendices 19-21 for complete lists of the strategies identified in this study within each category). This was an extensive identification of the learning strategies used by the participants but was by no means exhaustive. It is worthwhile to note that each of the particular strategies was not found to be used by the same number of participants, as shown in Table 5.1. In other words, some of the strategies were used by all six participants while others were used by only one or two of them. Regardless of the popularity, all the strategies identified were included in Appendices 19-21 because this exploratory study aimed to discover all possible learning strategies applied by these PhD students in their doctoral learning. The emergence of strategies which were used by only one or two participants indicated their existence and the possibility that they might also be used by students who did not participate in this study. According to their popularity among the participants, the strategies in each category were clustered into three groups (Table 5.1): most popular strategies (i.e., the strategies used by five or six participants), popular strategies (i.e., the strategies used by three or four participants), and less popular strategies (i.e., the strategies used by no more than two participants).

Given the large number of learning strategies identified, it was considered impractical to discuss each of them in detail. Therefore, the following discussion will be selective. That is, only the most popular strategies in each category will be
elaborated upon. With regard to the popular and less popular strategies, a brief and collective discussion will be included, and their definitions and the relevant exemplar data bites are provided in Appendices 19-21.

Table 5.1 Learning strategies sorted by their popularity among the participants

<table>
<thead>
<tr>
<th>Popularity</th>
<th>Metacognitive strategies</th>
<th>Cognitive strategies</th>
<th>Social/affective strategies</th>
</tr>
</thead>
</table>
| Most popular strategies (5 ≤ N ≤ 6) | • Planning (6)  
• Self-monitoring (5)  
• Self-evaluating (5) | • Resourcing (6)  
• Seeking training (6)  
• Writing-specific strategies (6)  
• Practising (5)  
• Self-questioning (5)  
• Publishing while doing the research (5) | • Interpersonal strategies (6)  
• Concentration managing strategies (6)  
• Emotion managing strategies (5)  
• Motivation retaining strategies (5) |
| Popular strategies (3 ≤ N ≤ 4) |  
| Less popular strategies (1 ≤ N ≤ 2) |  
|                       |  

Note: N = number of the participants who used the strategies

Structurally, this part includes four sections. Sections 5.2.1-5.2.3 will focus on delineating the participants’ use of the learning strategies in the three general categories, namely, metacognitive strategies, cognitive strategies and social/affective strategies. In addition, these sections will include definitions and subclassifications of the learning strategies identified in this study. The last section, Section 5.2.4, will concentrate on discussing the patterns observed in the participants’ learning strategy use.
5.2.1  Metacognitive strategies

Metacognitive strategies are the processes whereby learners use their metacognitive resources to plan for the learning or the carrying-out of research tasks, to monitor the effectiveness of learning activities, and to evaluate the outcomes of studying. These strategies also include monitoring one’s own affective state in the research process, and assessing the quality of oneself as a researcher. Three metacognitive strategies were identified in this study (see Appendix 19) and were all in the group of most popular strategies (Table 5.1). They were planning, self-monitoring and self-evaluating.

Table 5.2 presents the participants’ use of metacognitive strategies and it shows both commonalities and differences in their application of these strategies. All the participants reported making systematic arrangements in advance with respect to carrying out the research tasks or learning (planning). Furthermore, most of them (five out of six) consciously checked on their own learning processes by varied means (self-monitoring), and they tended to assess the quality of their own work or of themselves as researchers (self-evaluating). However, the individuals differed in the selection of specific strategies. The participants’ use of the three metacognitive strategies will be further examined in the sections under Table 5.2.
### Table 5.2 Metacognitive strategies used by the participants

<table>
<thead>
<tr>
<th>Metacognitive strategies</th>
<th>Participants</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F1</td>
<td>F2</td>
<td>F3</td>
<td>F4</td>
<td>F5</td>
</tr>
<tr>
<td><strong>Planning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advance planning</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Goal setting</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Establishing priorities</td>
<td>x</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Selective attention</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Scanning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reading with a different focus</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reading with a purpose</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Self-monitoring</strong></td>
<td>✓</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Checking on effectiveness of studying</td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Checking on efficiency of studying</td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Self-reflecting</td>
<td>x</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Checking one’s affective state</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Self-evaluating</strong></td>
<td>x</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Assessing the quality of one’s own work</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Evaluating the quality of self as a researcher</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Note: 1. The table was a modification of the matrix generated by Matrix Intersection Search in NVivo. See Appendix 22 for the original matrix.
2. ✓ = Used; x = Not used

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7 In Table 5.2, the strategies in bold font represent subcategories of strategies; the rest are specific strategies within each subcategory. As shown, metacognitive strategies consist of three subcategories and ten specific strategies (not including the strategies in italic font) (c.f. Appendix 19).
5.2.1.1 Planning

The analysis suggested that the participants applied a range of planning strategies to organise the performance of their research and learning activities. The planning strategies identified in this study were advance planning, goal setting, establishing priorities, and selective attention.

Advance planning

Advance planning involves the procedures of planning the research process as a whole. It was employed:

1) to organise the performance of research tasks in such a way that the effectiveness of research activities (e.g., reading, writing, data collecting and analysing) was maximised (F2:ST:Para15; F2:SR:Paras40, 148; F4:ST:Para9; F4:SR:Para247),
2) to make effective use of time (F3:ST:Para123), and/or
3) to prepare oneself for the research tasks that are forthcoming (F1:ST:Para105; F5:ST:Para55; M1:ST:Para20; M1:SR:Para56).

A number of factors were recognised to be relevant to the students’ use of this strategy. These included the students’ perceptions of the research tasks to be dealt with (e.g., easy, challenging, problematic), their needs analysis (e.g., need help from outside, need to learn new things), and their recognition of the interactive relationships between the research activities (e.g., data collection suggests further reading). The following are two illustrative examples.

When F3 was first interviewed, she had already finished collecting data and was about to do data analysis. In the storytelling interview, she predicted that analysing the data and writing up the analysis would both be problematic. Furthermore, she saw there was a need to seek advice from her supervisors on how to perform these tasks. In accordance with this, F3 made a plan as follows:

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8 As delineated in Chapter Three (Section 3.6.5), the information in the brackets shows the location of the data bite or quoted interview protocols. For example, (F2:ST:Para15) refers to paragraph 15 in the transcripts of storytelling interview with participant F2.
A few days ago, I seriously considered how to do the analysis. I had experience in analysing data so at least I have an idea about how to do it. I have had my plan but I will first discuss it with my supervisors before getting into details. I’ll do a rough analysis but not in great detail because I’m afraid to make mistakes. Making mistakes means wasting my time, why would I? So I shall wait until they have a look at my analysis and discuss it. (F3:ST:Para123)

The case of F3 exemplifies how the student undertook advance planning in the light of their needs and perceptions of the research tasks. The next quotation will demonstrate how the understanding of the relationship between research tasks shaped the students’ planning of their research activities.

I’ve mentioned that I didn’t do it as my supervisor suggested to spend the first two years on the literature research, and then to move on to the experiments. I didn’t think it was workable. I believed they should be done simultaneously. I mean, they are interdependent. The literature is so vast that it’s impossible to design the experiment after finishing reading all of [the name of the field]. However, when you take both the experiment and literature research into consideration, you’ll know to focus on which part of the literature. Let’s take an example of the criteria I used for evaluating tasks. They were found when I was reading while doing the experiment. I mean, you didn’t have the tasks when you first started, how could you anticipate using these criteria for evaluation? So I still believe that they should be done simultaneously. Of course, at the early stage, say, in the first two years, you may concentrate more on the literature and then focus more on the writing, that is, the data collection. (F2:SR:Para148)

It was shown that the student’s perception of the relationship between research tasks influenced not only her strategy use but also her handling of the advice received. In other words, the student tended to adopt the strategies which were compatible with her perceptions of the research tasks.
Goal setting

In contrast to the strategy of advance planning, goal setting puts emphasis on the completion of particular researching or learning tasks. The application of goal setting is concerned with completing a learning task within a specific time frame. The data show that there was no fixed formula for setting up goals and that each participant had their own preferences. The tasks to be completed were either as specific as “to write up 500 words” and “to finish reading these articles,” or as general as “to write up the section” and “to finish the analysis.” The time frame was either as short as “in a day” or as long as “by the end of the year.”

I’m on study leave this semester so I ask myself to write up 500 words each day.

(F2:ST:Para13)

I’ve planned to finish reading these articles today and to summarise them …

(F5:ST:Para40)

My original plan was to write up [the name of a section] at least by the end of July, … and then go back to revise [the name of another section]. (F4:SSI:Para12)

I’ve finished the first half of Chapter Four. … The second half will use [name of the data analysis method] so I know … I will have some difficulties, I will put it, ah: to finish it maybe by the end of the year. (M1:SR:Para62)

It was observed that several factors influenced the participants’ goal setting. Among them, the availability of time and the students’ perceptions of the task (e.g., easy or difficult) appeared to be most powerful. By setting up goals, the research tasks were broken down into manageable segments, which provided the participants with a mechanism for completing the task in a systematic way. In the meantime, the accomplishment of the goals could generate a sense of achievement, which might promote the student’s positive feelings towards the study. F2’s comments were representative:

I found my supervisor gave me a good piece of advice. He said, at each stage, you have a small goal to work for. When you achieve small goals one after another, gradually, you will find that you’ve achieved a lot. Otherwise, you may not know
what you are busy with every day, and might not be aware that you’ve made very slow progress or even haven’t made any progress at all. I found he was very right.

We should have small goals to work for. For example, I will write up the conclusion in ten days or whatever. If you weren’t even able to attain these small goals, nobody could help it. You might find yourself many excuses for that [laughs]. However, if you made it, you would be happy. (F2:SR:Para81)

The personal quality of being self-disciplined seemed essential to the successful application of this strategy (F2:ST:Para13; F4:SSI:Para187). However, the use of other learning strategies in conjunction appeared necessary to facilitate the effectiveness of goal setting, given that diverse situations could prevent the students from achieving the goals as planned. Such situations ranged from experiencing too many distractions (F5:ST:Para40, F4:SSI:Para10) to lacking ideas of what to write about (F2:SR:Para83). Correspondingly, the use of concentration managing strategies (Section 5.2.3.2) and resourcing (Section 5.2.2.1) were used to cope with the obstacles.

**Establishing priorities**

This strategy refers to the processes involving the way students decide on which research tasks they would like to do first. By establishing priorities, the students were in a position to concentrate their cognitive resources on one task first, and thus to improve the efficiency of learning which might be otherwise reduced. The participants’ use of this strategy will be exemplified by the following vignettes.

In the early stages of her literature review, F5 was worried about the selection of research methodology. This concern seemed to put much extra pressure on F5 who was in the process of deciding on a research topic. When she talked about the issue with her supervisors, they both suggested that the development of research methodology was based on the review of literature. On their advice, F5 intended to ignore the methodology for the time being and focus on the literature review first, although her concerns remained (F5:ST:Para55).

M1’s study involved analysing both qualitative and quantitative data. Aware of his own strengths in doing qualitative analysis (M1:SR:Para56), M1 gave priority to
writing up the qualitative analysis but decided to leave the section on quantitative analysis until last when he wrote the thesis (M1:ST:Para14).

When talking about participation in other academic activities, F4 claimed that she placed her priority on writing up the thesis. “For the time being, I have no time to attend conferences. I found it’s very time-consuming. I have been sparing no effort in grappling with writing up the thesis” (F4;SSI:Para160). Her viewpoints were shared by F3, who also gave priority to writing up the thesis at the final stage of her PhD candidature (F3:SSI:Para44).

The data show that, to prioritise research tasks, the students would either evaluate the relationship between research tasks (F5:ST:Para55), analyse their own strengths and weaknesses in researching skills (M1:SR:Para56; M1:ST:Para14), or assess the availability of time (F3:SSI:Para44; F4:SSI:Para160). The data further indicate that the use of this strategy could be initiated by the students themselves or by other people such as supervisors, as in the case of F5.

**Selective attention**

Selective attention involves the processes of deciding the focus of an action in advance. The interview data reveal that the participants tended to use this strategy in their reading activities. A number of actions were found related to this strategy use, specifically, scanning, focusing on different types of information, and finding answers to the questions in mind. They will be discussed in turn below with exemplary extracts from the interview data.

1) **Scanning**: The students looked through the written material quickly in order to find important or interesting information, or to assess its relevance to their own research (F2:SR:Para158; F5:ST:Para40; M1:SR:Para34).

   I would first have a look at its title, … if it’s relevant to my topic, I would continue reading. (F2:SR:Para158)

   When I have an article in hand, … I first have a look at the abstract. If it’s highly relevant [to my research], I’ll read it from the beginning. (F5:ST:Para40)
How did I read? Firstly, I need to find what interests me. … I’ve found usually … proceedings from a conference [are] very thick, hundreds of pages, … I need to find the parts relevant to my study. (M1:SR:Para34)

2) *Focusing on different types of information:* In accordance with the research tasks at each stage, the students selectively focused on different types of information in their readings (F1:SR:Paras63-74; F2:SR:Para158; F5:ST:Para40).

I have to say literature review is an on-going process or task in your PhD degree, it involves a lot of reading. The other thing is regarding the skills you use in literature review. It might be different at different stages. … [For the] literature review before your data collection you probably read everything and ah: take notes of everything because you don’t know what your theoretical framework is going to be like. And later it’s more focused … on the concepts that are relevant to your theoretical framework. (F1:SR:Paras63-65)

At different stages, you focused on different things in your readings. … The publications in our field are something like eight-legged essays, of which the first part is on theoretical background, and the last part is of results. Therefore, at the early stage, I focused more on the theory but now I read more about the results to see how they write. … I mean, I am interested in what their results are and how they analyse. … But, before, I only read about how the theories were used in the discussion of their research. I mean, the focus of reading is different at each stage, and so is it with reading the same article. (F2:SR:Para158)

3) *Finding answers to the questions in mind:* Reading with a question in mind was perceived to be important by some of the participants. The question would promote the students’ interest in their reading and enhance the efficiency of the reading activities.

Some students can read a few books in a day but I’m not able to do that. I must have a question, for example, what other people think about this [name of the research method]. I must have such kinds of questions in mind to keep me reading.

(F2:SSI:Para227)

When I’m reading, I must have something in my mind which I try to find in the readings. It encourages me to explore. Otherwise, I get lost. (F5:ST:Para67)
5.2.1.2 Self-monitoring

Self-monitoring is the process whereby students check the effectiveness and/or efficiency of their studying, observe the development and progress of their research, and watch their own affective state. Moreover, it involves self-reflecting on their studies to analyse reasons for actions. The data show that these strategies were responsible for detecting the factors which either slowed down or facilitated the learning process. Subsequently, adjustment of learning activities or learning strategy use was implemented when necessary.

Checking the effectiveness and/or efficiency of one’s learning

With regard to self-assessment of the effectiveness of learning activities, F2’s account was representative:

> When I first started, I only read but didn’t write. I found the more I read, the more I was confused. However, when you wrote, you had to be clear about what you were writing. So I started writing while reading rather than after reading a lot. … This was my experience at the early stages, that is, it’s better to start writing as early as possible. (F2:ST:Para15)

In addition to assessing the effectiveness of their learning activities, some of the participants also seemed to be concerned with the efficiency of studying, which was perceived to be closely related to the progress of their research. Among the four students (F2, F4, F5, M1) who explicitly commented on the efficiency of their learning, only one was generally satisfied with the progress of her study (F2:ST:Para17) while the other three all experienced low efficiency in the process and its associated slow progress at certain stages of their research. A number of causes were recognised for the low efficiency, such as lack of concentration (F4:ST:Para9; F5:ST:Para40), health problems (F4:ST:Para9), and difficulties in collecting data (M1:SR:Paras48-51).

Lack of concentration appeared to be paramount and was attributed by the participants to a variety of distractions. For F5, a newly arrived international student at the first interview, the sources of distraction were related to her adaptation to the
new learning environment, family commitments and social activities. In contrast, for F4, a well settled part-time student, the heavy work load, along with family commitments, was perceived as the main factor contributing to her lack of concentration. Realising these problems, the participants either took action to change the unfavourable situation, such as quitting some of the part-time jobs (F4:ST:Para9), or adopting other learning strategies to manage the distractions (Section 5.2.3.2).

**Self-reflecting**

Self-reflecting was another strategy that the participants employed for self-monitoring. By self-reflecting, the students actively examined the reasons for their learning outcomes, which was very likely to cause changes in learning behaviours. The following are two exemplary extracts:

I have confidence in writing the descriptive sections. However, for writing the discussion, I’ve found neither my brain nor my language functions well. I suspected that this had something to do with my reading. I was disinclined to read theoretical things, in which I personally had no interest. However, to write the discussion, you actually need to apply theories to increase the depth. I seemed very weak in this respect so I still have a lot of work to do with the discussion. I need to go over it once again. (F2:SSI:Para30)

M1: … I could have finished it within three years if I worked hard in the first two years.
R: What do you mean?
M1: I didn’t work very hard.
R: What do you mean by didn’t work hard?
M1: Didn’t work hard. I spent much time on other things [laughs].
R: So you’ve worked hard in the third year, trying to finish.
M1: Yeah, yeah, I have to.

(M1:SSI:Paras51-57)

The participants’ use of this strategy revealed that they tended to seek reasons inside themselves for the unfavourable outcomes of their learning. This indicated that these students were introspective and willing to take responsibility for their own learning.
Checking one’s affective state

To ensure favourable internal conditions for studying, three of the participants (F1, F5, M1) indicated their sensitivity of their affective state. Their accounts showed that destructive feelings (e.g., frustration, being upset, homesickness, disappointment, and the loss of confidence) could be evoked by the learning itself (F1:SR:Para248; M1:ST:Para20), living away from home (F5:SR:Para163), or unexpected negative outcomes of studying (F5:SSI:Para63). Such feelings could cause the loss of concentration and an increase of anxiety, which in turn had an adverse effect on the progress of their studies. Being aware of their affective situations, the participants took actions to diminish, ease or control such feelings in order to carry on.

It seems necessary to cite F5’s experiences to illustrate her use of this strategy. F5 believed that she had a strong background in doing academic research, given that she was an experienced teacher and had conducted independent research for both her work and academic degrees before she commenced her PhD study. Furthermore, in her past research, she did not rely much on her supervisors. However, when she moved to Australia for her PhD studies, she was inclined to depend on her supervisors because she thought that they would be very helpful. She asked for and respected their opinions. Despite this, and after almost one year’s study, her research topic was rejected by both supervisors when the time for her confirmation seminar was approaching. F5 was clearly advised to change either the topic or the supervisors. This unfortunate outcome almost convinced her to drop out. However, after a period of self-adjusting, she moved on to search for a new research topic.

I was very disappointed with this so I have adjusted my strategy completely. I won’t rely on him [the supervisor] any more. I mean, I will work out how to do it on my own. … Once I adjusted my mind to such a state, I felt much better. I was always disappointed when I kept wishing to depend on him, which not only impeded my progress but also impacted on my mood for studying. At that time, I wasn’t confident at all. When I couldn’t work things out, I wondered why and then I went to consult him but he wasn’t able to help me, either. … I had not been in the best state to study but now I’ve adjusted my mind. I’ll try my best to do it. I believe, no matter how, doing a PhD counts on yourself. Supervisors can’t help much so no help from them is normal. By thinking so, I adjusted my mind and decided to do it on my own.

(F5:SSI:Para63)
F5’s expectation of depending on the supervisors seemed to be consistent with the notion that Chinese students tend to respect their teachers and regard them as the authoritative sources of knowledge (Pratt, Kelly & Wong, 1999). However, such an expectation did not match the reality and had an adverse impact on F5’s self-confidence and mentality. From her experience, F5 learned the need to be independent and adjusted her expectations and strategies accordingly. This change revealed her willingness to take responsibility for her own study, on the one hand, and her ability to adapt herself to the learning environment, on the other hand.

5.2.1.3 Self-evaluating

Two types of self-evaluation were identified in the data. First, the participants (F2, F3, F4, F5) employed this strategy to assess the outcomes of their learning or researching activities against the criteria set by institutions or their self-perceived criteria. As a result, they identified the strengths and weaknesses of their own work, which contributed to their selection of learning strategies, and implementation of further learning or researching activities. Second, some of them (F2, F3, F5, M1) consciously judged the quality of themselves as researchers. This self-assessment seemed to influence the establishment of self-confidence and their application of learning strategies. These two types of self-evaluation will be further discussed in turn below.

Table 5.3 summarises the participants’ evaluative comments on their own studies and the subsequent implementation of learning strategies. The data show that the students tended to make negative comments on their own work, especially the thesis writing. A closer examination which took their personal backgrounds into consideration revealed the differences in self-evaluating between the students with limited research experience (F2, F4) and those with extensive experience (F3). Specifically, the students who were less experienced in researching carried out self-evaluation more frequently than those who were experienced. Furthermore, less experienced research students were more likely to evaluate their own work negatively than the experienced students. These differences suggested that students’ research experience had significant influences on their doctoral learning, with a noticeable feature that less experienced students were more critical of their own work.
## Table 5.3 Self-evaluation comments on the outcomes of learning/research

<table>
<thead>
<tr>
<th>PPT</th>
<th>Evaluative comments</th>
<th>Nature of comments</th>
<th>Further action</th>
<th>Subsequent learning strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>F2</td>
<td>“Sometimes I didn’t think my writing was academic. … For example, when I wrote an introduction, I wasn’t satisfied with it because the language wasn’t up to the level.” (F2:SR:Para58)</td>
<td>Neg.</td>
<td>To read other people’s writing to seek inspiration and to enrich the language. (F2:SR:Para58)</td>
<td>Resourcing</td>
</tr>
<tr>
<td></td>
<td>“I have a feeling that my experiments are very crude.” (F2:ST:Para31; F2:SR:Para152)</td>
<td>Neg.</td>
<td>“The PhD is a learning process but not a perfect product. I don’t expect to score high as long as I can pass. I just do what I can do.” (F2:SR:Para152)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“The introduction and conclusion are very rough. It’s the first draft.” (F2:SSI:Para22)</td>
<td>Neg.</td>
<td>To revise it. (F2:SSI:Para22)</td>
<td>Revising</td>
</tr>
<tr>
<td></td>
<td>“I feel my language is very plain. I think a doctoral thesis should be full of profundity, or at least the language should be of certain complexity, but that is not the case of mine, …, especially in the conclusion part.” (F2:SSI:Para30)</td>
<td>Neg.</td>
<td>To improve it by means of reading more and revising. (F2:SSI:Para34)</td>
<td>Resourcing Revising</td>
</tr>
<tr>
<td>F3</td>
<td>“In the proposal, I’ve written the literature review and methodology in great detail.” (F3:ST:Para119)</td>
<td>Pos.</td>
<td>To add more information if needed (F3:ST:Para119)</td>
<td>Refining</td>
</tr>
<tr>
<td></td>
<td>“Supervisors are reading the second draft. … see what they will say but I personally think it’s pretty good” (F3:SSI:Para22)</td>
<td>Pos.</td>
<td>To wait for supervisors’ comments. (F3:SSI:Para22)</td>
<td>Feedback-seeking</td>
</tr>
<tr>
<td></td>
<td>“I feel I’ve been writing about my own perceptions. Supervisor didn’t say it’s not good but I myself felt it’s problematic.” (F4:ST:Para9; see also F4:SR:Para241)</td>
<td>Neg.</td>
<td>To write it up first and then to revise it. (F4:SR:Para239)</td>
<td>Feedback-seeking Consulting Writing it up first regardless of the quality Revising</td>
</tr>
<tr>
<td></td>
<td>“I had talked about the issue with my supervisor and showed him the draft. He didn’t say the methodology was poor but I feel I need to do more work on it. I really don’t have a clear idea of methodology.” (F4:SR:Para261, for similar comments on the same topic see also F4:SR:Paras32, 40, 257; F4:SSI:Para14).</td>
<td>Neg.</td>
<td>To read more about methodology and to refine it. (F4:SR:Para261)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“Some parts are OK.” (F4:SR:Para239)</td>
<td>Pos.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>“I sensed that some parts were not powerful enough. I mean, it should be very convincing. … I’m not satisfied with the structure of some sections. … It’s not the best presentation.” (F4:SR:Para241)</td>
<td>Neg.</td>
<td>To revise it after writing up the draft. (F4:SR:Para241)</td>
<td>Writing it up first regardless of the quality Revising</td>
</tr>
<tr>
<td></td>
<td>“I feel my writing is too long-winded. I wanted to support myself so I just kept talking. I’m afraid that when the experts read it, they would think that I’ve been talking as talking to children.” (F4:SR:Para253)</td>
<td>Neg.</td>
<td>“Supervisor said so far, so good. Who knows. … No matter what he said … I must work out how to improve it later on.” (F4:SR:Para255)</td>
<td>Feedback-seeking Revising</td>
</tr>
<tr>
<td></td>
<td>“I feel the introduction and literature review chapters are not bad.” (F4:SSI:Para14)</td>
<td>Pos.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>“There are a couple of chapters which I haven’t shown to my supervisor. I didn’t think they were well written. Even I myself don’t think it’s good.” (F4:SSI:Para144)</td>
<td>Neg.</td>
<td>“I’ll make major revisions of it.” (F4:SSI:Para144)</td>
<td>Revising</td>
</tr>
<tr>
<td>F5</td>
<td>“I felt my methodology wasn’t very specific. … It’s a bit vague.” (F5:SSI:Para85)</td>
<td>Neg.</td>
<td>F5 accepted the fact that the first topic was not approved.</td>
<td></td>
</tr>
</tbody>
</table>

Note: 1. PPT = Participants  
2. Neg. = Negative; Pos. = Positive
The students’ perceptions of complexity seemed to be an important factor which evoked negative evaluations of their research, particularly the methodological parts. For example, F4, who was concerned that she had been doing the research without a particular methodology, commented “the crux of the matter is that I don’t know why other people’s writing is that complicated. … In their research, the models were so complex that I wasn’t even able to understand” (F4:SR:Para257). Similarly, F2 was also worried that her experiments and the language in her thesis lacked complexity. The perceived lack of complexity seemed to cause these students to devalue the quality of their work.

With regard to their subsequent learning strategy use, the strategies which were intended to improve the quality of their work appeared to be in the focus of choice, as suggested by the data in the last column of Table 5.3. This was most apparent in the way that they dealt with thesis writing. Despite their concerns about the quality of their writing, the participants tended to write up the draft first and then to concentrate on revising the parts which they considered to be weak, such as the structure and the language, and thus to improve the overall quality of their theses.

The following discussions will be on the students’ evaluation of themselves as researchers. The participants’ comments in this respect are presented in Table 5.4. As the data indicate, in this evaluation the students were mainly concerned with their research skills (F3, M1), theoretical preparation for the PhD studies (F2, M1), and general characteristics of themselves as researchers (F5, M1).

The information in the third column of Table 5.4 suggests that the participants with extensive research experience (F3, F5) had a stronger tendency than those with limited experience (F2, M1) to hold positive views of themselves as researchers. Moreover, it appears that positive self-evaluations were likely to promote students’ self-confidence in researching. However, negative evaluations seemed to be valuable for students to identify the strengths and weaknesses in themselves as researchers. In light of such self-awareness, the students were able to make an informed choice of learning strategies to facilitate their learning and researching, as suggested by the subsequent strategies adopted (see the last column of Table 5.4).
Table 5.4 Self-evaluation comments on themselves as researchers

<table>
<thead>
<tr>
<th>PPT</th>
<th>Evaluative comments</th>
<th>Nature of comments</th>
<th>Results</th>
<th>Subsequent learning strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>F2</td>
<td>“I think, for a good researcher, he or she should have already had it [disciplinary theories] in mind. However, I don’t have.” (F2:SSI:Para34)</td>
<td>Neg.</td>
<td>“With regard to the theoretical parts, I still need to read more. While writing the discussion, I’ll have to continue with the reading. Sometimes when I got stuck in the writing, I read other people’s articles.” (F2:SSI:Para34)</td>
<td>Resourcing</td>
</tr>
<tr>
<td>F3</td>
<td>“I mostly use databases [for literature searching]. I think my research skills in this respect are not bad.” (F3:ST:Paras43-45)</td>
<td>Pos.</td>
<td>Self-confidence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“I believe I’ve been reading with good methods.” (F3:ST:Para58)</td>
<td>Pos.</td>
<td>Self-confidence</td>
<td></td>
</tr>
<tr>
<td>F5</td>
<td>“Actually, I had a very strong research background. … In my previous research, I didn’t depend much on my supervisors.” (F5:SSI:Para61)</td>
<td>Pos.</td>
<td>Self-confidence</td>
<td></td>
</tr>
<tr>
<td>M1</td>
<td>“Frankly, I’m not a good economist because my background, especially the academic background, is not so strong.” (M1:SR:Para56)</td>
<td>Neg.</td>
<td>“I have studied a course here entitled [name of the course for the analysis method] … Fortunately, my supervisor is good at this so I can ask for help from him.” (M1:SR:Para56)</td>
<td>Seeking training Help-seeking</td>
</tr>
<tr>
<td></td>
<td>“I have no knowledge relevant to economic analysis from the Western economic view so to make an economic analysis in this thesis is hard.” (M1:SR:Para56)</td>
<td>Neg.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>“[For] all the other parts of the thesis, I mainly use qualitative analysis so it’s not hard because I think I’m quite good at qualitative analysis.” (M1:SR:Para56)</td>
<td>Pos.</td>
<td>Self-confidence</td>
<td></td>
</tr>
</tbody>
</table>

Note: 1. PPT = Participants 2. Neg. = Negative; Pos. = Positive

In brief, the use of self-evaluating strategies manifests that the participants were critical of both themselves and their own work. In accordance with the analytical self-assessment, they subsequently selected certain learning strategies to facilitate their striving for quality outcomes in learning and researching.

The analysis of the participants’ use of metacognitive strategies indicates that they are autonomous and self-regulated learners (Zimmerman & Schunk, 2001). To achieve their learning goals, the students actively planned for their learning and researching, monitored the learning process, and carried out self-evaluating. Their application of these strategies appears to have had an effect on their execution of cognitive and social/affective strategies. This is consistent with the general observation of the relationships between metacognitive strategies and cognitive and
social/affective strategies (Gagne, Briggs & Wager, 1988; Vermunt, 1996; Weinstein & Van Mater Stone, 1996). In addition, the analysis suggested that, besides the students’ self-generated strategies, some strategies could be introduced by supervisors, such as goal-setting and establishing priorities.

5.2.2 Cognitive strategies

Cognitive strategies refer to the procedures which directly act upon the learning materials or research activities. They are intended, first, to enhance the interpretation, understanding and acquisition of information; second, to facilitate the mastery or development of research skills; third, to promote the solving of the problems encountered in the research process; and finally, to assist in a timely accomplishment of the research tasks. The cognitive category is the largest among the three general categories (namely, metacognitive, cognitive, and social/affective strategies), consisting of 17 strategies (see Appendix 20), of which six were in the group of most popular strategies, seven in the group of popular strategies, and four in the group of less popular strategies (see Table 5.1).

Table 5.5 presents the participants’ use of cognitive strategies and it shows the similarities and differences in their selection of these strategies. Elaborated discussions in this section will mainly focus on the most popular strategies, namely, resourcing, seeking training, practising, self-questioning, publishing while doing the research, and writing-specific strategies (Sections 5.2.2.1-5.2.2.6). However, given its significance, the strategy of learning through trial and error in the group of popular strategies will also be considered in detail (Section 5.2.2.7) before presenting a brief collective introduction to the remaining strategies in the cognitive category (Section 5.2.2.8).

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9 See Section 5.2 (p.173) for the classification of these strategy groups, with reference to Table 5.1.
Table 5.5 Cognitive strategies used by the participants

<table>
<thead>
<tr>
<th>Cognitive strategies</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F1</td>
</tr>
<tr>
<td>Resourcing</td>
<td>✓</td>
</tr>
<tr>
<td>Practising*</td>
<td>✓</td>
</tr>
<tr>
<td>Learning to write by writing itself</td>
<td>✓</td>
</tr>
<tr>
<td>Learning to do research through the experience of doing it</td>
<td>✓</td>
</tr>
<tr>
<td>Learning through trial and error</td>
<td>X</td>
</tr>
<tr>
<td>Seeking training</td>
<td>✓</td>
</tr>
<tr>
<td>Self-questioning</td>
<td>✓</td>
</tr>
<tr>
<td>Modifying</td>
<td>✓</td>
</tr>
<tr>
<td>Learning from daily encounters</td>
<td>X</td>
</tr>
<tr>
<td>Using imagination</td>
<td>X</td>
</tr>
<tr>
<td>Publishing while doing the research</td>
<td>✓</td>
</tr>
<tr>
<td>Generative note-taking</td>
<td>X</td>
</tr>
<tr>
<td>Diagramming</td>
<td>X</td>
</tr>
<tr>
<td>Thinking of it all the time</td>
<td>✓</td>
</tr>
<tr>
<td>Taking thesis examination into consideration</td>
<td>✓</td>
</tr>
<tr>
<td>Rehearsal strategies*</td>
<td>✓</td>
</tr>
<tr>
<td>Verbatim note-taking</td>
<td>✓</td>
</tr>
<tr>
<td>Highlighting</td>
<td>✓</td>
</tr>
<tr>
<td>Elaboration strategies*</td>
<td>✓</td>
</tr>
<tr>
<td>Summarising</td>
<td>✓</td>
</tr>
<tr>
<td>Contextualising</td>
<td>✓</td>
</tr>
<tr>
<td>Relating theories to practical problem</td>
<td>✓</td>
</tr>
<tr>
<td>Repeating</td>
<td>X</td>
</tr>
<tr>
<td>Writing-specific strategies*</td>
<td>✓</td>
</tr>
<tr>
<td>Following guidelines</td>
<td>✓</td>
</tr>
<tr>
<td>Modelling</td>
<td>✓</td>
</tr>
<tr>
<td>Focusing on the structure of the thesis</td>
<td>✓</td>
</tr>
<tr>
<td>Starting to write as early as possible</td>
<td>X</td>
</tr>
<tr>
<td>Writing continuously</td>
<td>X</td>
</tr>
<tr>
<td>Writing it up first, regardless of quality</td>
<td>X</td>
</tr>
<tr>
<td>Revising</td>
<td>✓</td>
</tr>
</tbody>
</table>

Note: 1. The table was a modification of the matrix generated by Matrix Intersection Search in NVivo. See Appendix 23 for the original matrix.
2. * These strategies represent subcategories which consist of a number of specific strategies.
3. √ = Used; x = Not used

10 In Table 5.5, the strategies in normal font, except those marked with “*”, represent both subcategories and specific strategies in the cognitive strategy category. As shown, cognitive strategies consist of 17 subcategories and 27 specific strategies (c.f. Appendix 20).
5.2.2.1 Resourcing

The learning strategy of resourcing refers to the activity of consulting written materials or other information media when learners identify gaps in their knowledge base or face a problem in the course of researching. The interview data show that the use of resourcing was fundamental to the participants’ doctoral learning. All six participants applied this strategy, and the typical viewpoint was illustrated by F3’s words “Doing a PhD, if you didn’t read, how would you learn then?” (F3:ST:Para135).

The centrality of the use of resourcing in their learning was further revealed by the participants’ rich accounts of their learning of research skills, research methodology (including data collection and analysis methods or software) and disciplinary discourse. In addition, the participants acknowledged that the use of resourcing assisted them in making decisions and solving problems. For example:

> When I first started, I read some articles about how to conduct a literature review. (F1:SR:Para77)

> I learned this [data analysis] method from the articles published in this field. ... While reading, I paid attention to from which perspective the authors did the analysis. (F2:SR:Para186)

> When I first started, I didn’t know the terminology in the field, or what vocabulary or concepts were used. I got to know these from the reading. At least, when you write, you won’t write in such a way as a layman does. It’s basic that you know what the people in the field are talking about and you use their language to express your ideas. (F4:SR:Para91)

> At the stage of writing the discussion, I do the rewriting, thinking, and reading at the same time. Sometimes you didn’t think an article would influence your work much but its language, wording and viewpoints, and so on, did benefit your writing. (F2:SSI:Para153)

As the quotes demonstrate, the participants perceived the use of resourcing as the preliminary means by which they learned. Therefore, when they encountered
problems in researching, they tended to blame themselves for not reading as much as was needed. The following are two examples.

F4 was at an advanced stage of her study, doing the data analysis and writing about the findings, when she participated in this study. However, she perceived that the methodology she used was problematic (F4:SR:Para257) and she believed that she “didn’t have a specific methodology” (F4:ST:Para9). Given her detailed descriptions of how she did the data collection and analysis, it appeared that F4’s concerns about methodology were conceptual in nature. “I’m doing the PhD but don’t have a clear concept of methodology” (F4:ST:Para9). In her perception, these problems resulted from her lack of reading in this regard (F4:SR:Paras89, 259). “I lack confidence in my methodology mainly because I haven’t read much and know little about it. I don’t know what methodologies are available” (F4:SR:Para259). It seemed that not knowing what she should read contributed to this fact, “I knew nothing about methodology when I first started. I had no idea about what to read” (F4:SSI:Para16). F4 believed that the solutions to this problem lay simply in reading more, “I’m thinking about reading more books and see how to support what I have done. To say, oh, this is the way of doing it” (F4:SSI:Para103, see also F4:SR:Para261).

F2 shared F4’s viewpoint that the lack of reading caused problems in her research. F2 believed that, academically, she was weak in the theoretical preparation for doing the PhD (F2:SR:Para40). Given her lack of interest in theories, F2 did not like to read theoretical writing (F2:SSI:Paras30, 223). She remarked that this lack of reading was responsible for her theoretical weakness and in turn influenced the quality of her writing of the discussion in the thesis (F2:SSI:Paras30, 128). “With regard to the theoretical parts, I still need to read more. While writing the discussion, I’ll have to continue with the reading. Sometimes when I got stuck in the writing, I read other people’s articles, and then found some viewpoints to cite” (F2:SSI:Para34).

The strategic use of resourcing appeared essential to the participants’ learning and problem-solving. However, resourcing was not applied in isolation, and various learning strategies were reported to be used in conjunction with it. These strategies included not only cognitive strategies such as practising, learning through trial and error, learning from daily encounters and using imagination, but also social/affective strategies such as interpersonal strategies of talking over one’s research with others,
consulting supervisors or feedback-seeking. This combination of learning strategy use is exemplified by the extracts in Table 5.6.

Table 5.6 Combined use of learning strategies

<table>
<thead>
<tr>
<th>Extracts</th>
<th>Learning strategies in use</th>
</tr>
</thead>
<tbody>
<tr>
<td>“[To decide on the data analysis method], I think someone initiated the idea and then after I read a lot of things, it confirmed my thoughts. … Of course, you consulted with your supervisor.” (F1:SR:Para162)</td>
<td>Resourcing \nInterpersonal strategies</td>
</tr>
<tr>
<td>“[I learned the methodology] from the experiences, from actually doing it. … but of course, … before you did it yourself, you’d been reading about this methodology.” (F1:ST:Para57)</td>
<td>Resourcing \nPractising</td>
</tr>
<tr>
<td>“[To learn to do the interview,] first, by reading. I read books on in-depth interviewing. … I mean, books on qualitative research methods. There are plenty of books on this topic. Then, … I watched a lot of TV programs, interviewing programs on business. It’s possibly because I’m personally interested in it. I observed how others handled, … how they interviewed people to get the information they wanted. That’s it. It’s also because I did interviews when doing my Master’s. It’s a process whereby you develop step by step. … Be observational , and read books to know theoretically how to interview.” (F3:SR:Paras142-143)</td>
<td>Resourcing \nLearning from daily encounters \nPractising</td>
</tr>
<tr>
<td>“It’s not easy to develop arguments. You can’t just write, say, as a tree trunk without branches or leaves. You can’t only show others a skeleton without flesh, that’s very ugly. … How to solve it? It’s a bit difficult, difficult. … First, you need to read while writing. Need to work out whether other people in the field have put forward similar viewpoints so you can refer to them. Besides this, you need to use your imagination to propose some ideas. These ideas normally are creative. Sometimes, I had discussions with others and was inspired by their ideas.” (M1:ST:Paras24-26)</td>
<td>Resourcing \nUsing imagination \nInterpersonal strategies</td>
</tr>
<tr>
<td>“[To learn the methodology,] first, I shall borrow books on it from the library to read. … If the reading was not effective, I could learn it from people in the department of psychology. They must know about this methodology. That’s what I thought.” (F5:SR:Para206)</td>
<td>Resourcing \nInterpersonal strategies \nSelf-monitoring</td>
</tr>
<tr>
<td>“I read a book about how to do your research. It’s a very thin and simple book. After reading, I found it too general to be much help. So I thought you had to learn it through trial and error. If the supervisor knew about your area, it would be all right. However, it seemed that my supervisor didn’t know much about it, either. So, I don’t know but just have been doing it through trial and error.” (F2:ST:Para33)</td>
<td>Resourcing \nInterpersonal strategies \nLearning through trial and error \nSelf-monitoring</td>
</tr>
</tbody>
</table>
As suggested by the last two quotes in Table 5.6, the use of the strategy of resourcing may not always be effective. When the participants observed the ineffectiveness of this strategy, they tended to adopt a different strategy to proceed with their study. The change of learning strategy use indicates the application of self-monitoring strategies in the metacognitive category.

5.2.2.2 Seeking training

The strategy of seeking training refers to learners’ intentions or actions of looking for opportunities to receive formal or systematic instruction in research methods, skills or other knowledge relevant to the development of their projects. All six participants used this strategy to learn practical skills, including data analysis methods (F1:SR:Paras182-185; F1:ST:Para123; M1:SR:Paras26, 56), using data analysis software (F3:SSI:Paras55-56), literature searching skills (F3:SR:Paras57-58; F2:SSI:Paras210-213), and using bibliography software (F1:SSI:Paras112-115; F2:SR:Para68; F5:SSI:Paras208-213). One of the students who undertook research in a new discipline also sat in on the lessons of a theoretical subject with an intention to build up her knowledge base of the field (F4:SR:Para127). Training in academic writing appeared to be attractive to some of the participants. However, the lack of information about academic writing workshops limited such opportunities, thus preventing them from receiving training (M1:SSI:Paras62-67).

One of the participants explicitly emphasised that taking courses on research methodology was imperative for Mainland Chinese students who did not have research experience at Australian universities (F4:SR:Para13; F4:ST:Para9). Such training would help them to build up a concept of methodology including what was involved in it (F4:ST:Para9) and what methodologies were used in the field (F4:SSI:Para58).

F4’s standpoint seemed to be supported by other participants’ accounts of their research experiences in China. In the biodata questionnaire, five of the participants, including F4, reported that they did research for the degrees that they received at universities in China. However, except for F5 who commented that the requirements for the research done for her Master’s degree was very similar to those in Western countries, the participants tended to acknowledge that they lacked experience in
The quotes reveal that for the Chinese students who did not have experience in conducting rigorous research, it was inevitable that they lacked generic knowledge of research methodology. When they came to Australia to study a research higher degree such as a PhD, it seemed beneficial for them to undertake relevant courses at the initial stage of their candidature.

The training that the participants attended or were interested in varied in form and were delivered by different agencies. Three types of training were identified in the data: first, special training courses or workshops on a particular data analysis method or software offered by agents other than the university (F1:SR:Para185; F3:SSI:Para56); second, courses on research methodologies provided by the
university for other students (F4:SR:Para127; F5:SR:Para261; M1:SR:Paras26, 56); and lastly, research or computing skill workshops organised by university libraries (F1:SSI:Paras112-115; F2:SSI:Paras210-213; F5:SR:Para261; F5:SSI:Paras208-213).

The data further imply that, of the three types of training, the last two were easily accessible to the students whereas attendance at the first type was constrained by the availability of funding (F1:SR:Para185; F1:SSI:Para28; F3:SSI:Para56) or the suitability of time (F1:ST:Para123; F1:SSI:Para28). Both F1 and F3 were interested in taking a special training course on data analysis. However, because of the lack of funding, neither of them was able to attend as they wished.

In brief, the strategy of seeking training was one of the most popular strategies used by the participants. It was mainly used to learn practical skills, such as data analysis methods and using software. Formal training on these skills appeared to be desirable. However, the students were not always able to attend the training which was needed because of financial issues, timing or the lack of relevant information. The participants in this study benefited most from the free training opportunities within the university.

5.2.2.3 Practising

The strategy of practising involves the procedures of the actual application of what is to be learned. In other words, students learn through the processes of doing the research. However, the data suggest that the execution of practising was conditional. The prerequisite for practising was that the students had the declarative knowledge about what to do (F1:ST:Para57; F2:SSI:Para104; F3:SR:Para143; F3:SSI:Para37). The application of practising was found in two main processes, namely, the learning of academic writing in English and the learning of the application of research methods or skills. By actually doing the research, the participants did not only obtain an enhanced understanding of the overall research methodology adopted but also learned more about the field of interest (F1:ST:Paras179-183; F1:SR:Para47; F3:SR:Para211) and developed the abilities of critical thinking (F3:ST:Paras89-91; F4:SSI:Paras22, 28).
With regard to the learning of academic writing in English, the participants put much emphasis on the significance of practising. In F1’s words, “practice makes perfect” (F1:SR:Para213). Similarly, F3 stressed that “it results from practising. … The more you write, the more you’ll know about how to write” (F3:SSI:Para37). In line with their viewpoints, M1 was happy with his writing skills: “My writing skills are developing gradually through the three years’ writing practice” (M1:SSI:Para61).

According to the participants, the process of practising facilitated their learning by providing a mechanism for relating theory to practice. This connection internalised the theoretical knowledge, integrated it into the students’ knowledge network, and thus converted it into the skills that were needed for researching. This was well illustrated by F1’s account:

It’s not difficult to [learn] theories in marketing, but difficult with the methodology part. … By using it to analyse your own data and try to make sense of your data, it does [cause the learning to occur]. (F1:SR:Para261)

5.2.2.4 Self-questioning

Some of the participants reported that they asked themselves questions in order to stay focused (F1:SR:Para41; F2:SR:Paras137-138; F3:ST:Para25); to understand, acquire and apply new knowledge (F1:SR:Paras252, 261); or to solve problems (F2:SR:Para142; F5:SR:Para230; M1:ST:Para24). Finding answers to their own questions meant making progress in the study. The participants’ use of self-questioning strategies was exemplified by the following quotes:

[To narrow down the topic,] I was consistently asking myself what [problem] exactly are you trying to solve? … Which is both theoretically and practically contributing? (F1:SR:Para41)

[In the process,] sometimes I became unclear about what I’ve been doing so I have got to rethink about the topic. … To think about why I’m doing this. I’ll solve this problem. Then, from which perspective, how to justify that it can be solved or eased. Something like this, I mean, you need to frequently review your topic and to ask a lot of questions in relation to the central problem. Gradually, you became clear about it again, and able to relate your readings to these problems. (F2:SR:Para138)
The quotes indicate that students might experience the tendency of drifting away from their research focus at different stages. The application of a self-questioning strategy would help the students to clarify the confusion and stay focused.

5.2.2.5 Publishing while doing the research

This strategy refers to the activity of students write articles based on their research for publication or for presentations at seminars or conferences. Five of the participants indicated the use of this strategy (F1, F2, F3, M1) or the intention of using it (F5). However, the purposes of applying this strategy differed among these students, as revealed by the following discussions.

First, this strategy was used to prevent the findings of one’s research from becoming out of date due to the rapid pace of technology development (F2:SR:Para42). As introduced in Section 4.3.2, F2’s research involved the application of computing technology and she had been studying under the pressure of technology development. To avoid her research becoming outdated by the time she finished her thesis, F2 developed a strategy of publishing journal articles while writing the thesis. F2 acknowledged that this strategy was very helpful but time-consuming.

Second, this strategy was perceived as a channel for seeking feedback from a broad audience (F1:ST:Para23; F1:SR:Paras91-95). F1 indicated that her supervisor tended to organise seminars for her to present at different stages of her research (F1:SR:Para89). Furthermore, papers based on her research were also presented at conferences by her and her supervisor. F1 commented that the feedback she received through these presentations provided insights into how to further justify her research (F1:SR:Para95).

Third, it was believed that publications on one’s research demonstrated a good quality thesis, which might favourably impress the examiners when the thesis was assessed (M1:SSI:Paras134-135; F5:SSI:Para113). When he commented on his presentations at conferences, M1 indicated that it would benefit the examination of his thesis: “The examiners will think that maybe your thesis is better” (M1:SSI:Para135). This understanding was shared by F5, who had experience of
publishing journal articles when doing her Master’s degrees. Believing that publishing would provide evidence of a good thesis, F5 had an expectation to publish her research when she was preparing for her first research topic, which was not approved by her supervisors (F5:SSI:Para113).

Lastly, publishing was perceived to be necessary for future career development (F3:SSI:Para46). F3 indicated that writing for publishing was time-consuming so it all depended on the individuals’ time management and intentions as well as the supervisors’ requirements (F3:SSI:Para44). As for herself, F3 contended that she published while writing the thesis because of the need for career development: “If you are going to look for a job, you must have publications so I write articles” (F3:SSI:Para46).

The discussion so far has revealed that students might apply the same strategy with varied intentions. The major factors relevant to their application of this strategy appear to be their needs and their perceptions of publishing. Furthermore, the use of this strategy could be motivated by supervisors, as illustrated by the case of F1.

5.2.2.6 Writing-specific strategies

A set of strategies was found particularly relevant to thesis writing, in addition to the learning strategies that the students used to facilitate both their researching and writing, such as practising (Section 5.2.2.3) and feedback-seeking (Section 5.2.3.1). The strategies in this set include (Table 5.7): following guidelines; modelling; focusing on the structure of the thesis; starting to write as early as possible; writing continuously (or often); writing it up first, regardless of the quality; and revising.
Table 5.7 Writing-specific strategies

<table>
<thead>
<tr>
<th>Strategies in the set</th>
<th>Definitions</th>
<th>Exemplary data bites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Following guidelines</td>
<td>Organising the written presentation of one’s research in accordance with the requirements of the degree guidelines provided by the university or school</td>
<td>F1:SR:Paras411-413 F3:SR:Paras161-166</td>
</tr>
<tr>
<td>Modelling</td>
<td>Activities involving imitating published materials in the field (e.g., journal articles and other students’ theses) to improve one’s own writing, or to ensure one’s writing conforms to the disciplinary discourse</td>
<td>F1:SR:Para203 F1:SR:Para206-207 F2:SR:Para58 F2:SSI:Para104 F4:SSI:Para56</td>
</tr>
<tr>
<td>Starting to write as early as possible</td>
<td>Actions intended for a timely completion of the thesis, or for facilitating the development of the research</td>
<td>F2:ST:Para15 M1:ST:Para14</td>
</tr>
<tr>
<td>Writing continuously</td>
<td>Writing the thesis every day without taking major breaks from the writing</td>
<td>F3:SR:Para172</td>
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</table>

These strategies were employed to facilitate thesis writing from different perspectives. Following guidelines and modelling were used to ensure that the thesis writing conformed to the disciplinary discourse. For example, by modelling, the participants learned how to synthesise and present research results:

When you read something [in the literature], you said, well, this is well written. What I do is I write down on the paper ‘very well written’, and make some comments on that and put it aside. When the time comes for me to write, … I pull out the paper and see what they did and maybe try to do the same thing with my topic, for example, how to present my results and things like that. (F1:SR:Para203)
For me, [to write] the research methodology is very hard because I didn’t receive any training in this respect, for example, how to deal with the interview [data]. So what I can do is only to read and see how other people write and then follow them.

(F2:SSI:Para106)

Some strategies focused on the actual writing process. These included focusing on the structure of the thesis; starting to write as early as possible; writing continuously (or often); and writing it up first, regardless of the quality. Specifically, focusing on the structure of the thesis was concerned with constructing an overview of the thesis. This would enable students to organise materials for the best presentation, thus developing powerful and convincing arguments in the thesis (F4:SR:Para259; M1:SR:Paras117-118). The data show that the participants differed in how they decided on the structure of the thesis. Some of them adopted the prescribed thesis structure in the literature, and might have modified it slightly in order to suit their own research (F1:SSI:Para38). In contrast, some developed their structure based on the procedures of their own research (F2:SR:Para87).

Most of the participants were highly motivated to complete the thesis as early as possible, and thus they adopted several strategies to assist in the accomplishment of this ultimate goal. These strategies were starting to write as early as possible; writing often; and writing it up first, regardless of the quality. The participants tended to perceive that it was important to complete the first draft early so as to set up the basis for revision.

When you write, you need to write every day to keep the continuity of the process. If you wrote a bit today [and stopped], you would have forgotten about what you had written when you picked it up again a few days later. So you need to write every day, and try to write a lot, no matter if what you write is rubbish or whatever, anyway, just keep writing, and then revise it. If you didn’t have the draft, you wouldn’t have the basis for revision. (F3:SR:Para172)

Moreover, the early completion of the draft seemed to have positive psychological effects on the students, as exemplified by M1’s experience:

I started writing in the second year. What I thought was that, when you have an idea, you write it down as soon as possible and don’t leave things to the last minute.
Otherwise, you would be confused about what you had written or not and you would be worried that the time was [not enough]. I don’t like to throw myself into chaos. Anyway, sooner or later, it’s your job to finish it up. So write it up and give it to the supervisors, and then revise it later on. Write it up first. Once you write it up, you’ll be free of anxiety. Don’t worry about the quality. At least I’ve written, for example, twenty thousand words. I’d like to write it up first so I started. Up to now, I’ve written three or four chapters. (M1:ST:Para14)

Consequently, the participants emphasised the importance of revising in ensuring the quality of the final version of their writing. The data reveal that the significance of revising lay not only in polishing the language (F2:SR:Para58) but also in improving the structure of the thesis and writing techniques (F1:SR:Paras217-219; F2:SR:Para146; F4:SR:Para241). More significantly, the process of revising had the power to prompt new ideas and thus to increase the depth of thought (F2:SR:Paras62, 83; F4:SR:Paras239, 253). F2’s words were most illustrative of this point:

I believe rewriting is very important. Currently I’m rewriting some parts. When rewriting, I’m able to resume the train of thought which was somehow terminated. Sometimes, I wondered why I didn’t write it down [in the first draft] and it seemed that I had thought about this issue. I guess that I had forgotten about it when I was writing. This problem was related to the language. You were so concerned with the grammar that you eventually forgot the idea. I do believe rewriting is really very important. (F2:SSI:Para153)

All six participants reported using writing-specific strategies. However, their selection of the specific strategies was rather personalised. In other words, none of them adopted all the specific strategies listed in Table 5.5. For example, F5 reported using only the strategy of writing up first, regardless of the quality. This might be because, when she was interviewed, she was at the initial stage of her study and she had only had experience of preparing for the research proposal rather than the thesis writing.
5.2.2.7 Learning through trial and error

The strategy of learning through trial and error was in the group of popular strategies (see Table 5.1). However, it is worthy of an elaborated discussion, given that it appeared to be significant to at least half of the participants and that it was not included in the existing classifications of learning strategies (cf. Table 2.2). The strategy of learning through trial and error is defined as the process in which learners experiment with their own ideas and learn from their own performance in order to complete a research activity or to solve problems. Similar to practising (Section 5.2.2.3), this strategy also involves learning by carrying out the research activities. However, the main distinction between these two strategies is whether or not the students had the knowledge necessary for the research activity.

The participants reported using the strategy of learning through trial and error in the following circumstances:

1) The students lacked the knowledge needed for conducting the research (F2:ST:Paras31, 33; F2:SSI:Para22; F4:SSI:Para103). For example, “I don’t know what are the rigorous procedures for collecting data so I’ve been doing it through trial and error” (F2:ST:Para31).

2) There were no models to learn from because of the originality of their own projects, as suggested by F2’s experience. “With regard to the experiment, you even have to learn to do it through trial and error because nobody has done this kind of teaching” (F2:SR:Para113).

3) The students perceived that external help was not available (F2:ST:Paras23, 33; F2:SR:Para113). For example, F2 commented that in the early stages of developing the theoretical framework, neither she nor her supervisors had a clear idea about what theories to draw on. Therefore, she had to work it out through trial and error on her own (F2:SR:Para113).

However, the adoption of this strategy might also be perceived as a result of being independent, as F3 suggested:

You may also find that after trying for a while, you suddenly have the problems solved. … You keep thinking about it, and after some time, you suddenly understand
it. This is only my personal experience. I believe people are different from each other. This is my style but other students may not do the same, because I tend to be independent in doing research, and, normally, I think a lot about it. (F3:ST:Para35)

5.2.2.8 Other strategies in the cognitive category

So far, the discussion of cognitive strategies has been focused on the strategies in the group of most popular strategies (Sections 5.2.2.1-5.2.2.7) and one in the group of popular strategies, namely, learning through trial and error (Section 5.2.2.7). There are still a number of cognitive strategies in the group of less popular strategies, as presented in Table 5.1. The participants’ interview protocols clearly signified the importance of these remaining strategies in their doctoral learning. However, given the constraint of the size of this thesis, the participants’ use of these learning strategies will not be elaborated in this dissertation.

5.2.3 Social/Affective strategies

Social/affective strategies involve the processes whereby students learn through their interactions with social environmental factors (e.g., supervisors, peers, other academics, friends). In addition, these strategies include the control processes which act upon the affective domain of learners (e.g., concentration, emotion, motivation) and thus enable them to build up and maintain a favourable internal working environment. Four types of social/affective strategies were identified in this study (Appendix 21) and all were in the group of most popular strategies (see Table 5.1). Specifically, they were interpersonal strategies, concentration managing strategies, emotion managing strategies, and motivation retaining strategies. Each of these subcategories contains a number of specific strategies, as show in Table 5.8.

Table 5.8 demonstrates the participants’ use of social/affective strategies. It was observed that all six participants applied the four kinds of social/affective strategies. However, they greatly differed in the selection of specific strategies within each subcategory. Their use of these strategies will be delineated in the sections following Table 5.8.
Table 5.8 Social/affective strategies used by the participants

<table>
<thead>
<tr>
<th>Social/affective Strategies</th>
<th>Participants</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>F1</td>
</tr>
<tr>
<td>Interpersonal strategies</td>
<td></td>
</tr>
<tr>
<td>Help-seeking</td>
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<tr>
<td>Help-seeking from supervisors</td>
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<td>Help-seeking from others</td>
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<td>Consulting</td>
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<tr>
<td>Feedback-seeking</td>
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<td>Feedback-seeking from supervisors</td>
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</tr>
<tr>
<td>Feedback-seeking from others</td>
<td>x</td>
</tr>
<tr>
<td>Networking</td>
<td>✓</td>
</tr>
<tr>
<td>Sharing resources</td>
<td>✓</td>
</tr>
<tr>
<td>Sharing experiences</td>
<td>✓</td>
</tr>
<tr>
<td>Talking about the research with others</td>
<td>x</td>
</tr>
<tr>
<td>Concentration managing strategies</td>
<td>✓</td>
</tr>
<tr>
<td>Resource management</td>
<td>✓</td>
</tr>
<tr>
<td>Labelling by notes</td>
<td>✓</td>
</tr>
<tr>
<td>Using bibliography software</td>
<td>x</td>
</tr>
<tr>
<td>Cataloguing</td>
<td>x</td>
</tr>
<tr>
<td>Time management</td>
<td>✓</td>
</tr>
<tr>
<td>Assigning research activities to different time slot</td>
<td>x</td>
</tr>
<tr>
<td>Quantifying weekly hours for working on the PhD</td>
<td>x</td>
</tr>
<tr>
<td>Concentrating working hours for the PhD</td>
<td>x</td>
</tr>
<tr>
<td>Organising research activities</td>
<td>✓</td>
</tr>
<tr>
<td>Making use of any time available</td>
<td>x</td>
</tr>
<tr>
<td>Setting up deadlines</td>
<td>x</td>
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<tr>
<td>Distraction management</td>
<td>x</td>
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<tr>
<td>Finding a quiet place</td>
<td>x</td>
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<tr>
<td>Changing learning environment</td>
<td>x</td>
</tr>
<tr>
<td>Emotion managing strategies</td>
<td>✓</td>
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<tr>
<td>Self-adjusting</td>
<td>x</td>
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<tr>
<td>Self-talking</td>
<td>✓</td>
</tr>
<tr>
<td>Taking a break</td>
<td>✓</td>
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<tr>
<td>Being patient</td>
<td>✓</td>
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<tr>
<td>Having entertainment</td>
<td>x</td>
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<tr>
<td>Motivation retaining strategies</td>
<td>✓</td>
</tr>
<tr>
<td>Being persistent</td>
<td>✓</td>
</tr>
<tr>
<td>Thinking positively</td>
<td>x</td>
</tr>
<tr>
<td>Self-praising</td>
<td>✓</td>
</tr>
</tbody>
</table>

Note: 1. The table was a modification of the matrix generated by Matrix Intersection Search in NVivo. See Appendix 24 for the original matrix.
2. ✓ = Used; x = Not used

11 In Table 5.8, the strategies in bold font represent subcategories of strategies; the rest are specific strategies within each subcategory. As shown, metacognitive strategies consist of four subcategories and 15 specific strategies (not including the strategies in italic font) (c.f. Appendix 21).
Interpersonal strategies

Interpersonal strategies are the processes whereby students learn for their research through the interactions with social variables in the learning environment. Four types of interpersonal strategies were identified in the interview data, namely, help-seeking, consulting, feedback-seeking and networking. The strategies of help-seeking, consulting and feedback-seeking sometimes are difficult to differentiate. However, given that the use of these strategies indicated the level of the participants’ dependence on others in the course of their doctoral studies, they were differentiated as three separate strategies. The level of dependence suggested by the three strategies was on a continuum from relatively high to relatively low. When the data were coded, the words “help”, “consult”, “discuss” and “feedback” in the interview protocols determined which specific strategy was applied.

All six participants applied interpersonal strategies in their PhD studies. However, a close examination of the data revealed noticeable diversity of their interactions with the social variables. To illustrate this diversity, further classification of the first three strategies (i.e., help-seeking, consulting, and feedback-seeking) was made in accordance with the social variables involved, specifically, “supervisors” and “others”. In this context, “others” included other academics (e.g., academics in the faculty other than supervisors, and experts and experienced researchers in the field) and peers. In consequence, the following specific strategies were recognised: help-seeking from supervisors, help-seeking from others; consulting supervisors, consulting others; and feedback-seeking from supervisors and feedback-seeking from others.

This further classification revealed, as Table 5.8 shows, that some of the participants (F1, F5, M1) had interactions with both supervisors and other academics and peers, while other participants had limited (F3, F4) or no (F2) interactions with peers or academics other than supervisors. This fact indicates that supervisors tended to be the primary resource that the students turned to in the course of researching. However, the interactions with other academics and peers were more individualised or contextualised, as the following discussion will show.
From the individual perspective, students’ interactions with others were influenced by their perceptions of the social environmental factors and by their learning style. The students who believed that “other people do not know much about my topic” tended to seek help only from their supervisors but not to interact with others (F2:SSI:Para38). Similarly, those who preferred to work on their own were very unlikely to interact with others, except for their supervisors. For example, “I rarely communicate with others. I enjoy this kind of isolation. This is my style. I like to do things on my own” (F4:SSI:Para150).

From the contextual perspective, the isolated learning environment in which the PhD students were situated reduced their interactions with others, especially peers (F5:SSI:Para135). However, this situation could be improved by interventions such as introductions by supervisors to other academics. For example, with her supervisors’ assistance, F1 was able to seek advice from a number of external experts (F1:SSI:Para22). Attending conferences or seminars was another way to get in touch with other doctoral students who had similar research interests, as F1’s experiences suggested (F1:SR:Para421).

The preceding paragraphs present a general description of the participants’ use of interpersonal strategies; detailed discussion of their use of the four interpersonal strategies will be provided in the successive sections. In the next discussions, each of the four strategies (i.e., help-seeking, consulting, feedback-seeking, and networking) will be defined in accordance with the data in which they were embedded.

**Help-seeking**

Help-seeking strategies refer to the activities or intentions that involve students’ asking for help from others when they face a problem, lack ideas about how to handle an issue, and/or lack knowledge for carrying out certain research tasks. For example:

To make an economic analysis in this thesis is hard, you don’t have much knowledge about it. Of course, I’ve studied a course here … Fortunately, my supervisor is good at this, so I think I can ask for help from him. (M1:SR:Para56)
I believe that the most important thing at the stage of analysing data is to have external help. The point is that you are able to find the people who can help you. … My supervisors helped me a lot [in terms of advising me on the principles of analysing data]. However, the most invaluable help was that they knew who were the experts I could seek help from, and recommended me to them. (F1:SSI:Para22)

Consulting

Consulting strategies describe the actions of students who talk about and exchange ideas or views with others in order to make a research-related decision or to perform a research activity. The participants’ use of these strategies are illustrated by the following excerpts:

At this stage [of deciding on a topic], I think it’s important to have somebody you can talk with and to have somebody confirm your thoughts. … Once I made an appointment with a senior student whose topic was similar to mine and we had a discussion. When he said that my orientation was interesting and do-able, I felt encouraged. (F5:ST:Para34)

[Regarding methodology,] I talked to my peers, they said you had to create your own methodology. They said you kept writing first and then wrote about the methodology last. Some of them did write the methodology last. They all said that you finished your research first and then summarised what method you used. Some of them did so. (F4:ST:Para9)

However, the data suggest that the application of consulting strategies was not always effective. It is worthwhile to cite F2’s experiences for illustration.

When she was first interviewed in September 2002, F2 expressed her concern about how to proceed with the data analysis:

I’ve collected the data but I didn’t know where to start the analysis. … I went to ask my supervisor whether I needed to transcribe all the interviews. He said that it’s not necessary and that you just transcribe what you’ll use. I’m not sure whether it should be done as such. … What are the criteria? Would I be asked to submit completed transcripts eventually? Or what? (F2:ST:Para33)
After consulting the supervisor, however, F2’s concern remained the same when she was interviewed again a year later in July 2003:

I’ve transcribed a lot. However, currently I don’t know whether I should do a verbatim transcription or what I need to do is only to transcribe the important parts. I consulted my supervisor. He said it would be OK to transcribe only the important things. However, I transcribed it nearly completely. Only that I didn’t transcribe the unimportant things very carefully but just noted down the meaning. However, whether I need to put all of them in the appendix, till now, I’m still not clear about it, and my supervisor is also uncertain about it. (F2:SSI:Para14)

F2’s experience seems to indicate that the student lacked confidence in her supervisor, which might have limited the effectiveness of consultation. However, it also suggests that students sometimes prefer to have explicit criteria of what they are expected to do with their research. The lack of such an objective standard could make it difficult for students to consider the advice given by others.

In addition, misunderstanding appears to be another factor which could influence the effectiveness of consultation (F4:ST:Para9; F4:SSI:Paras118-119; F5:SSI:Paras69-71). For example, concerned about her methodology, F4 consulted an expert in the field. However, the expert indicated that she could not design methodology for F4, which F4 considered was reasonable because it was her PhD (F4:ST:Para9).

F4 showed willingness to take responsibility for her study. Nevertheless, the expert seemed not to understand that F4’s lack of confidence in the methodology was conceptual. Instead, she seemed to believe that F4 was asking her for a ready-made methodology. This was then confirmed by F4 as a misunderstanding:

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12 It was discussed in Section 4.5.2 that F4 designed her research but had difficulties in justifying the methodology because she did not have a concept of it (see also discussions in Section 5.2.2.1, p. 193). That was the background of her consulting the expert.
R: … Seemed to me that she thought you were asking her for a methodology so you could do it.
F4: No, no, no. I didn’t expect her to help me with that. Because everybody was saying that doing research, you must consider methodology. … I talked to her and said I did not know how to deal with methodology. … She didn’t know that I actually had already decided on the methodology. I had already decided to do it this way.

(F4:SSI:Paras118-119)

As suggested by F4’s experience, mutual understanding is important for effective consultation. On the one hand, it seems necessary for consultants (e.g., supervisors, experts, or peers) to understand the causes of the student’s problem, such as the lack of a concept of methodology. On the other hand, it appears to be essential for student to properly define the situation and communicate it comprehensibly to the consultants. In other words, to improve the effectiveness of consultation, it would be helpful that students clearly understand what problems they are confronting, what they have done and its results, and what they are expecting of the consultation. F1’s experiences demonstrate this point:

R: When you went to see the experts, how did you communicate with them?
F1: Normally, I first introduced my topic and then I showed them that this was the data I had collected and this was the analysis I was about to do. Could you please give me some suggestions? Oh, different persons had different suggestions. At that time, I wasn’t an expert in this field so what I did was to bring the suggestions to my supervisors after each consultation and asked for their opinions, because they were experienced. My principal supervisor had supervised many students in this field. Normally, he would give me some feedback. For example, he would advise that this suggestion you could ignore and then gave me the reasons, and that the other one was good, you could consider it, and so on.

(F1:SSI:Paras31-32)
Feedback-seeking

Feedback-seeking strategies involve the procedures by which students first carry out research activities (e.g., designing a research instrument, analysing data, or writing thesis chapters, etc.) and then present the work to others for critical comments that are expected to provide insights into improving the quality of the work.

The participants’ use of these strategies suggests that they perceived supervisors’ feedback as a safeguard for the quality of their research, especially for data collection instrument design, data analysis and thesis writing. For example:

Writing up is the final stage. After this, you will present your work to others. So you would consider two questions in the process of analysing. First, is the analysis method you applied right? Second, how would you write about it? Of course, it’s very important to have your supervisors’ hands on your project. I mean, after writing a chapter, you must give it to him to read and see whether he thinks it’s right. If he confirmed it’s OK, you can follow; if he didn’t think it’s fine, you must rewrite it. That’s what you can only do and there is no other choice. (F3:ST:Para119)

Consistent with their perception of supervisors’ feedback as a quality safeguard, the participants tended to expect and value critical and constructive feedback, although the quality of the actual feedback that they received varied from case to case.

Sometimes I said to my supervisor you need to be very critical. If my writing is not good, please just tell me. However, he didn’t say much but just it’s OK, just keep on writing. It’s OK. He said you refine it after writing it all up. (F4:SR:Para242)

With regard to the feedback received, the participants sometimes followed it readily. However, they would have second thoughts about it when the supervisors did not point out a problem in the parts which they themselves considered to be weak. This is illustrated by the following excerpts:

After reading the first part of data analysis, they [supervisors] suggested that I link it more to the literature and provided me with a framework for writing. I followed their requirement to rewrite it. After the rewriting, they gave some further comments on it, and then I further refined it according to their comments. (F3:SSI:Para18)
I wrote up the four chapters on data analysis and the discussion, and gave them to my supervisor. … Two days ago, we had a meeting to discuss the structure. I found his feedback was very helpful. … That’s a very good idea. 

(F2:SSI:Para38)

I needed to transcribe the videos but I can’t find references on how to do it. I found one but after reading it, I still couldn’t work out how to do it so I just followed my own method. That is, I wrote down whatever I saw in the video. I just did it as such. I didn’t follow a convention and wasn’t clear about how to do it. I just wrote it down in this way and gave it my supervisors, they didn’t say it’s not OK. So I think they didn’t say it’s not OK. … I hoped my reviewers weren’t experts in this respect and would let me pass. (F2:SSI:Para22)

*Networking*

Networking strategies refer to students’ interactions with peers, including sharing resources or research experiences, and talking about one’s research with others. In addition, by networking, some of the participants were seeking intellectual inspiration (F3:SR:Para90; M1:ST:Para26), encouragement (F1:ST:Para163; F5:ST:Paras34, 53), moral support (F1:SR:Para309; F3:ST:Paras136-141), and/or a reduction of the feeling of isolation (F1:SR:Paras417-419; F3:ST:Para141; F5:SSI:Para135).

As with their use of the other three interpersonal strategies, the participants’ application of networking strategies was both personalised and contextualised, as discussed in the opening paragraphs of Section 5.2.3.1. Some of the participants (F1, F3, F5) emphasised the importance of networking with peers. “[To have] moral support, I believe it’s very important. Because doing a PhD is frustrating and you feel very isolated, if you didn’t have contact or communication with others, it would be very hard for you to continue with it” (F3:ST:Para141). In contrast, other participants (F2, F4) did not have any forms of networking with others at all in the course of doing the PhD, either because they preferred working in isolation (F4:SSI:Para150) or lacked the time (F2:SSI:Para219).
The analysis so far has revealed that the application of interpersonal strategies, especially help-seeking and consulting, were applied most often to deal with the research tasks of analysing data. This indicates that methodological issues were the major concern shared by the participants and that they tended to require more external assistance at the stage of analysing data than at other stages.

Furthermore, the participants whose strategy use involved peers indicated a strong preference for interacting with students who were studying in the same area and working at a similar or advanced stage of research, had shared research interests, were using the same research methodology, or had knowledge about the methodology that the participant adopted (F1:ST:Paras161-163; F1:SR:Para417; F5:ST:Para53; M1:SR:Para60). This was in contrast to the findings of McClure’s (2003) study which found that international students tended to seek support from those who were from similar cultural backgrounds rather than from the host country. That the participants in this study did not demonstrate such a preference could be because in social science disciplines, it is rarely the case that students from similar cultural backgrounds research in the same area. Nevertheless, one of the participants (F5) explicitly remarked that there was a barrier to talking about the research with students from China studying in a different field. “We were not able to understand each other, … how to say, the conversations could not touch on the core of the topic” (F5:ST:Para53). The other participant (F3) strongly suggested that it would be beneficial for Chinese students to try to “mingle with other people [from different countries]” (F3:SSI:Para110).

5.2.3.2 Concentration managing strategies

Concentration managing strategies are the procedures adopted to prevent concentration failure caused by a disorganised learning environment or other distractions (e.g., work commitments, family commitments, noise). Three types of concentration managing strategies were identified in this study, namely, resource management strategies, time management strategies and distraction management strategies.

All six participants used concentration managing strategies. However, their choice of specific strategies within each subcategory differed largely from one to another, as
shown in Table 5.8. It was especially so with the use of time management strategies, which comprised a number of specific strategies, none of which were employed by more than two participants. This variety further suggests the individuality of learning strategy use. In the next subsections, the participants’ use of the three concentration managing strategies will be further elaborated.

**Resource management**

Resources, in this category, mainly refer to the literature resources that doctoral students collect for their studies. Doing a PhD involves reading a very large amount of literature. It can be frustrating when the student “can’t find where my document is” (M1:SR:Para34). To have a well organised learning environment, systematically managing the resources collected seems essential for doctoral students. As the data suggest, by means of managing the resources the students were able to improve the efficiency of locating materials and thus reduce frustration which may cause a loss of concentration. Four of the participants explicitly mentioned the strategies that they used to manage resources. According to their descriptions, the strategies adopted were classified as labelling by notes, using bibliography software, and cataloguing.

The strategy of labelling by notes refers to the activity of marking the readings by using a certain type of notes to provide easy identification of the materials which may be needed in future. For example:

> When you read something, you said well, this is well written. But what I do is that I write down on the paper very well written, and make some comments on that and put it aside. For example, I read some article that’s very well written on the technique that I was using. When the time comes for me to write, I pull out the paper and see what they did and maybe try to do the same thing with my topic. (F1:SR:Para203)

> [When I’m reading,] I put some keywords on it. Sometimes when I have time, I would type out the highlights, print it out, and then stick it to the first page of the article. When the time comes for writing the literature review, I know this is about what and that is about what. (F3:ST:Paras62-68)
The labelling of notes made it easy for students to decide how to use the readings in their studies. Sometimes it seemed important for students to know what resources they had in hand and to avoid the loss of these resources. This could be facilitated by the use of bibliography software, as F2’s experiences suggested:

I use EndNote. I put down notes in it such as how this article is or where I’ve put it. I’ve found it’s very useful. In the early days, sometimes I couldn’t find the article which I had already read. For example, by looking at the name of the author, I knew I had already read the article which was recorded in my EndNote. However, I didn’t know whether or not I had it in my file because I didn’t keep a note of it. But now, I note down in EndNote whether I have this specific article so I can find it when I need to read it again. … I’ve found it’s good to use EndNote. (F2:SR:Para64)

How to easily locate the literature resources collected was another issue that the participants took into consideration. Cataloguing was used by F2 and M1 to achieve this end. They indicated a number of different methods of organising the catalogue, such as by authors’ name or by topic (F2:SR:Para194; M1:SR:Para34).

**Time management**

Time management strategies involve the actions adopted to make a good use of the time available and to avoid wasting time. The data suggest that the use of time management strategies enabled students to concentrate on their studies and thus to reduce the impact of distractions associated with issues such as work or family commitments. Time management appeared to be paramount, especially for the students who lacked time because of studying part-time, having a full-time work load, and having a family to look after, as in the cases of F2 and F4. However, its importance was also appreciated by full-time students, such as F1 and F3.

A number of time management strategies were identified in four participants’ interview protocols; these are listed below with exemplary quotations from the database:
• Assigning research activities to different time slots. For example:

During the semester, on week days, when I have lectures, I [use the spare time to] work on the odds and ends, such as collecting data, literature searching, or reading. When I have a day off or on the weekends, I would sit down to write something. This semester, I’m on study leave so I ask myself to write at least 500 words each day. (F2:ST:Para13)

• Quantifying weekly hours for working on the PhD. For example:

I believe, for part-time students, you must have a weekly plan, such as asking yourself to write up how many words or to spend how many hours on your research. Otherwise, the time would just flow away. During the semester, when I have lectures, I ask myself to spend about 10 hours every week on the things related to my thesis, not necessarily to write. (F2:ST:Para13)

• Concentrating working hours for the PhD. For example:

Since last year, the writing became relatively productive. I was still teaching from the beginning of the year till the end. However, the teaching was arranged on one or two days. So in all the other time, I could concentrate on the writing and analysis. (F4:ST:Para9)

• Organising research activities to achieve a better use of time. For example:

R: During the time you were waiting for the questionnaires, what did you do?
F1: I started to learn how to use [the data analysis method]. Started to read all the chapters. I told you I had hundreds of books to read. Yeah. … So there was not a time that you didn’t have anything to do. I mean, even when you’re waiting for the data to come back, you can do something else for later on. Otherwise, it’s going to just take time, you know, later on in the process. (F1:ST:Paras108-111)

• Making use of any time available. For example:

R: As a Chinese student, do you find that your PhD experiences are the same as other students or not?
F4: Different, I feel it’s different. For the Australians, when they are doing the PhD, they would also like to have a life. I mean, for example, some of them said, “I do the PhD in the day but I won’t study at night.” That’s unthinkable for me. As for me, whenever I have a time, I study. To still want to have a life, I don’t think that’s possible [laughs]. I feel I have no life. When I chatted with Australian peers, they had the need to have weekends, week nights, and to have time for recreation, for rest, and for social life. I thought how could I have time for all that, I don’t have the time. Whenever I can study, I study. Saying what, only study within the eight hours, and no study outside the eight hours. I found it’s impossible. This is how I feel. … For them, what kind of life will it be if you only study but don’t have a life. I believe Chinese students possibly all try to do the same, to fully devote ourselves to studying. But now I’m not doing so, the family takes up much of my time.

(F4:SSI:Paras165-168)

- Setting deadlines. For example, “my supervisors set up deadlines for me. Once the deadline is set, you would do the work” (F3:SSI:Para62).

As revealed from the data, the participants’ use of time management strategies conveyed one typical characteristic of Chinese students, that is, self-discipline (see discussion in Section 2.5.1). Furthermore, the use of time managing strategies could be initiated by external agents, as in the case of F3.

*Distraction management*

Distraction management strategies are activities intended to improve concentration on studying by minimising the impact of noise or other interruptions. Besides noise, the interruptions that the participants had concern with ranged from chatting with office mates to checking and replying to emails. To manage these distractions, four of the participants (F2, F3, F5, M1) mentioned the strategies of finding a quiet place, or changing learning environments.

The participants indicated that they would concentrate better in a quiet environment. Moreover, they worked more productively when it was quiet. This was demonstrated by the accounts of F2 and M1. “I often work on weekends. The campus is quiet on weekends because no students are around. So I come to Uni on weekends to study”
Similarly, M1 said that “I come to Uni at night, too. It’s quiet at night and I am able to write something” (M1:ST:Para18).

Changing learning environments to avoid interruptions was another strategy reported by the participants. For example, F3 preferred to work at home rather than in the shared office at the final stage of writing up because she needed to keep a high level of concentration while writing (F3:ST:Para169). As for F5, who was doing a literature review when being interviewed, she found emails were very distracting because she could not help checking when a new email came in. To maintain her concentration, F5 decided to do the reading at home instead of in the office (F5:SSI:Para241).

5.2.3.3 Emotion managing strategies

Emotion managing strategies are devices implemented to control or diminish the influence of negative emotional factors (e.g., isolation, frustration, anxiety, disappointment, stress, homesickness, boredom and the like), and thus maintain a constructive mood while studying. The interview data reveal that the participants employed a variety of emotion managing strategies in different situations and that they differed in the choice of specific strategies (see Table 5.8). Emotion managing strategies emerging from the data include: self-adjusting, self-talking, taking a break, being patient, and having entertainment. The diversity of these strategies indicates that the choice of emotion managing strategies was closely related to the individuals’ personal preferences.

The discussion in the following subsections will selectively focus on the strategies of self-adjusting, self-talking and taking a break, given that they appeared to be relatively more popular and significant than others. The participants’ use of these three strategies will be exemplified by the excerpts drawn from the interview protocols.
Self-adjusting

The strategy of self-adjusting involves students’ self-regulation of their affective state to maintain a constructive mood for studying. The participants’ (F3, F5) use of this strategy was demonstrated by their dealing with the feelings of isolation and disappointment (F3:SSI:Paras91-100; F5:SSI:Para63 quoted in the subsection of Section 5.2.1.2, checking one’s affective state). The following dialogue illustrates how F3 executed self-adjusting in the face of isolation:

R: Some students said that it’s very isolating to sit in the office, doing the research on their own, day after day.
F3: Regarding this, I believe everybody has the same experience. All the PhD students are the same, we are all isolated, doing our own things on our own. Nobody talks to you much. All the same. I don’t think anybody will be different.
R: All the same?
F3: Doing a PhD itself is a lonely journey of the soul. So …
R: It’s nothing for you?
F3: Yeah.
R: But some of them tended to be in a bad mood or couldn’t work productively when feeling isolated.
F3: I don’t have such feelings. When I first started, I did feel the same. The key is how you regulate your own emotion. I think everybody will feel isolated so it all depends on how you yourself perceive this situation and how you adjust yourself.
R: What’s your view?
F3: My view? Maintain a good mood. Anyway, doing a PhD is a kind of commitment so I must finish it and I won’t give up halfway.

(F3:SSI:Paras91-100)

F3 appreciated that isolation was inherent in the PhD learning process. She emphasised that, to diminish the adverse effects of the isolation, it was important to execute self-adjustment of emotions. In other words, F3 perceived that students themselves were able to control the situation and maintain a good constructive mood for studying.
**Self-talking**

The strategy of self-talking is an activity in which students talk to themselves in order to ease feelings such as frustration or anxiety. For example, F1 became very frustrated when she was not able to find sponsorship for her survey for about four months: “I got to the point where I lost all my hope, I thought there was no way that the survey is going to be done” (F1:ST:Para127). At this critical moment, in addition to the supervisor’s encouragement, F1 applied a set of strategies to deal with this frustration, which included being patient, taking a break and self-talking.

That was frustrating, and you had to learn how to deal with it. I think I dealt with it by being patient, like what I said before, by going away for holidays. Well, it’s not a real holiday. I mean, you just had to keep telling yourself, “relax”, and “don’t stress over it, there is no point. Even if you are stressed and frustrated, what can you do?” There’s absolutely nothing I can do, so, … just get over it. (F1:SR:Para309)

Self-talking was also employed to smooth out the feelings of anxiety. For example, F5 described her early experience of reviewing the literature:

At this stage, I have a lot of thoughts but just can’t sort them out. … When I can’t sort things out, I easily become anxious, why can’t I figure it out? But when I thought about it again, I told myself, “it’s normal, it’s the stage for you to work things out. Once you sort it out, everything will be fine”. (F5:ST:Para36)

**Taking a break**

The strategy of taking a break is the action of students willingly interrupting their study by going away for holidays or simply taking a rest when they are experiencing a low level of productivity in studying, which may be caused by negative feelings (e.g., frustration, homesickness and tiredness). Three participants (F1, F2, F5) explicitly indicated the use of this strategy. The length of the break varied in accordance with the needs of individual students. It could be as short as one day (F2:ST:Para45) or as long as months (F5:SSI:Paras7-9). For example, “I wasn’t in high spirits when I talked to you last time. After that, I went home … and stayed there for about three to five months” (F5:SSI:Paras7-9).
5.2.3.4 Motivation retaining strategies

Motivation retaining strategies refer to mental or behavioural activities that are executed to uphold one’s motivation in the face of difficulties or to keep oneself motivated in the years-long process. The participants in this study appeared to be highly self-motivated PhD candidates, as indicated by their strong intention to finish the study as early as possible (F1:SR:Para331; F2:ST:Para45; F3:SSI:Para66; F4:SSI:Para160; F5:ST:Para40; M1:SSI:Para104). The interview data show that the motivation driving them was multi-dimensional, and included intrinsic, extrinsic and achievement motivation (this will be elaborated on in Section 5.3.1.3).

However, in the process of doing the PhD, the participants sometimes found themselves in a situation where their self-motivation was challenged. To sustain the motivation and fulfil their ultimate goal of completing the PhD, five of the participants (F1, F2, F4, F5, M1) used motivation retaining strategies. Three types of such strategies emerged from the data: being persistent, thinking positively and self-praising. Their use of these strategies will be illustrated by the quotations selected from the interview protocols in the following sub-sections.

**Being persistent**

Being persistent means not giving up in the face of difficulties or challenges. The participants’ execution of this strategy suggests that what underlay it was strong willpower which was associated with the determination to finish the PhD study successfully (F4:SR:Para73) and the personal commitment to the study (F1:SR:Para429). Amongst the stories of the three students (F1, F4, M1) who reported the use of this strategy, F4’s experiences were most revealing.

F4’s experience of part-time study encompassed all sorts of problems that a doctoral student could encounter. As has been mentioned in Chapter Four (Section 4.5), she was asked to change her research topic in the middle of her first year of study. In addition to look after a young family, she had health problems and financial difficulties throughout the years of study. Furthermore, the heavy teaching loads left her with very limited time for the PhD research. At the end of her narration in the storytelling session, F4 said:
Anyway, what strategies do you think I have? No strategies but do not give up, I think. Being persistent. … Some students … stopped because being a mother takes up too much time. … The reason that I don’t stop is that I had been keen to do it [the PhD]. I told myself: “At first you were so keen to do it. Now because it’s difficult, you’d like to stop. I don’t think it’s good”. It too contradicts my original ambition. I said, OK, let me persist in doing it. However, I feel it’s a very humiliating experience, not very rewarding. It has dragged on for too long.

(F4:ST:Para9)

Thinking positively

Thinking positively is the mental activity where students think of the bright side of the situation. Two of the participants’ accounts suggested the use of this strategy (F2:SR:Para180, F5:SSI:Para19), which was well represented by F5’s story.

To understand F5’s application of this strategy, it will be helpful to briefly review the background story first. As mentioned in the last subsection of Section 5.2.1.2, F5’s supervisors did not approve her first topic which she was very interested in and which was connected to her Master’s study (F5:SSI:Para113). This happened after she had worked on it for about one year. This incident had such a strong impact on F5 that she almost dropped out. However, after a period of mental struggle and self-adjustment, F5 decided to carry on, a decision to which her husband contributed:

I very much wanted to go home. However, after thinking over and over again about whether to stay or to leave, I thought if I went back without finishing the PhD, I might regret it later on. Especially, my husband also said “you definitely will be regretful, you’d better continue”. (F5:SSI:Para15)

Eventually, F5 started afresh. When the third interview was conducted, F5 was in the process of deciding on a new topic, which was related to her teaching experience. Talking about starting again, F5 sounded much more cheerful, “I restarted from the beginning. This orientation will be generally related to my future work interests. So I think it might be a good thing. Once you think this way, you feel better” (F5:SSI:Para19). This is a good example of positive thinking.
The strategy of thinking positively sometimes could be introduced by others such as supervisors, as in the case of F2.

My supervisors are very encouraging. Sometimes I was very depressed. … One of my supervisors told me, every morning, you say “I love my research”. I said it's hard to do so. He said if you do it every morning, you’ll be fine, you’ll feel better.

(F2:SR:Para180)

**Self-praising**

The strategy of self-praising involves the students’ positive comments on their own work. The use of this strategy was identified in the interview protocol of F2. According to F2, self-praising helped her to stay motivated and build up her confidence. F2 had her plan to write 500 words each day when she had the time. However, to fulfil this task was not easy.

Of course, it’s the best if you can write up 500 words. But if you couldn’t, it’s fine. However, when I write more than that, I feel very rewarded. I would tell myself, “you’ve done very well today, wrote 600 words”. I think you need to boost your own morale. Otherwise, you can’t see the way out. If you don’t have the little targets and the final target is so out of reach, would you commit suicide [laughs]?

(F2:SR:Para81)

The discussions in Sections 5.2.1-5.2.3 have focused on the descriptions of the learning strategies identified in this qualitative study and the participants’ application of these strategies. The analysis strongly reveals that the participants were autonomous and self-regulated learners. They self-monitored the learning process. Responding to the results of self-monitoring, they modified their learning or research activities with the aim of enhancing their learning efficiency, or they managed their affective state to maintain a favourable internal working environment. In addition, the participants took proactive actions to organise their own learning and researching, and actively reacted to the needs or problems emerging from the process by adopting appropriate learning strategies. However, it was observed that the participants’ application of learning strategies and the effectiveness of their learning strategy use sometimes were constrained by external factors, such as the availability of funding, others’ misunderstanding of their intentions, or the absence of necessary information.
The factors which influenced their learning strategy use will be further examined in Section 5.3.

To attain an overview of the participants’ learning strategy use, the next discussion will concentrate on the patterns of their learning strategy use (Section 5.2.4). In addition, the factors underlying the patterns observed will be explored.

### 5.2.4 Patterns of the participants’ learning strategy use

To obtain a comprehensive understanding of the participants’ learning strategy use, two types of count were carried out. First, the overall number of the learning strategies emerging from the data was counted in relation to the three general categories (i.e., metacognitive, cognitive and social/affective strategies). The results are presented in Table 5.9. This count was expected to reveal the overall pattern of learning strategy use of the participants as a group. Second, the number of the learning strategies in each of the three categories used by each participant was counted. The results are presented in Tables 5.10, 5.12 and 5.13. This count was expected to disclose the individual differences in the participants’ use of learning strategies.

In Tables 5.9, 5.10, 5.12 and 5.13, the number of learning strategies at the subcategory level represents the types of learning strategies within the general categories. The number of specific learning strategies exemplifies the variety of learning strategies used by the participants. This variety is closely related to the individual’s selection of specific learning strategies. By examining the data in these tables, a number of patterns were observed in the participants’ learning strategy use, which will be elaborated on in the succeeding sections.
5.2.4.1 Overall use of learning strategies

As shown in Table 5.9, the participants as a group tended to use more cognitive strategies than either metacognitive strategies or social/affective strategies. Moreover, their selection of specific strategies varied largely within both the cognitive and social/affective categories.

Table 5.9 Number of learning strategies in each category\textsuperscript{13}

<table>
<thead>
<tr>
<th>Overall number of learning strategies</th>
<th>Learning strategy categories</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. in each category</td>
</tr>
<tr>
<td>24 subcategories</td>
<td>Percentage</td>
</tr>
<tr>
<td>52 specific strategies</td>
<td>No. in each category</td>
</tr>
<tr>
<td></td>
<td>Percentage</td>
</tr>
</tbody>
</table>

Note: The percentages total to slightly more than 100 due to rounding.

As shown in Table 5.1, the three types of metacognitive strategies (i.e., planning, self-monitoring and self-evaluating) and four types of social/affective strategies (i.e., interpersonal strategies, concentration managing strategies, emotion managing strategies and motivation retaining strategies) were all commonly used by the participants. Among the 17 types of cognitive strategies, four of them were in the most popular group, namely, resourcing, seeking training, writing-specific strategies, practising and self-questioning.

When the learning strategies identified in this study (as listed in Appendices 19-21) were compared with those in the literature on learning strategies (as summarised in Table 2.2), it was observed that significant differences existed in cognitive strategies but similarities in metacognitive and social/affective strategies. In other words, this group of Chinese PhD students shared similarities with the students in classroom settings in their use of metacognitive and social/affective strategies while they differed in the use of cognitive strategies. This finding lends support to the observation that metacognitive and social/affective strategies are transferable across learning contexts while cognitive strategies are more sensitive to learning contexts.

\textsuperscript{13} Table 5.9 is in reference to Tables 5.2, 5.5 and 5.8.
and less transferable across learning tasks, especially those task-specific cognitive strategies (Alexander, Graham & Harris, 1998; Biggs, 1984; O’Malley & Chamot, 1990; Veenman & Verheij, 2003).

5.2.4.2 Use of metacognitive strategies

The number of metacognitive strategies used by the participants is summarised in Table 5.10. The numbers at the subcategory level show that participants F2, F4, F5 and M1 were more metacognitively engaged in their doctoral learning than participants F1 and F3. The numbers of specific strategies used reveal that, among the participants, F5 approached her study by all metacognitive means, F1 and F3 used the least metacognitive strategies, and F2, F4 and M1 were medium to high users of metacognitive strategies. To interpret this information in depth, the participants were clustered into groups according to their background (Table 5.11, see Appendix 18 for details). The background factors include their age, mode of attendance, overseas studying experience, length of residence in Australia, stage of PhD research, and experience in researching.

Table 5.10 Number of metacognitive strategies used

<table>
<thead>
<tr>
<th>Number of strategies</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F1</td>
</tr>
<tr>
<td>3 subcategories</td>
<td></td>
</tr>
<tr>
<td>No. not used</td>
<td>1</td>
</tr>
<tr>
<td>No. used</td>
<td>2</td>
</tr>
<tr>
<td>Percentage</td>
<td></td>
</tr>
<tr>
<td>Not used</td>
<td>33%</td>
</tr>
<tr>
<td>Used</td>
<td>67%</td>
</tr>
<tr>
<td>10 specific strategies</td>
<td></td>
</tr>
<tr>
<td>No. not used</td>
<td>7</td>
</tr>
<tr>
<td>No. used</td>
<td>3</td>
</tr>
<tr>
<td>Percentage</td>
<td></td>
</tr>
<tr>
<td>Not used</td>
<td>70%</td>
</tr>
<tr>
<td>Used</td>
<td>30%</td>
</tr>
</tbody>
</table>

When the factors of personal backgrounds were considered, it was observed that attendance mode and overseas studying experience had little influence on the participants’ metacognitive strategy use. For example, both full-timers (F5, M1) and part-timers (F2, F4) reported the use of all three types of metacognitive strategies. The student who did not have overseas studying experience (M1) reported the use of

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14 Table 5.10 is in reference to Table 5.2.
three types of metacognitive strategies as did three of the students who had overseas studying experience (F2, F4, F5).

Table 5.11 Participants grouped by background

<table>
<thead>
<tr>
<th>Age</th>
<th>Attendance modes</th>
<th>Overseas studying experience</th>
<th>Length of residence in Australia</th>
<th>Stage of PhD research</th>
<th>Experience in researching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 30</td>
<td>Over 30</td>
<td>Full-time</td>
<td>Part-time</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>F1</td>
<td>F2</td>
<td>F4</td>
<td>F5</td>
<td>M1</td>
<td>F1</td>
</tr>
</tbody>
</table>

However, the factors of age, length of residence in Australia, stage of PhD research, and research experience appeared to contribute to the differences in the participants’ metacognitive strategy use.

First, older students (F2, F4, F5, M1) used more varied metacognitive strategies than younger ones (F1, F3). The explanation for this difference could lie in that mature students were more capable than the less mature of applying their metacognitive power (Bruning et al., 2003; Schunk, 2004).

Second, the student who was newly arrived in Australia (F5) used far more metacognitive strategies than those who had been in Australia for a longer time (F1, F2, F3, F4, M1). This difference was most apparent in their use of self-monitoring strategies. As shown in Table 5.2, four kinds of self-monitoring strategies were identified in F5’s interview protocols whereas no more than two of them were used by others. This difference could be an effect of F5’s unfamiliarity with the learning environment.

When the participants were first interviewed, F5 had been in Australia for less than four months. In contrast, the other participants had been studying in Australia for at least two years. F5’s accounts showed that, when she was interviewed, she was undergoing the process of adapting herself to the new learning environment. The

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15 Table 5.11 is in reference to Appendix 18.
adaptation ranged from getting to know the facilities and resources available to building up a comfortable working relationship with supervisors (F5:ST:Paras22, 34). One major impact of this adaptation process on the students was to evoke a high level of metacognitive awareness in their learning. This may have resulted in F5’s use of varied metacognitive learning strategies. In contrast, those students (F1, F2, F3, F4, M1) who had been in Australia for a longer time tended to have gone through the adaptation stage and understood better how to operate within its educational context. From this point of view, doing research in this learning environment may have been relatively less metacognitively taxing for them.

Third, the student who was in the early stages of her research (F5) used significantly more metacognitive strategies than those who were at an advanced stage of their research (F1, F2, F3, F4, M1). When the participants were interviewed, F5 was doing the literature review for deciding on a topic and preparing for a research proposal, and the others were working on data collection, analysis and thesis writing. The analysis of the interview data reveals that, compared to the students who were at an advanced stage of their doctoral studies, the student (F5) in the early stages tended to have less confidence in what she was or would be doing. The different levels of confidence could impact on the students’ metacognition and subsequently on their application of metacognitive strategies.

Lastly, amongst the students who had been in Australia for a longer time, it appeared that the students who were experienced in doing research (F1, F3) used less varied metacognitive strategies than those who were less experienced (F2, F4, M1). This difference was largely associated with the participants’ use of self-monitoring strategies and self-evaluating strategies (see Table 5.2). To understand this difference, it is worthwhile to further note that the research topics of participants F1 and F3 were based on their previous academic studies (i.e., Honours and Master’s study, respectively) while the others (F2, F4, M1) were working on job-related research topics, which tended to be in areas different from their previous studies. The narratives in Chapter Four revealed that the students doing a job-related research topic tended to lack both theoretical and methodological preparation for their PhD studies. Comparatively, the research tasks might be more challenging for the inexperienced participants than those who were experienced. This could have contributed to their differences in using metacognitive strategies, given that learners
are more likely to monitor their own activities when dealing with relatively difficult tasks as opposed to easy tasks (Schunk, 2004).

In short, with regard to the participants’ use of metacognitive strategies, this study found that mode of attendance and overseas studying experience had little influence on the students’ choice of learning strategies. However, the factors of age, length of residence in Australia, stage of PhD research, and research experience appeared to be relevant to the individual differences in the selection of metacognitive strategies. Specifically, older students used more metacognitive strategies than younger students; the new arrival used more metacognitive strategies than those who had been studying in Australia for a longer time; the student in the early stages of her research used more metacognitive strategies than those at an advanced stage; and the students who were less experienced in researching used more metacognitive strategies than those who were experienced. However, caution needs to be applied when considering these findings, given that, in this study, the students who were less experienced in researching happened to be older students (F2, F4, M1), and that the student in the early stages of research happened to be a new arrival (F5).

5.2.4.3 Use of cognitive strategies

Table 5.12 presents the number of cognitive strategies used by each participant. By examining the numbers at the subcategory level, it was observed that F5 used considerably fewer cognitive strategies than other participants (F1, F2, F3, F4, M1). This pattern was verified by the numbers of specific strategies used. The numbers of specific strategies used further revealed that participants F1 and F3 used more varied cognitive strategies than participants F2, F4 and M1. These patterns will be scrutinised in relation to the participants’ backgrounds. Applying the same procedures used to examine the participants’ use of metacognitive strategies, the background factors taken into account included their age, mode of attendance, overseas studying experience, length of residence in Australia, stage of PhD research and experience in researching (Table 5.11).
When the background factors were considered, it appeared that mode of attendance and overseas studying experience contributed little to the differences in the participants’ use of cognitive strategies. For example, both full-timers (F1, M1) and part-timers (F2, F4) used ten out of 17 strategies at the subcategory level. Among them, M1 did not have overseas studying experience.

However, the factors of age, length of residence in Australia, stage of PhD research, and experience in researching were observed to have varied relations to the participants’ cognitive strategy use at different levels (i.e., at the subcategory level and at the level of specific strategy use).

With regard to the participants’ cognitive strategy use at the subcategory level, there was not much difference between the experienced (F1, F3) and less experienced (F2, F4, M1) students, or between the older (F2, F4, M1) and younger (F1, F3) students, as shown in Table 5.12. Nevertheless, a remarkable difference was observed in the strategy use between the student in the early stages of doctoral study and those at advanced stages. Specifically, the student in the initial stages (F5) used much fewer cognitive strategies than those in the advanced stages (F1, F2, F3, F4, M1). This difference might be attributable to the complexity of research tasks at different stages and the variety of research tasks that the participants had undertaken, given that cognitive strategies act directly upon the learning tasks. Differences in strategy use were also noticed between the new arrivals and the students who had been in Australia for a longer time. In particular, the student who was newly arrived (F5)

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16 Table 5.12 is in reference to Table 5.5.
used much fewer cognitive strategies than those who had been in Australia for a longer time (F1, F2, F3, F4, M1). The cause of this difference is not clear.

With regard to the participants’ use of specific cognitive strategies, the new arrival who was in the early stages of her doctoral study (F5) used the least varied strategies. Among the students who had been in Australia for a longer time and were in the advanced stages of their studies, the students who were experienced in researching (F1, F3) used more varied strategies than those who were less experienced (F2, F4, M1). The cause underlying this difference seemed to be that the experienced students might have accumulated knowledge of learning strategies through their previous research experience, and thus developed a larger repertoire of cognitive strategies than the less experienced students.

Furthermore, the younger students (F1, F3) used a larger number of specific strategies than the older students (F2, F4, M1). This difference could be related to the fact that younger students tended to rely more on their cognitive resources than the older ones. Nonetheless, the fact that the younger students in this study happened to be more experienced in researching than the older ones could also have played a role in this difference.
5.2.4.4 Use of social/affective strategies

Table 5.13 summarises the number of social/affective strategies used by each participant. The numbers in the table reveal that, at the subcategory level, participants F1, F2, F5 and M1 used more strategies than participants F3 and F4. With regard to the specific strategies, participants F1, F2 and F5 used more varied strategies than participants F3, F4 and M1. Noticeably, F4 used the least varied strategies in comparison with all the others.

<table>
<thead>
<tr>
<th>Number of strategies</th>
<th>No. not used</th>
<th>No. used</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 subcategories</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F1</td>
<td>F2</td>
<td>F3</td>
</tr>
<tr>
<td>No. not used</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>No. used</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Not used</td>
<td>0%</td>
<td>0%</td>
<td>25%</td>
</tr>
<tr>
<td>Used</td>
<td>100%</td>
<td>100%</td>
<td>75%</td>
</tr>
<tr>
<td>15 specific strategies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No. not used</td>
<td>No. used</td>
<td>Percentage</td>
</tr>
<tr>
<td></td>
<td>F1</td>
<td>F2</td>
<td>F3</td>
</tr>
<tr>
<td>No. not used</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>No. used</td>
<td>10</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Not used</td>
<td>33%</td>
<td>40%</td>
<td>47%</td>
</tr>
<tr>
<td>Used</td>
<td>67%</td>
<td>60%</td>
<td>53%</td>
</tr>
</tbody>
</table>

When the background factors of age, mode of attendance, overseas studying experience, length of residence in Australia, stage of PhD research, and experience in researching (Table 5.11) were taken into account, none of them appeared to be relevant to the differences observed. This suggests that there might be other factors which were conducive to the differences in the participants’ social/affective strategy use. To comprehend these differences, the participants’ use of specific strategies within each subcategory was deliberately examined.

The four subcategories of social/affective strategies are interpersonal strategies, concentration managing strategies, emotion managing strategies and motivation retaining strategies. Each of them consists of a number of specific strategies (as listed in Table 5.8). To facilitate the discussion, the rows in Table 5.8 will be duplicated in Tables 5.14-5.16. Specifically, Table 5.14 is about the participants’ use of interpersonal strategies; Table 5.15 presents their choice of concentration.

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17 Table 5.13 is in reference to Table 5.8.
management strategies; Table 5.16 displays their selection of emotion managing and motivation retaining strategies.

As suggested by its definition, the use of interpersonal strategies reveals how the participants interacted with social environmental factors (e.g., supervisors, other academics and peers). Table 5.14 shows that participants F1, F5 and M1 used almost all the specific strategies within this subcategory. This suggests that they had a wide and varied range of interactions with others. Their accounts disclosed that they valued the interactions with supervisors, other academics in the field, and peers who shared a research interest in the same field or used similar research methodology.

Table 5.14 Interpersonal strategies used by participants

<table>
<thead>
<tr>
<th>Interpersonal strategies</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F1</td>
</tr>
<tr>
<td>Help-seeking</td>
<td>✓</td>
</tr>
<tr>
<td>Help-seeking from supervisors</td>
<td>✓</td>
</tr>
<tr>
<td>Help-seeking from others</td>
<td>✓</td>
</tr>
<tr>
<td>Consulting</td>
<td>✓</td>
</tr>
<tr>
<td>Consulting supervisors</td>
<td>✓</td>
</tr>
<tr>
<td>Consulting others</td>
<td>✓</td>
</tr>
<tr>
<td>Feedback-seeking</td>
<td>✓</td>
</tr>
<tr>
<td>Feedback-seeking from supervisors</td>
<td>✓</td>
</tr>
<tr>
<td>Feedback-seeking from others</td>
<td>✓</td>
</tr>
<tr>
<td>Networking</td>
<td>✓</td>
</tr>
<tr>
<td>Sharing resources</td>
<td>✓</td>
</tr>
<tr>
<td>Sharing experiences</td>
<td>✓</td>
</tr>
<tr>
<td>Talking about the research with others</td>
<td>x</td>
</tr>
</tbody>
</table>

It was evident that F2 did not use any strategy which involved peers or academics other than her supervisors. Her connection with the social environment was restricted to interactions with supervisors. This, as discussed in Section 5.2.3.1, was closely related to her perception that nobody else but her supervisors would know about her research. Furthermore, as a part-time student, she lacked time to socialise with others. F3 did not use the strategies of help-seeking, which might be attributable to her perception that she herself tended to be independent in researching. F4, who preferred the style of working in isolation, did not network with others.
The discussion above implies that the participants’ use of interpersonal strategies was influenced by their perceptions of social environmental factors, their perceptions of themselves as researchers, their learning style and personality\textsuperscript{18}.

With regard to the participants’ use of concentration managing strategies, Table 5.15 shows that F2 applied more varied specific strategies than all the others and that F4 and F5 used the least varied strategies. There was a tendency that part-time students (F2, F4) were more likely to use time management strategies than full-time students (F1, F3, F5, M1).

Table 5.15 Concentration managing strategies used by the participants

<table>
<thead>
<tr>
<th>Concentration managing strategies</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F1</td>
</tr>
<tr>
<td>Resource management</td>
<td>✓</td>
</tr>
<tr>
<td>Labelling by notes</td>
<td>✓</td>
</tr>
<tr>
<td>Using bibliography software</td>
<td>✓</td>
</tr>
<tr>
<td>Cataloguing</td>
<td>✓</td>
</tr>
<tr>
<td>Time management</td>
<td>✓</td>
</tr>
<tr>
<td>Assigning research activities to different time slot</td>
<td>✗</td>
</tr>
<tr>
<td>Quantifying weekly hours for working on the PhD</td>
<td>✗</td>
</tr>
<tr>
<td>Concentrating working hours for the PhD</td>
<td>✗</td>
</tr>
<tr>
<td>Organising research activities</td>
<td>✗</td>
</tr>
<tr>
<td>Making use of any time available</td>
<td>✗</td>
</tr>
<tr>
<td>Setting up deadlines</td>
<td>✗</td>
</tr>
<tr>
<td>Distraction management</td>
<td>✗</td>
</tr>
<tr>
<td>Finding a quiet place</td>
<td>✗</td>
</tr>
<tr>
<td>Changing learning environment</td>
<td>✗</td>
</tr>
</tbody>
</table>

F4, who worked from home on her PhD, experienced all sorts of distractions associated with working and looking after a young family but few concentration managing strategies were identified in her accounts. This indicates that F4 might have had little control over the distractions. What she was able to do was only to make good use of time when she was free, for example, when she was not working or her children were not at home (F4:ST:Para9; F4:SSI:Para12). It appeared that having little control over the distractions was one of the major causes for F4’s

\textsuperscript{18} As the data analysis progressed, it became clearer to the researcher that personality was an important factor relevant to the participants’ learning strategy use. However, its effect was not further elaborated in this thesis, given that it was beyond the scope of this study. The relationship between personality and PhD students’ learning strategy use could be a subject for future studies.
prolonged candidature. Among the full-time students, the students who were situated in shared offices (F3, F5, M1) were more likely to use distraction management strategies than those who had their own office (F1).

It appears that the factors of mode of attendance and the working environment were closely relevant to the participants’ use of strategies for time management and distraction management.

Table 5.16 reveals that participant F4 did not use emotion managing strategies and F3 did not apply motivation retaining strategies. The examination of the participants’ interview protocols disclosed that F4 had little emotional reaction to the hurdles encountered in her doctoral study, although she repeated that the data analysis and thesis writing were very hard and concluded that doing the PhD was a humiliating experience. A possible explanation for this phenomenon might be the factor of age, in other words, the participant’s maturity. F4 was in her forties when she was interviewed. Her maturity might have empowered her to have control over her emotions. With respect to other participants, they all experienced some degree of negative emotions in the learning process, including frustration, isolation, depression, boredom and/or homesickness.

Table 5.16 Emotion management and motivation retaining strategies used by the participants

<table>
<thead>
<tr>
<th>Strategies</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
<th>M1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Emotion managing strategies</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-adjusting</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Self-talking</td>
<td>✓</td>
<td>X</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Being patient</td>
<td>✓</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Taking a break</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
<td>X</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Having entertainment</td>
<td>X</td>
<td>X</td>
<td>✓</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Reading news</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Motivation retaining strategies</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being persistent</td>
<td>✓</td>
<td>X</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Thinking positively</td>
<td>X</td>
<td>✓</td>
<td>X</td>
<td>X</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Self-praising</td>
<td>X</td>
<td>✓</td>
<td>X</td>
<td>X</td>
<td>✓</td>
<td>X</td>
</tr>
</tbody>
</table>
The prolonged learning process at the doctoral level is itself a challenge to students’ motivation. Although all six participants were highly self-motivated students, some significant obstacles encountered could cause the risk of losing motivation, as discussed in Section 5.2.3.4. To keep themselves motivated, the participants, except for F3, adopted varied strategies. F3’s accounts revealed that she devoted herself to the study with a strong confidence in herself. This could have sustained her motivation throughout the study.

It was observed that the participants’ use of emotion management strategies and motivation retaining strategies was related to the influence of the encounters in the learning process upon their emotional and motivational domains. Furthermore, the maturity and self-confidence of the participants appeared to play a role in their application of these strategies.

The discussion in this section suggests that a range of factors were pertinent to the participants’ use of social/affective strategies. These included their perceptions of social environmental factors, their perceptions of themselves as researchers, their personal learning style, their mode of attendance, the environment that they were physically situated in, and the influences of the encounters in the learning process upon their emotional and motivational domains. Although certain patterns emerged within the participants’ use of the strategies at the subcategory level, no specific patterns were observed in the participants’ use of social/affective strategies at the general level.

The examination so far has focused on obtaining an overall understanding of the participants’ learning strategy use. As a result, the participants as a group were found to use more varied cognitive and social/affective strategies than metacognitive strategies. Their use of metacognitive and social/affective strategies shared similarities with that of students in classroom settings. However, the participants of this study differed largely from students in classroom settings in their use of cognitive strategies.

The investigation of the participants’ use of strategies within each of the three general categories reveals that, first, younger students used more cognitive and fewer metacognitive strategies than the older ones; second, the student who was newly
arrived in Australia and was in the early stages of research employed fewer cognitive and more metacognitive strategies than those who had been in Australia for a longer time and were at an advanced stage of their studies; and finally, the students who were experienced in researching applied more cognitive and fewer metacognitive strategies than those who were less experienced. Given that the experienced students showed a higher level of self-confidence than those who were less experienced, this finding agrees in part with the findings of earlier studies that showed that students with high self-confidence used more varied cognitive and metacognitive strategies than those with low self-confidence (Pintrich, 1999; Pintrich & De Groot, 1990). Nonetheless, these findings need to be handled with caution because, in this study, the students experienced in researching happened to be younger students, as mentioned in Section 5.2.4.2.

With regard to the participants’ use of social/affective strategies, no specific patterns were discovered at the general level. Within each of the four subcategories, a number of trends were observed. Specifically, first, the students who perceived that nobody else but the supervisors would know about their research and those who preferred to work in isolation tended to use less varied interpersonal strategies, especially those involving interactions with social elements other than supervisors. Second, part-time students appeared to use more varied time management strategies than full-time students. Third, among full-time students, those physically located in shared offices had a tendency to use distraction management strategies. Finally, the students’ use of emotion managing strategies and motivation retaining strategies tended to be evoked by their emotional and motivational reactions to the learning process.
5.3 Factors relevant to learning strategy use

The analysis of the participants’ learning strategy use (Section 5.2) revealed that the participants’ application of learning strategies was influenced by a variety of factors, for example, research experience, complexity of research tasks and the students’ perceptions of social environmental variables. The influences could be either on their selection of specific learning strategies or on the effectiveness of their learning strategy use, as the discussions in Section 5.2 suggested. This section will further examine the factors pertaining to their learning strategy use.

To facilitate the discussion, the factors contributing to the participants’ learning strategy use were differentiated into two basic groups: factors in the personal domain (e.g., research experience) (Section 5.3.1) and factors in the contextual domain (e.g., complexity of research tasks) (Section 5.3.2). The influence of contextual factors on students’ learning strategy use has been found to be both direct and indirect (Ramsden, 1988, 1997). The direct influence is brought about by the essential nature of the contextual elements, which prompts students’ selection of learning strategies. The indirect influence results from students’ perceptions of learning contexts which are shaped by their learning experiences and their personal characteristics as learners (Vermetten, Vermunt & Lodewijks, 2002). Investigating these contributing factors has the potential to offer insights into students’ characteristics and their interactions with the learning environment, which has significant implications for educational practice.

The following analyses will bring together the discussions in the preceding parts of this chapter to provide a better understanding of the characteristics of the students, how they interacted with the learning environment, and how they carried out their PhD studies in the Australian academic context.
5.3.1 Personal domain

This section describes the factors in the personal domain which influenced the participants’ learning strategy use. These factors include personal qualities, previous experience, motivation, affective state, self-knowledge, learning style, language competency and cultural background. Each of them will be examined in turn in the following sections.

5.3.1.1 Personal qualities

The interview data conveyed that the participants exhibited a high level of commitment to their studies, that they were persistent in their study, and that they were highly self-disciplined and self-motivated. In addition, they were willing to take responsibility for their own studies.

The participants’ commitment to their studies was highlighted by the following accounts, for example, “I have to be very focused and devote myself to my research, which involves sacrificing your personal life and not having so much fun” (F1:SR:Para429). “I believe Chinese students possibly all try to do the same, to fully devote ourselves to studying” (F4:SSI:Para168). However, this commitment seemed to create a tension between study and life. For instance, “I want to ask someone who did a PhD in less than two years as well as had a lot of fun, in terms of other parts of their lives. I wonder if there is anyone who can do it because I certainly didn’t” (F1:SR:Para427). “It’s not simply that you concentrate on your study. Doing a PhD is not to be a Kuxingseng (monk). I don’t want it like that. I want to still have a normal life … but that takes up time and energy” (F5:ST:Para42).

It is hard to keep a balance between study and life. Facing this dilemma, the participants shared the same solution: to finish it as early as possible (F1:SR:Para331; F2:ST:Para45; F3:SSI:Para66; F4:SSI:Para160; F5:ST:Para40; M1:SSI:Para104). The participants’ characteristics of being persistent, self-disciplined and self-motivated provided strong support in striving for this goal, as illustrated by their own words. For example, “I don’t have strategies, but just do not give up, … being persistent” (F4:ST:Para9). “I believe it’s good to set up some requirements for yourself” (F2:SR:Para81). “I’ve done better than them [peers], made more progress.
This is relying on my self-discipline” (F3:SSI:Para88). “I tend to push myself” (F3:SSI:Para66). F1 even considered that anybody was able to do a PhD as long as he or she had the motivation and persistence to do it (F1:SR:Para374).

The participants were willing to take responsibility not only for their own studies but also for negative outcomes of their learning, as disclosed by their accounts. For example, “With respect to theories, you need to search for it yourself and to find one which is applicable or relevant to your experiment” (F2:SR:Para113). “Some students complain that the meetings [with supervisors] are not frequent but I believe that you are doing it mainly on your own” (F3:ST:Para154). Their strong tendency to seek reasons for negative outcomes within themselves rather than blaming others such as supervisors was illustrated by the following snapshots. F4 attributed her weakness in methodology to her lack of reading about it and concluded that “I have no-one but myself to blame” (F4:SR:Para89). M1 intended to finish his study within three years but he did not, for which he acknowledged that he had not worked very hard on his study (M1:SSI:Para53). F5 was very upset when her supervisors did not approve her topic. However, she accepted her own responsibility for such a result when looking back at the issue in the interview:

There always are two sides of a story. When I wrote about that [the first topic], I didn’t think I was able to convince them. I did not have the confidence. So it’s unfair to have them [supervisors] take full responsibility for that. I myself was not confident to do that topic. (F5:SSI:Para111)

The personal qualities of the participants seem to be in harmony with their cultural background. As discussed in Chapter Two, education in China, dominated by traditional Confucian ethics, puts emphasis on moral cultivation. Students are trained to be industrious, disciplined and persistent. The culturally valued qualities of diligence, self-discipline and persistence encourage students to take more personal responsibility for their own learning. When the students perceive that they themselves are responsible for the outcomes of their learning, they tend to believe that the study is under their own control. According to studies of causal attributions, feelings of control enhance students’ motivation and increase their effort, persistence and achievement (Pintrich, 2003; Schunk, 1994; Weiner, 2001).
5.3.1.2 Previous experience

The participants differed in their educational and research experience, which determined the differences in their development of research skills, and their competence in researching and English academic writing. In this discussion, educational experience specifically refers to where the participants received their previous education and the related experience, while research experience is particularly about their experience of doing research for either an academic degree or in their work.

Chapter Four introduced the participants’ academic backgrounds. To facilitate the discussion, a brief overview is presented here. With regard to their educational experience, all six participants completed their undergraduate studies in China. M1 did his Master’s degree in China; F5 received two Master’s degrees, one in China and the other in a Western country; and the other four (F1, F2, F3, F4) all studied for their postgraduate degrees in Australia.

All the participants’ postgraduate studies included research elements, which however varied in depth and seriousness. Furthermore, F1, F3 and F5 had research experience in their part-time or full-time jobs. According to the participants themselves, F1, F3 and F5 considered that they themselves were experienced in researching whereas F2, F4 and M1 perceived that they lacked experience in doing rigorous research. M1 did social research for both his undergraduate and postgraduate degrees in China, which he acknowledged was at a very low level. F4’s research for her 15,000 word Master’s thesis involved only library searches and was not much concerned with methodology. F2’s Master’s project involved a kind of laboratory work, which did not foster the research skills needed for empirical studies.

Embarking on PhD study with limited research experience, F2, F4 and M1 encountered diverse methodological problems. For F2 and M1, the problems were mainly associated with collecting and analysing data. For example, how to collect data systematically? How to do interviews? How to deal with the interview data? How to apply the data analysis tool? For F4, the problems were predominantly conceptual. She lacked an understanding of what methodology is and what it involves.
In contrast, the research experience that F1 had for her Honours degree and F3 had for her Master’s thesis (which in size was equal to a thesis for a Master of Philosophy) appeared to be beneficial for their PhD studies. Most significantly, by doing those studies, they conceptually understood what research is (F1:SR:Para21) and what methodology is (F1:ST:Para57; F3:ST:Paras148-150). Furthermore, their research skills in the areas such as the literature search, and data collection and analysis were well developed (F1:SR:Para138; F3:SR:Paras58, 143). Even though they were competent in researching, F1 and F3 still found that doing the PhD further improved their research skills and extended their understanding of the methodologies adopted (F1:ST:Para55; F1:ST:Para179; F3:ST:Para91). Moreover, new learning occurred in the doctoral process, for example, learning new data analysis methods and software (F1:ST:Paras79, 117; F3:ST:Paras125-133).

With regard to English academic writing, the participants who completed their Master’s degrees in Australia indicated that they had confidence in writing in English. The experience of writing for their Master’s degrees built up their knowledge of English academic writing and enhanced their writing skills (F1:ST:Para71; F2:ST:Para33; F3:SSI:Paras37-39; F4:SSI:Paras53-56). F5 indicated that she published journal articles in English when doing her first Master’s degree in China, which developed her confidence (F5:SSI:Paras173-178). M1 was the only participant who started to learn English academic writing while doing his PhD, and he acknowledged that his writing skills had gradually developed in the process (M1:SSI:Paras60-61).

However, writing the thesis was by no means an easy task. Apart from the English language itself (which will be discussed in Section 5.3.1.6), a range of sources gave rise to difficulties in writing, specifically:

- Synthesising the literature and integrating it into one’s existing knowledge network (F1:SR:Para199)
- Abstracting critical elements from the literature (F5:SSI:Para182)
- Not being good at abstract thinking (F3:SR:Paras50-54)
- Experiencing “writer’s block” (F2:SR:Para83)
Having problems with interpreting data because of the absence of a methodological framework (F4:ST:Para9; F4:SR:Para253; F4:SSI:Para56)

Lacking methodological knowledge of how to present the data in the thesis (F2:SSI:Para106)

Lacking theoretical preparation (F2:ST:Para15; F2:SSI:Para30; M1:ST:Para22)

Developing arguments (M1:ST:Para24; M1:SR:Para74)

Attempting to make theoretical breakthroughs (F3:SSI:Paras12-14; M1:ST:Para22)

Not having enough data (M1:SR:Paras48-50)

Controlling the size of the thesis (F2:SR:Para89)

It appears that the major causes for difficulties in writing were critical thinking ability, methodological issues, and theoretical issues. To overcome these obstacles, it was not enough to have good writing skills or knowledge of academic writing. In some cases, further development of theoretical and methodological knowledge was necessary. Nevertheless, the participants indicated that they used strategies to cope with the challenges, such as resourcing, modelling, using imagination, discussing the problem with others, help-seeking, and feedback-seeking.

5.3.1.3 Motivation

The data analysis revealed that the participants in this study were driven by mixed motives, which comprised intrinsic, extrinsic and/or achievement motivation. This classification of motivation was adopted from the literature (Biggs, 1987; Biggs & Watkins, 1996). Intrinsic motivation refers to the students’ true interest in what they are studying. By contrast, extrinsic motivation involves motives related to external factors such as studying for a qualification. Achievement motivation conveys the students’ sense of achievement.

Intrinsic motivation was identified in four participants’ interview protocols (F1, F2, F4, F5). This motivation was connected to their personal interests in researching or the topics that they were doing. For example, “After my Honours, I was quite interested in research, so I thought, well, all the conditions were working quite well for me, why not do a PhD” (F1:ST:Para23). “I enjoy doing my PhD because it’s
related to my teaching” (F2:SR:Para28). “I’m interested in [researching] these characters” (F4:ST:Para9).

Furthermore, the participants’ self-determination to do a PhD motivated them to set off on the journey and to be persistent in the process, despite the obstacles encountered. For instance, “The reason for that I don’t stop is that I had been keen to do it [the PhD]” (F4:ST:Para9). “Doing a PhD is a thing that I’ve long been wanting to do” (F5:ST:Para20).

One of the participants explicitly acknowledged the lack of genuine interest in doing research:

For most PhD students, they intend to work in schools or in research institutions after graduation but I have no interest in such jobs. I was not born a person for researching so when I was asked to do research, it’s difficult for me to settle down and do it. I have no interest in doing research. (M1:ST:Para20)

Without intrinsic motivation, M1 moved to Australia, carried out his full-time PhD study and completed it in a timely fashion, specifically, in three and a half years. This might be attributable to his only motivation which was extrinsic in nature (see discussions in following paragraphs).

The extrinsic motivation that the participants (F1, F2, F4, F5, M1) mentioned was dominantly related to their careers and/or families. Career-wise, the participant who had been working at a university (F2) perceived that the receipt of a PhD degree was a stepping-stone to promotion. For example, “Doing a PhD is good for my job. When I have a PhD, I’ll get promoted faster. Otherwise, you’ll never get promoted” (F2:SR:Para28). “As for me, I must do the PhD because I’m working at a university” (F2:SR:Para20). Similarly, the participants who intended to find a job in a university (F4, F5) believed that they would be qualified to teach at universities when they had their PhD degrees. For example, “I’ve never wanted to teach at high schools but, to teach at universities, you must have a PhD degree. A Master’s degree is not enough, especially in Australia. … So it’s a kind of instrumental motivation” (F4:SR:Para67). “I always believe it’s a qualification to have [for working at a university]” (F5:SR:Para64). “I’ll be going back to China [after the study]. It’ll be easy for me to
find a job at a university” (F5:SSI:Para21). For F1, her main motivation was the expectation of starting her career (F1:SR:Para331).

Some of the participants (M1, F4) moved to Australia to do a PhD for the benefit of their families. M1’s experience was most illustrative:

They asked whether I was interested in [taking up the project]. I considered that doing this project would mean that I would have to give up my job. That is, I must give up all that I had already achieved and develop a new career. … I compared the present with the future. … If I came to study, I might be able to find a job abroad after finishing the project. I must be paid better than in China. Moreover, I would be able to find a better educational environment for my child later on. Taking the family’s benefit into account, I mean, not only yourself but also your family who would benefit from it, I decided to come. (M1:ST:Para10)

By doing the PhD, most of the participants (F1, F2, F3, F4, F5) expected to attain self-development and to receive the degree. These expectations were identified as achievement motivation. Receiving the degrees was considered as achievement rather than extrinsic motivation in that the participants had related it to the sense of success rather than just an academic qualification (F1:SR:Para331; F4:SR:Para67; F5:SR:Para64).

With regard to self-development, the participants were expecting to improve their knowledge of theories (F2:SR:Para28), to develop expertise (F3:SR:Para211), to build up academic competence (F3:SR:Para117), to achieve personal development in researching (F4:SR:Para67), and to develop their English language competency (F5:ST:Para20).

This discussion suggests that the participants’ motivation had its root in the Chinese culture. In Chinese collectivist civilisation, motives for learning combine the factors of personal ambition, family expectations and pragmatic benefits (Biggs & Watkins, 1996; Stevenson & Lee, 1996). Furthermore, the perceived outcomes of education in Chinese culture involve the possibilities of upward social mobility and economic advancement, which are considered to benefit not only the individual but also the family (Li, 2002, 2003b; Smith, 1991; Stevenson & Lee, 1996), in addition to the primary goal of attaining self-perfection (Yu, 1996).
In terms of learning strategy use, the participants’ differences in motivation did not appear to cause differences in their learning strategy use. For example, as shown by Tables 5.10, 5.12 and 5.13, M1 who did not have an intrinsic interest in researching used a similar range of metacognitive, cognitive, and social/affective strategies as the participants who were intrinsically motivated (F2, F4). This was especially so at the subcategory level. This finding contradicts the findings of studies on self-regulated learning, which have profoundly established that motivation has important influence on students’ use of learning strategies (McWhaw & Abrami, 2001; Pintrich & De Groot, 1990). Most significantly, intrinsic motivation, or intrinsic interest in the academic tasks, was found to promote the use of cognitive and metacognitive strategies. In other words, students with high intrinsic interest used more cognitive and metacognitive strategies than those with low interest (see Section 2.3.1.2 for a detailed discussion).

5.3.1.4 Affective state

The participants emphasised that, to concentrate and work effectively on their PhDs, it was necessary to keep a calm mind (jing xia xin lai) (F2:ST:Para13; F3:ST:Paras133, 169, 173, 175). However, given the complexity and challenge inherent in the prolonged doctoral learning process, it was inevitable that the students would encounter some obstacles which would provoke destructive emotional reactions, such as frustration, boredom, stress, anxiety, loneliness and homesickness. The common consequences of such reactions were a loss of concentration and decreased learning efficiency.

The feelings of frustration, boredom, stress and anxiety were widely experienced by the participants at different stages of their research. For example, F1 was frustrated when she was not able to find sponsorship for conducting her survey after four months’ searching. F3 was frustrated with writing up the literature review and the discussion chapters. F2 easily got bored when reading theoretical material because of her lack of interest in it. Doing research itself was boring for M1, given that he genuinely was not interested in it.
However, the feelings of loneliness and homesickness were only reported by F5. She acknowledged that these feelings were the strongest in the first two weeks after her arrival in Australia. This seemed to be a combined effect of culture shock and stress, when her personal circumstances were taken into consideration. With respect to personal life, F5 moved to study in a country where she did not know anybody, she lived far from her family and had a child to look after (F5:ST:Para42). This left her in a very isolated situation: “I felt that only my child and I were left in the world. … I didn’t want to be here but just to go home” (F5:ST:Para42). With regard to the academic life, first, F5 was concerned with how to establish a working relationship with a supervisor whom she did not know prior to her arrival. This concern discouraged F5 from discussing her research with her supervisor, although she considered that it was important to talk about the research with others in the initial stages (F5:ST:Para34). Moreover, she was worried that she was not making good progress (F5:SR:Paras240-242), because of the distractions that she experienced when adapting herself to the new learning environment (F5:ST:Paras40-42).

As a student newly arrived in Australia, F5’s feelings of loneliness and homesickness were not shared by other participants. In contrast to F5, the other participants were either single or had their families living with them in Australia. Furthermore, they had been in Australia for much longer than F5, which ensured greater familiarity with the learning environment. The effect of culture shock might have thus diminished by the time they were interviewed. The other participants seemed also to have the advantage of knowing their supervisors through either work or previous study before they commenced their PhD study.

The discussion above suggests that the students’ emotional reactions to the learning processes were closely related to the nature of the tasks in hand, their individual perceptions of research or learning tasks, the outcome of their efforts, and their perceptions of the learning environment. Furthermore, for the student who was newly arrived from overseas, her unfamiliarity with the learning environment tended to magnify her negative feelings towards the surroundings and the learning itself.

When experiencing destructive feelings, the participants did not surrender to them. Rather, they actively responded to such feelings by adopting appropriate learning strategies to control their feelings and thus minimise the impact of them. As
discussed in Section 5.2.3, the strategies applied to achieve this effect ranged from emotional managing strategies to interpersonal strategies such as networking. This process involved personal development; as F1 said, “I learned how to deal with stress” (F1:SR:Para264) and to “deal with frustration” (F1:SR:Para309).

5.3.1.5 Self-knowledge

Self-knowledge, or “self-awareness” (Twining, 1991, p. 3), is what the students know about themselves. The data analysis identified that the participants’ self-knowledge guided their selections of learning strategies and influenced their self-confidence and independence in researching.

In the interviews, the participants demonstrated a high level of self-awareness. They were aware of what they liked or disliked, for example, “I like to sort my thoughts out by drawing diagrams” (F3:ST:Para165). “I don’t like abstract theories. I like practical things, such as how to teach grammar” (F2:SR:Para28). “I have no interest in doing research” (M1:ST:Para20).

The participants recognised what their own strengths and weaknesses were as well as what skills they had or did not have for the PhD studies, for example, “I know my weakness is in theories” (F2:ST:Para15). “I’m not good at abstract thinking” (F3:SR:Para54). “I was ignorant of linguistics when I started” (F4:ST:Para9). “I believe my methodology is a problem” (F4:SR:Para257). “I have no knowledge relevant to economic analysis from the Western economic view” (M1:SR:Para56). “Because I had experience doing my Honours thesis, … I knew how to do a survey” (F1:ST:Para125). “I did my Master’s here, … [so] I know how to write” (F2:ST:Para33; see also F4:SSI:Para54-56). “My research skills are not bad” (F3:ST:Para45). “I had a strong research background because I had more than ten years of teaching experience and I had done independent research” (F5:SSI:Para61). “I think I’m quite good at qualitative analysis” (M1:SR:Para56).

In line with their self-knowledge, the participants were aware of what research tasks were difficult or easy for them, and accordingly, they selected their learning strategies to facilitate the accomplishment of the tasks. For example, M1 acknowledged that he was weak in theoretical preparation and lacked knowledge
about the data analysis tool used in his thesis. To compensate for these weaknesses, M1 adopted the strategies of consulting, seeking training and resourcing. F2 shared weaknesses similar to M1’s. In order to carry out her study successfully, F2 selected the strategies of resourcing, advance planning, consulting and learning through trial and error. The differences in their choices of specific strategies revealed that the participants were capable of developing learning strategies in accordance with their individual needs and preferences.

The data further indicated that successful experience in their previous degrees or work tended to shape the participants’ perceptions of their strengths in researching. Furthermore, the participants’ realisation of their strengths encouraged their self-confidence. In contrast, the recognition of their weaknesses, to some extent, was responsible for their lack of self-confidence. For example, the accounts of the participants who were aware of their successful research backgrounds, on the whole, conveyed a strong sense of self-confidence. For example, “Supervisors are reading the second draft. … I’ll see what they’ll say but I personally think it’s pretty good” (F3:SSI:Para22). By contrast, the participants who recognised their weaknesses in theory and methodology tended to lack self-confidence in their own work. For example, “I have no confidence in my research methodology” (F4:SR:Para259; F2:SSI:Para38). “I wasn’t sure whether the last draft I gave to my supervisor was well written. He didn’t say much but good, well written, well written. He said so but I myself didn’t feel it’s very good” (F4:SSI:Para140).

Despite the differences in their self-confidence, the participants showed a strong tendency towards being independent in researching. For example:

[I meet my supervisors] on the basis of need. … I’m writing and refining my Chapter Two, so there’s no need [to see supervisors]. I have to read and write. That’s all that I do. I don’t need to see him. Yeah, until I have a pretty good draft, then I’ll go and show him. (F1:SR:Para354)

I feel it’s good to do it on your own and don’t always go to see supervisors. … I think it might be because of age. Young students might lack confidence in themselves so always wanted to talk with supervisors. As for me, I’d like to work things out first, and then discuss with supervisors. (F2:SSI:Paras78-80)
I believe, with regard to the research, you must do it on your own. It would be good enough if the supervisors could point out whether you’re following the track. I mean, if they could tell you that doing it like this was not good and you wouldn’t be able to get any result, or you can’t follow this direction, it would be enough.

(F4:SSI:Para136)

[After her topic was rejected, F5 re-recognised her own strength in researching and changed her attitude towards supervision.] I believe, no matter how, doing a PhD counts on yourself. Supervisors can’t help much so no help from them is normal. By thinking so, I adjusted my mind and decided to do it on my own. (F5:SSI:Para63)

As these quotes reveal, the participants’ knowledge of their direction, awareness of self-preferred working style, sense of responsibility and recognition of their own strengths contributed to their independence in researching.

5.3.1.6 Language competency

Speaking English as a second language, the participants, except for F2, did not seem to be concerned about their language competency, although they acknowledged the associated difficulties. The language issue appeared to be most apparent in writing, although it also impacted on reading and even the selection of research topics (M1:SSI:Paras150-151).

The participants held varied perceptions of the English language. Some of them were confident with their command of the language and did not think that it caused problems in writing (F4:SR:Para253). Some perceived that the linguistic mistakes in their theses were minor and the mistakes occurred because the language itself was not the focus of their attention when writing the draft (F1:ST:Para71; F5:SSI:Para61). They believed that to polish the language was a task for the revision stage while it was important to focus on the ideas in the first draft.

Other participants remarked that it was difficult to write in English (F2, F3, M1). For example, “[In English] academic writing, style is not difficult but the language is” (F2:SSI:Para106). “It’s very difficult. … Even now it’s still a difficult thing. Writing in English is not an easy job for us, non-English speakers” (M1:SSI:Para61). The perceived difficulties varied among the participants, including grammar
(M1:SSI:Para61) and wording, especially when translation from Chinese to English was involved (F3:SSI:Para41). However, some of the participants did not think these difficulties were unique to non-native English speakers and believed that even native speakers could encounter the same problems (F3:SSI:Para88).

F2 provided a profound view about the adverse impact of her language proficiency on her study. She recognised that, accompanied by her theoretical deficiencies, the difficulties associated with the language tended to interrupt her train of thought and thus obstructed the depth of discussions in her thesis. To achieve a better understanding of her viewpoint, it is worthwhile to provide an extensive quotation.

[After reading the first draft of conclusion,] my supervisor said that you’ve done a lot, why didn’t you write about it? … I think, on the one hand, it is because my thoughts were not as incisive as my supervisor’s; on the other hand, it’s because of the language. It hindered me. I believe if I wrote in Chinese, I would be able to provide a profound and clear presentation of it. However, when I was writing, I’ve never thought in Chinese but in English. When thinking in English, I found sometimes I still wasn’t able to achieve the depth. There were the occasions that I believed my arguments were strong enough, but he [the supervisor] still said it wasn’t. Why? I think, … to a great extent, it was a problem of the language.

(F2:SSI:Para130)

Sometimes, you think about some single words in Chinese. However, the whole thinking process is in English. So I believe if your English is extremely good, it may be able to facilitate your thinking. However, I’ve found my English has blocked my thinking. For example, sometimes, it’s not that I didn’t think about this issue. As my supervisor said, I covered it in the thesis but the discussion was too shallow. I mean, if you wrote it in Chinese, you could talk about it in much depth and relate it to other things. However, this doesn’t happen when writing in English. You just stop there … and do not penetrate further. When you think in Chinese, you will see this issue related to others and then link them up. But in English, you can’t reach such a level. … I believe it’s because of the language, given that language is the carrier of thoughts. Sometimes, when you’re writing in English and thinking about an issue, you suddenly noticed, oh, the grammar seemed not correct so you shifted your attention to checking grammar. … The thinking was so interrupted and you didn’t pick it up again. (F2:SSI:Paras141-149)
F2 described in detail how language deficiencies could interrupt her thinking and thus limit the depth of discussion in writing. To improve the quality of her writing, revision appeared to be imperative: “When doing revision, you’ll come up with many new ideas and probably resume the train of thought which somehow was cut short” (F2:SR:Para62; see also F2:SSI:Para153). Nevertheless, F2 indicated that the major cause of her problems in research was not the language but her understanding of the field and the research methodology (F2:SSI:Para223).

5.3.1.7 Cultural background

Diverse perceptions of the influence of cultural differences on their doctoral experiences were observed in the participants’ accounts. They were classified into two themes: one was related to learning; the other was relevant to supervision.

With regard to learning, some participants did not know whether or not they had learned differently because they had no communication with other students (F2:SSI:Para223). Some participants did not think their learning experiences were different from others’ (F3:SSI:Para88). However, the participants did notice that they were different from other students in terms of attitudes towards learning. That is, they were self-disciplined and devoted to their studies (F3:SSI:Para88; F4:SSI:Para168). Being a student who had been in Australia for years, F2 observed changes in her attitude. For example:

> It might be because I have been here for a very long time, I found …. although I study on weekends, I always think I shouldn’t have done that. Not very willingly. But when I was at university, I didn’t think like that. I was proud of myself to get up at five o’clock in the morning and study. (F2:ST:Para45)

Except for their attitudes to learning, the participants did not perceive that their learning experiences were different from others’. However, to the participants, the cultural differences seemed more apparent with regard to supervision. There were two general viewpoints. Some participants perceived that cultural differences predominantly influenced the communication between them and their supervisors (F5:ST:Para34; M1:SSI:Para114). However, other participants maintained that
individual characteristics rather than cultural differences played the more important role (F1:SSI:Para145; F2:SSI:Para80; F3:SSI:Para70; F4:SSI:Paras125-136).

The participants who perceived that cultural differences influenced the supervision received believed that mutual cultural understanding would promote communication between the students and supervisors (F5:SR:Paras27-30; M1:SSI:Paras128-129). Otherwise, misunderstandings could occur and break down the communication:

It after all involves two different cultures so it’s awkward to talk about some issues frankly. … Once, because of the topic problem, I brought the supervisors’ responsibilities [in the booklet] to him. I believed that supervisors had the responsibility to help. However, his understanding was that a supervisor wasn’t able to help you until you had a topic. I mean, my understanding was different from his. According to my understanding, supervisors help the students to develop a topic. According to his understanding, students have to find a topic on their own. So I didn’t know. … There was something very funny in it. He had an impression that I was expecting him to give me a topic. … Actually, that was not my intention. I only hoped he was able to give me some guidance, for example, to suggest which books to read. However, he just thought that you shouldn’t expect supervisor to give you a topic. … This was a kind of misunderstanding. So after that, I didn’t discuss this issue with him at all. (F5:SSI:Paras69-71)

F5 believed that it was not a good start to work with a new supervisor who knew nothing about the student beforehand (F5:SR:Para255). In addition to the cultural differences, M1 and F5 perceived that the personal characteristics of the students and supervisors might have played a role in the process (F5:SSI:Para91; M1:SSI:Paras115-120). The participants further suggested that the students and supervisors’ knowledge about each other at the personal level and sharing a research interest were important for achieving an effective supervision (F5:SR:Para84).

In contrast, other participants tended to emphasise their own adaptation to the host culture (F1:SSI:Paras132-141; F3:SSI:Paras67-70), and the match between work ethic or the working styles of both students and supervisors (F1:SSI:Paras123-131; F4:SSI:Paras125-138). Furthermore, they believed that the individual’s personality (F1:SSI:Para131; F3:SSI:Para70) and age (F2:SSI:Para80) would make a difference to their interactions with supervisors. Other factors valued by these participants were
mutual respect (F4:SSI:Para134), mutual trust (F1:SR:Para358; F4:SSI:Para126), frankness (F3:SSI:Para62; F4:SR:Para145) and knowing each other well at the personal level (F1:SR:Para360). In other words, from their point of view, the interactions with supervisors were influenced more by personal variables than by cultural differences.

This discussion suggests that the students who were relatively new to Australian universities tended to interpret the encounters from a cultural perspective while the students who had been in Australia for a longer time (over two years) were inclined to adopt a personal perspective. This, to some extent, had an obvious influence on their selection of interpersonal strategies. For example, the new arrivals may have been reluctant to use the strategies of help-seeking from supervisors or consulting supervisors, as suggested by F5’s experiences (F5:ST:Para34). As discussed in Section 4.6.2, in the initial stages of her study, F5 perceived it was important to have somebody to talk to. However, she decided to have discussions with peers instead of with her supervisor because she was concerned about taking up too much of the supervisor’s time and she was not comfortable discussing her thoughts with a supervisor who did not know much about her (F5:ST:Para34).

5.3.2 Contextual domain

A wide range of contextual factors were identified as influencing the participants’ use of learning strategies. These factors included the participants’ perceptions of the PhD (Section 5.3.2.1), the supervision received (Section 5.3.2.2), the nature of the research tasks (Section 5.3.2.3), the participants’ perceptions of isolation (Sections 5.3.2.4), family-related factors (Section 5.3.2.5), the mode of attendance, financial issues, peers, the participants in their studies, and the availability of information on training opportunities. To control the size of this thesis, the discussion in this section will selectively focus on the first five factors.
5.3.2.1 Perceptions of the PhD

Five types of perceptions of the PhD were recognised in the interview data: a transaction tool, a qualification, the highest academic degree, a big research exercise, and a learning process. These perceptions existed independently or jointly among the participants and appeared to be relevant to their interest in and motivation to study (for a detailed discussion of their motivations, see Section 5.3.1.3).

As a transaction tool, the PhD degree was perceived to enable the students and their families to immigrate to Australia. For example, “I need the PhD degree for my application for immigration” (M1:SSI:Para106). In this situation, the student (M1) would not necessarily have an intrinsic interest in the study, “I have no interest in doing research” (M1:ST:Para20). However, the student possessed powerful motivation to accomplish the task, “I hope to finish my thesis as soon as possible” (M1:SSI:Para104).

As a qualification, it was perceived that the receipt of the PhD degree would facilitate job promotion or secure job opportunities in certain areas such as teaching at universities. This perception promoted the participants’ (F2, F4, F5) extrinsic motivation but did not consequentially negate the students’ intrinsic interest in their studies (see Section 5.3.1.3 for a detailed discussion).

As the highest academic degree, the receipt of the PhD degree encouraged the students’ sense of success. In these circumstances, some participants’ (F1, F3, F4, F5) achievement motivation was enhanced, as discussed in Section 5.3.1.3. The relationship between this perception and the students’ interest in studying was not straightforward. For illustration, F4’s accounts are quoted:

Personally, I also want to have a PhD. I mean, even if I’m not going to work at universities, I still want to have a PhD because I used to wish to obtain the highest academic degree. I think, since I have got into the cycle of studying, I don’t like to stop at the average level. I just want to have a very high degree. … Because of the Great Cultural Revolution, most of my classmates lost the opportunity for schooling. I did some self-teaching during that period and passed the entrance examination to a foreign language university after the Great Cultural Revolution. Few of my
classmates went to universities and I was one of the lucky ones. Since I’ve followed the track of schooling, I think I must finish it at the summit and do well.

(F4:SR:Para67)

As a big research exercise, PhD studies provided students with an opportunity to polish their research skills and to further develop their competence. For example, “Frankly, you’re doing a big exercise. After graduation, … your research assistant will help you to do it and you won’t need to do so much. So this is an opportunity for you to do an exercise” (F3:ST:Para91). In this study, the student who perceived the PhD as a big research exercise was found to have only achievement motivation, accompanied by strong self-confidence.

As a learning process, PhD studies encouraged the students to open up for new learning experiences. In the interviews, the participants (F1, F2) who perceived the PhD as a learning process tended to express their need to learn more theory and methodology (including data collection and analysis methods and skills). Furthermore, they perceived that the PhD thesis was not a perfect piece of work but just a process through which they learned to be a researcher (F1:SR:Para95; F2:SR:Para152). This could impact on their self-requirement of the thesis’ quality, for example, “as long as I can pass, it’s enough” (F2:SR:Para152). The participants who perceived the PhD as a learning process reported possessing intrinsic, extrinsic and achievement motivation.

5.3.2.2 Supervision

The participants appreciated that their supervisors were approachable, supportive, encouraging and motivating, although some of them found that their supervisors were experienced and others noticed that their supervisors were inexperienced. The participants’ experiences of supervision were mixed (see Chapter Four for a detailed discussion of individual supervisory experiences). Some of them enjoyed highly positive experiences resulting from a “very trusting and close” supervisory relationship (F1:SR:Para366). However, some had depressingly negative experiences, such as the supervisors’ rejection of a research topic (F5:SSI:Para13).
A comparison of the role played by supervisors and the role of supervisors as perceived by the participants disclosed that the participants’ expectations of supervision were met in general, as shown in Table 5.17. However, what gave rise to concern was not whether their expectations were satisfied. Rather, it was the quality of the supervision received.

Table 5.17 A comparison of the role played by supervisors and the supervisors' role as perceived by the participants

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<tr>
<th>The role played by supervisors</th>
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<tr>
<td>● Providing guidance</td>
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<td>● Providing feedback</td>
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<td>● Providing consultation</td>
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<td>● Checking on the quality of students’ research</td>
<td>● Checking on the quality of students’ research</td>
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<td>● Providing academic help</td>
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<td>● Encouraging students</td>
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<td>● Motivating the students</td>
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The primary expectation that the participants had for their supervisors was to provide guidance. Some of the participants indicated that they received specific and constructive guidance from their supervisors. For example, F1’s supervisors advised her on the principles of analysing data (F1:SSI:Para22). F2’s supervisor suggested that she set up goals for each stage (F2:SR:Para81). F3’s supervisors provided her with a framework for writing up the data analysis (F3:SSI:Para18).

However, some participants did not receive the guidance needed at crucial stages of their studies. For example, F5 wished to have her supervisors’ guidance when she was developing her first topic. In addition, she was aware that “supervisors have responsibilities to help students to develop a topic, to recommend books to read, and much more,” which were outlined in the postgraduate handbook (F5:SSI:Para61). F5 indicated that her expectations were reasonable. However, “I did not receive any such assistance [from my supervisor]” (F5:SSI:Para61). For instance:
I felt the methodology was a bit weak. I wondered whether there’s a better way to do it. Instead of suggesting constructive ideas, he said if you couldn’t work out the methodology, you can’t follow this direction. … This disappointed me. 

(F5:SSI:Para63)

The participants tended to take seeking supervisors’ comments on their work, especially the writing, as an essential mechanism for quality control. They seemed to believe that supervisors would recognise the strengths and weaknesses or problems in their research. Moreover, they tended to believe that they would pass the final examination once supervisors gave a green light to their thesis. Consequently, the participants expected to receive critical and constructive feedback from their supervisors, as discussed in Section 5.2.3.1. However, their expectations sometimes were not realised. For example, “When you talked to him, whatever you did was OK, was good. He never wrote comments on my writing, except for correcting some grammar mistakes” (F5:SSI:Para61).

Students seemed to benefit most from supervision which involved the elements of training and guiding students into a broad academic culture, as F1’s experiences suggested.

My supervisor organised a seminar on the first day or second day I arrived. [Let me] give a seminar to the School or the people who were interested. That basically got things going because through the seminar I met some people at this university from different schools … who were interested in the same area. They gave me some pretty good feedback. (F1:ST:Para23)

I think my supervisor tends to organise a seminar for me at each stage of my research, mainly after my data collection or data analysis. Like when I finished my first stage of research, he organised a seminar for me. … After the second stage, he did something else. (F1:SR:Para89)

Through attending or giving a speech at seminars and conferences, F1 received feedback on her research from a wide audience (F1:SR:Para95), felt intellectually stimulated (F1:SR:Para117), and started to network with other PhD students (F1:SR:Para115).
With regard to the supervision received, some participants tended to compare what they experienced in Australia with the academic practices in China, which ranged from the development of a research topic to student-teacher relationships. For example:

In China, your supervisor would assign you a topic but here you have to develop it yourself. (F2:SR:Para176)

If you didn’t ask him [the supervisor] questions, he would think you know everything. Only when you ask him does he explain it to you. He doesn’t take the initiative to ask you whether you have any difficulties in the study. This could be a difference [between the East and the West]. (M1:ST:Para26)

In China, the supervisor teaches you step by step. He gives you advice from the beginning till the end. That’s why students are very dependent. Here I have nobody to rely on. … I feel very good. Don’t often see supervisors. (F2:SSI:Para78).

Probably, the most significant difference between us is that the Chinese students usually would like to be encouraged or driven by your supervisor. We are so accustomed to following the orders of our teachers. But in Australia, the teachers don’t give orders quite so often. They don’t push you too often as Chinese teachers do. In most cases, they would like you to design your work, your tasks on your own. Actually, it’s a bit difficult to get used to this kind of cultural environment. I don’t know whether other supervisors have similar characteristics. (M1:SSI:Para114)

These comparisons indicated their understanding of what they were expected to do as a PhD student in Australia. This encouraged their development of independence, for example, “I try to take the initiative to do something” (M1:SSI:Para120).

5.3.2.3 Research tasks

When research tasks were taken into consideration, a number of elements were observed to have important influences on the participants’ learning strategy use. These included the origin of topics and the participants’ perceptions of complexity.

The origin of topics refers to the bases on which the participants developed their PhD research topics (see Appendix 18 for the origin of each participant’s topic). Two
origins were identified in the data: previous academic studies and work experience. This dissimilarity in origin was found to cause significant differences in the participants’ content knowledge. As the narratives in Chapter Four suggested, the participants (F1, F3) whose PhD research was related to their previous academic study would be continuing in the same field, and thus launched into the process with a profound content knowledge base. For example, “The topic that I am looking at for my PhD actually came out of my Honours study” (F1:ST:Para23). “By the time [that I started my PhD], I had actually reviewed all the literature. Not all of them but most of them” (F1:ST:Para23).

However, the participants (F2, F4, M1) whose topic emerged from work experience were most likely to embark on a field different from their study for previous degrees, and they consequently tended to experience problems of theoretical deficiency. For example, “My research is to solve this problem [encountered in my teaching]” (F2:ST:Para13). “I’ve never studied education so I don’t know much about teaching and linguistics. By doing the PhD, I wish to learn some theories in this respect, and to solve the actual problem” (F2:SR:Para28). In realisation of the theoretical deficiency, the participant (F2) was concerned that it would take a considerable amount of time to catch up with the literature which was new to her. To maximise the effectiveness of her research activities, F2 adopted the strategy of advance planning:

I know I’m weak in theory and should do a lot of reading. However, I don’t have that much time. I can read but it could take me four years to finish the reading before I was able to start writing so I didn’t want to do that … but just to learn it while writing. … At first, my supervisor suggested that I finish the literature review first before carrying out the experiment. I said my progress would be very slow if I did it that way. I’d like to do the two simultaneously. (F2:SR:Para40)

The strategy of doing “the two simultaneously” seemed to be effective for F2, given that she completed her part-time study in three years of full-time equivalent. However, this strategy had its own disadvantages, as discussed in Section 4.3.2. To deal with the same problem of lack of theoretical preparation, M1 and F4 applied different strategies; both of them concentrated on building up the knowledge of the field before they collected data.
The participants’ perceptions of complexity appeared to be relevant to their execution of self-evaluating (also see discussion in Section 5.2.1.3):

Anyway, I’m not confident. … My research is very simple. (F2:SR:Paras126-128)

I feel my language is very plain. I think a doctoral thesis should be full of profundity, or at least the language should be of certain complexity, but that is not the case of mine, … especially in the conclusion part. (F2:SSI:Para30)

I feel that my methodology is a problem. … It’s not that I haven’t written about the methodology. I have. The crux of the matter is that I don’t know why other people’s writing is that complicated. … In their research, the models were so complex that I wasn’t even able to understand. (F4:SR:Para257)

It appeared that, when they perceived that their own research lacked complexity, the participants tended to devalue their own work, and in turn, their self-confidence was decreased.

5.3.2.4 Perceptions of isolation

All six participants acknowledged that they were situated in an isolated learning environment. However, their perceptions of this isolation varied. Specifically, one participant (F2) did not feel the isolation; another (F4) enjoyed the isolation; some (F1, F3, M1) strategically diminished the feeling of isolation; and another (F5) suffered from the isolation. There were a number of factors underlying these differences, which included personal circumstances, familiarity with the environment, personality, learning style and learning strategy use.

In terms of personal circumstances, the students who had other commitments such as work and were under the pressure of time tended not to feel isolated:

I don’t have such feelings because it seems that I don’t have time to feel isolated. Most of the time I have to work. If I could have one or one and a half days in a week for my research, it would be very good. I feel very busy and am not feeling isolated. (F2:SSI:Para219).
However, students who moved to Australia from overseas and did not have acquaintances here would experience the feeling of isolation, especially in the early stages. In other words, the feeling of isolation would be magnified by the students’ unfamiliarity with the learning and social environments:

As a Chinese student, you came to a new environment, knowing nobody here. It’s very suffering to be put in such a position, [working lonely in your own office]. If I had grown up here, I would have another life besides doing a PhD. However, you came from overseas and you don’t have another life besides your PhD. … Suddenly, you were segregated. This is not good, very bad. If you had already done your Master’s study here, it would be much better. (F5:SSI:Para152)

The situation seemed to be most distressing for students who had an outgoing personality:

I enjoy doing the tutoring very much. At least, … you are not living in an isolated world. … I desperately need some social interactions. Otherwise, it would be too difficult. I always enjoy being with others. This is my personality. At the beginning, I just felt like I had dropped into an ice-hole. (F5:SSI:Para146)

In contrast, the students who preferred to study in isolation found that this situation was enjoyable. For example, “I don’t communicate with others. Some people say you’ll feel isolated when doing research. I like this kind of isolation. This is my style. I’d like to do it on my own, and rarely communicate with others” (F4:SSI:Para150).

Other students took initiatives to diminish the feeling of isolation by applying learning strategies, such as networking and self-adjusting:

By going to a doctoral colloquium, things like that, you meet with other PhD students, who experience exactly the same thing. You can at least find some moral support. … If you find someone who is on the same boat, you don’t feel very isolated or lonely. You don’t feel you that you’re the only one pathetic person in this world experiencing the difficulty. (F1:SR:Para309)

Having moral support from others appeared to be important for students to cope with the isolation. However, when face-to-face communications were absent, the
application of technology played a role in connecting students with others. For example, “I do not feel much [isolated]. Though I don’t have face to face talks with others, I have many communications with others by emails and phone. In addition, I have frequent meetings with my supervisor” (M1:SSI:Para147).

It appears that the participants had different perceptions about what caused the isolation. One of the participants (F5) was concerned that the state of isolation was generated from the structure of the PhD program (F5:SSI:Para152). Therefore, she suggested that the solution to this problem was to change the structure of the program (F5:SSI:Para135). In contrast, another student (F3) appreciated that the isolation was part of the inherent nature of the PhD learning process. She emphasised that it was a matter of how students perceived the situation and believed that students would be able to control its effects by adjusting their own emotions.

5.3.2.5 Family

Family plays an important role in Chinese students’ learning, as the literature suggests (Lee, 1996; Li, 2002, 2003b). The same importance was observed in this study. First of all, family formed part of the students’ motivation (see discussion in Section 5.3.1.3). Next, it was an essential source of encouragement and support. Nevertheless, looking after a family took up time and energy, which participants (F2, F4, F5) recognised as one of the causes for the lack of time and concentration.

As briefly mentioned in the last section, Chinese students studying overseas had fewer social connections, compared with local students. This left them in a relatively isolated situation. Besides supervisors, family, whether living together with them in Australia or not, inevitably became the main source of encouragement and support.

I brought my family here. … When you write the thesis, you need the support from them. (M1:ST:Para14).

Talking to my family on the phone, I said I don’t want to be here, I don’t want to do the PhD. We’re too lonely here. They said, don’t worry, go out for fun. Everything will be fine when you’re making friends. (F5:ST:Para42)
My family is always very encouraging. On the phone, they kept saying, you’ve been doing very well. Don’t require too much of yourself. … This makes me feel very good and it’s a very important support for me. (F5:ST:Para46)

As for the students with a young family to look after, if they had been studying in China, they would not have had to deal with this commitment on their own because other members in the family would have helped them with it. However, in Australia, they had to cope with the commitments on their own, along with doing the PhD. This put extra pressure on their concentration and time management, especially for part-time students, as the following excerpts indicate:

If it was only the work and study, it would be fine. However, you have still a family to look after so you’ll feel that you don’t have enough energy. This is a big problem for me.

(F2:SR:Para40)

I’ve found the teaching is very distracting. In addition, I have a family to take care of. … All of these take up much of my time and my study has been badly held up.

(F4:ST:Para9)

So far, the analysis has concentrated on factors in the personal and contextual domains, and shows that these factors operated together rather than independently on the participants’ learning strategy use.

The examination reveals that the participants’ experiences of doctoral learning were distinctively individualistic, and so was their learning strategy use, although they shared certain commonalities. They were all diligent, persistent, self-disciplined, self-motivated and willingly took responsibility for their own study. However, given the differences in their research experience and the origins of their topics, they differed widely in research competence and theoretical preparation for their PhD studies. Furthermore, the length of their stay in Australia and their experiences of studying overseas appeared to influence their interpretation of the surroundings. However, all the participants showed an understanding of the expectations of them as PhD students in Australia, that is, to be independent in their studies, which they acknowledged was very different from the expectations in China. The participants
were aware of adapting themselves to the new learning environment, although conflicts sometimes were encountered.

5.4 Summary

This chapter systematically analysed the participants’ learning strategy use (Section 5.2) and the factors pertaining to their learning strategy use (Section 5.3). It was found that the participants used a variety of learning strategies to facilitate their doctoral learning. The most popular strategies were planning, self-monitoring, and self-evaluating in the metacognitive strategy category; resourcing, seeking training, writing-specific strategies, practising, self-questioning, and publishing while doing the research in the cognitive strategy category; and interpersonal strategies, concentration managing strategies, emotion managing strategies, and motivation retaining strategies in the social/affective strategy category. Nevertheless, individual differences in the application of these strategies were observed as a result of the influence of personal and contextual factors.

The examination of the factors relevant to the participants’ learning strategy use provided a comprehensive understanding of the characteristics of the participants, their interactions with the learning environment, and their doctoral learning experiences. It was observed that the participants commenced their PhD studies with varied motivation and diverse perceptions of what a PhD is. Despite these differences, they all demonstrated diligence, persistence, self-discipline and self-motivation in the learning process. Furthermore, they showed a high level of willingness to take responsibility for their own studies.

The differences in their academic experiences and the origins of their research topics resulted in differences in their research competence and theoretical preparation for the PhD research. This was observed to have an important influence on their self-confidence, their overall PhD experience, and eventually on their learning strategy use.

Furthermore, the length of the participants’ residence in Australia and their overseas study experience had more influence on their interpretations of the surroundings (e.g., with respect to supervision) than on their learning strategy use. By comparing the
academic practices in China and Australia, the students understood that they were expected to be independent learners in the process, and they consciously made the effort to adapt themselves to the new learning environment, although conflicts sometimes were encountered.

To sum up, the analysis of the participant’s learning strategy use and the factors influencing their learning strategy use reveals more individual differences than commonalities in their doctoral learning. Despite the differences, the participants were found to be able to use effective learning strategies to facilitate their learning, in accordance with their personal circumstances and the requirements of their learning environment.

In the next chapter, the final chapter of the thesis, conclusions will be drawn, based on the discussion of the findings. Implications of the findings for PhD students, supervisors, and institutions will be discussed before recommendations for further research are made.
6.1 Discussion of findings

This study aimed to understand the learning processes of Mainland Chinese PhD students of social sciences in Australian universities with a focus on their learning strategy use. The research methodology focused on examining the phenomenon from the learners’ perspective within the context (Chapter Three). The findings of within-case (Chapter Four) and cross-case analyses (Chapter Five) of the interview data lend support to the studies which challenge the stereotyped views of Chinese students (Section 2.5.5) and which argue for a contextualised approach to investigate the learning behaviours of these students (Section 2.5.6).

The participants collectively exhibited diligence, persistence, self-discipline and self-motivation in the learning process, and showed a high level of willingness to take responsibility for their own studies (Section 5.3.1.1). These qualities are desirable for doing a PhD (Wright, 1986) and are traceable to their previous education received in China (Section 2.5.1 and Section 2.5.2). However, as individuals, they possessed distinctive personalities, motives, and perceptions of the learning environment; and differed in theoretical and methodological preparation for their doctoral studies (Chapter Four and Section 5.3). These personal differences determined the idiosyncrasies of their learning.

This study found that the participants’ theoretical and methodological preparation for their PhD research rather than their ethnic background significantly influenced their overall learning experience. Nevertheless, the cultural impact on their interactions with supervisors was noticed by some participants. In general terms, the participants who were in the first two years of their studies tended to emphasise the cultural difference between them and their supervisors and its influence. By contrast, the students who had been in Australia for over two years tended to interpret their supervisory experiences from a personal perspective (e.g., personality of supervisor or student, mutual trust) (Section 5.3.1.7). Furthermore, influenced by their perceptions of teacher-student relationships developed in their previous educational experience, the students who had obtained Master’s degrees in China had a strong tendency to depend on their supervisors in the early stages of their candidature. For
example, they tended to seek help from supervisors when encountering problems; they expected to have supervisors’ instructions on what to do next. Nevertheless, these students gradually developed a higher level of independence in the process when they understood that they were expected to be independent in doing the PhD. In contrast, the students who completed their Master’s degrees in Australia showed a preference for independence and were able to keep a balance between dependence and independence while doing the research. Although the supervisory issue appears to be an important area that invites further investigation, it will not be elaborated on in this thesis, given that discussion about the supervisor-supervisee relationship *per se* is beyond the scope of this study.

This study revealed that, in the learning processes, the participants applied a variety of learning strategies to attain their ultimate goals. Although they shared similarities in their strategy use, significant individual differences were observed in their application of specific strategies, which were influenced by personal and contextual variables. The most influential personal variables were personality, research competence and prior knowledge about the field, and the length of residence in Australia. Contextual influences were mainly brought about by the supervision received, the stage of their PhD research, individuals’ perceptions of the learning environment (e.g., research tasks undertaken, isolation, supervision received), and their interactions with others (e.g., supervisors, peers, and other academics). The key findings of this study will be discussed in the following paragraphs.

Coming from a non-English speaking background (NESB), some of the participants shared the problems that the other NESB students might have encountered, such as difficulties caused by language proficiency and the challenges of the research tasks which required critical and analytical skills (Aspland, 1999a, 1999b; Belcher, 1994; Cadman & Ha, 2001; Farquhar, 1999; Maheshwari & Malfroy, 2001; Parry & Hayden, 1994; Smith, 1999). Nonetheless, the students in this study perceived that the major causes of their problems in the PhD research were not the language but their knowledge of the field and research methodology. In other words, the students’ theoretical and methodological preparation was the most important influence on their doctoral learning experience.
It was found that the students who were less experienced in researching and were doing a PhD in a field different from their previous academic studies were likely to encounter problems of theoretical deficiency, insufficient methodological knowledge, and underdeveloped research skills. These students tended to lack confidence in both themselves and the quality of their research. In contrast, the students who were experienced in researching and were doing a PhD based on the research done for their previous academic degrees showed confidence in both their theoretical knowledge of the field and research competence. Nevertheless, these experienced research students also indicated the need to further develop their methodological knowledge and research skills, especially for data analysis.

Methodological issues were observed to be the major concern shared by both experienced and less experienced research students. However, this problem was not unique to this group but also widely experienced by their local counterparts (see discussion in Section 2.4.2.2). To cope with methodological difficulties, the participants identified the need to learn more about research methodology and further develop their research skills. For the students who lacked prior knowledge of their field of interest, they also articulated the need to build up their theoretical base.

In line with their needs, the participants applied a number of learning strategies to facilitate their learning and problem-solving. The analysis of their learning strategy use revealed that this group of students were autonomous learners. Specifically, the participants formulated plans for undertaking their studies. In addition, they monitored the learning process or evaluated the outcomes of their learning and research activities as well as the quality of themselves as researchers. Through these processes they identified on their own the impediments to their progress and the areas needing improvement. Subsequently, they adopted relevant learning strategies to enhance their learning efficiency or the quality of their research. Moreover, through their doctoral experiences the participants who initially tended to rely on supervisors learned the need to be independent and consequently developed strategies to support their independent learning. By applying interpersonal strategies, the participants made use of available intellectual resources to meet their learning needs or to solve the problems encountered. Furthermore, the participants were aware of the impact of their affective state on their learning. When they observed that their learning productivity was reduced by a lack of concentration or the disturbance
of negative feelings, the participants were able to develop strategies to minimise the adverse effect and maintain a constructive mood for studying. However, it was found that the students who had little control over the distractions experienced tended to face a prolonged candidature.

Furthermore, the analysis of the participants’ learning strategy use showed that the moral support received from supervisors, peers and families had played an important role in allowing them to cope with the difficulties encountered. With regard to the involvement of peers in their coping mechanism, although other researchers found that Chinese students tended to seek collegial support from those who came from similar cultural backgrounds rather than from the host country (McClure, 2003), the participants in this study did not show such a preference. Rather, they valued the interactions with peers who were studying in the same field, using the same methodology or having knowledge of the methodology that they applied, or working at a similar or more advanced stage of research (e.g., reviewing literature, analysing data, and so on). A number of researchers were concerned that international RHD students were disadvantaged in accessing peer and academic cultures (Deem & Brehony, 2000; Friedman, 1987). This issue was also observed in the present study. However, the participants’ experiences showed that some students were able to take the initiative to expand their networks by attending conferences, seminars, or the activities organised by postgraduate associations while others chose to be isolated.

This study further found that the metacognitive and social/affective strategies used by this group of Chinese PhD students (Section 5.2.1 and Section 5.2.3) were identical to those used by students in classroom settings (Section 2.2.2.1 and Section 2.2.2.3). However, significant differences existed between the cognitive strategies used by this group of PhD students (Section 5.2.2) and those used by students in classroom settings (Section 2.2.2.2). These findings support the observation that metacognitive and social/affective strategies are transferable across learning contexts and tasks whereas cognitive strategies are more contextualised and less transferable across different types of academic tasks (Alexander, Graham & Harris, 1998; Biggs, 1984; O'Malley & Chamot, 1990; Veenman & Verheij, 2003). The similarities recognised in the metacognitive and social/affective strategies used by this group of Chinese PhD students and those used by students in classroom settings support in part the findings of Denzine and Pulos (2000). They indicated that doctoral students’
learning strategy use was similar to that of undergraduate or even high school students (Denzine & Pulos, 2000). However, given that by definition cognitive strategies operate directly upon learning tasks, the differences in the cognitive strategies used by this group of Chinese PhD students and those used by students in classroom settings strongly suggest that the independent nature of doctoral learning in social science disciplines (Parry & Hayden, 1994; Whittle, 1992) requires PhD students to develop learning strategies which assist self-teaching and development of research competence (see Section 6.3.1.2 for further discussion).

With regard to the individual differences in learning strategy use within this group of Chinese students, this study found that the participants’ application of specific strategies in the three general strategy categories (i.e., metacognitive, cognitive, and social/affective strategies) was determined by both their personal and contextual variables, as mentioned above (p. 269). This finding was consistent with the stance established by the existing literature on learning strategies that the selection of learning strategies is influenced by personal variables, factors in the learning environment, and the interactions between diverse personal and contextual factors (Section 2.3).

In this study, a number of trends in relation to personal differences in learning strategy use were observed. The most important ones are summarised as follows. First, the students who perceived that only supervisors knew about their research or who preferred to work in isolation tended not to use the strategy of networking. They either had constrained interactions with only supervisors or made limited use of interpersonal strategies which involved peers. By comparison, the students who appreciated input from varied intellectual sources or who were extrovert made a greater use of interpersonal strategies involving not only supervisors but also other academics and/or peers.

Second, compared with those who had been in Australia for a longer time and were in the advanced stages of their research, the students who were newly arrived in Australia and in the initial stages of the PhD research used the most varied metacognitive and the least varied cognitive strategies. The new students’ use of varied metacognitive strategies appeared to be attributable to their unfamiliarity with the learning environment. Furthermore, working in the early stages of the PhD, they
tended to have a lower level of confidence about what they were or would be doing in their research. This could have impacted on their metacognition and subsequently on their use of metacognitive strategies. However, the differences in their use of cognitive strategies seemed more related to the complexity of research tasks at different stages and the variety of research tasks that the participants had undertaken, given that cognitive strategies were more task specified than other strategies (Alexander, Graham & Harris, 1998; O'Malley & Chamot, 1990).

Third, compared to those who lacked theoretical and methodological preparation for their doctoral studies, the students who were experienced in researching and had a good knowledge of their fields showed a higher level of self-confidence and used more varied cognitive but less varied metacognitive strategies in their learning. The finding was consistent with the notion that students are less likely to monitor their own learning activities when dealing with easy tasks as opposed to difficult tasks (Schunk, 2004). However, this observation was only partially in agreement with the findings in the literature on learning strategies that students with a higher level of self-efficacy used more varied cognitive and metacognitive strategies than others (Section 2.3.1.2). It appeared that self-efficacy had different functions in doctoral students’ learning strategy use than those of students in classroom settings. Nevertheless, further research needs to be done to verify the observation.

It is worthwhile to note that motivation has been recognised as an important factor influencing students’ learning strategy use (Section 2.3.1.2). In particular, intrinsic motivation, or an intrinsic interest in academic tasks, is found to promote the use of cognitive and metacognitive strategies and enhance students’ persistence at tasks (McWhaw & Abrami, 2001; Pintrich & De Groot, 1990; Wolters & Pintrich, 1998). However, in this study, the participants’ differences in motivation did not appear to be relevant to the differences in their learning strategy use (Section 5.3.1.3). The student (M1) who had only extrinsic motivation and lacked an intrinsic interest in research used as varied strategies as those who were intrinsically motivated. This suggests that the role of motivation in student learning may vary in accordance with learning contexts. However, further research examining the relationship between motivation and doctoral students’ learning strategy use will verify and improve the understanding of this phenomenon.
The findings of this study support the observation that Chinese students strategically adjust their learning behaviours in line with the requirements of different educational systems (Chan, 2001; Volet & Renshaw, 1995, 1996). Rather than being culturally bound or unchangeable across educational contexts, their learning strategy use was influenced by the dynamic interactions between personal and environmental factors. Furthermore, the analysis of the participants’ learning strategy use indicated that, although they were able to use learning strategies to facilitate their independent learning and problem-solving, the efficiency of their efforts could be further improved by formal training on methodology and generic research skills in the early stages of their PhD studies and on-going methodological assistance, especially at the stage of analysing data. In the following section, the implications of the findings will be considered with regard to students, supervisors and institutions.

6.2 Implications of findings

6.2.1 Implications for students

The findings of this study suggest that it is essential for PhD students to apply learning strategies in order to complete their studies within the stipulated time frame. The effective use of learning strategies allows students to gain control of their own learning, to take responsibility for their own studies, and ultimately to attain their learning goals (e.g., Clifford, 1999; Entwistle, 2002; Weinstein & Van Mater Stone, 1996). The students in this study used a number of learning strategies to improve the efficiency of their learning and research activities, and to teach themselves to become better researchers. The strategies relevant to the improvement of learning efficiency were mainly metacognitive and social/affective strategies, including planning, self-monitoring, self-evaluating, interpersonal strategies, concentration managing strategies, emotion managing strategies, and motivation retaining strategies. The important strategies for enhancing the outcomes of their self-teaching and the quality of their research were resourcing, seeking training, writing-specific strategies, practise, learning through trial and error, self-questioning, and publishing while doing the research. The implications of these strategies will be delineated in following subsections.
6.2.1.1 Strategies for improving learning efficiency

When the time for learning is restricted, it is important for students to plan their study (Eilam & Aharon, 2003). Both this research (Section 5.2.1.1) and the existing literature on learning strategies (Section 2.2.2.1) suggest that effective planning involves setting up goals to attain (i.e., goal setting), sequencing and timing learning and research activities (i.e., advance planning), and focusing attention selectively on the goals (e.g., establishing priorities, selective attention). Furthermore, organising learning strategies to achieve the goals is another important part of planning (Eilam & Aharon, 2003; Kirby, 1984a; Zimmerman & Martinez-Pons, 1986). Using the strategy of planning students are able to approach their studies systematically; and to execute self-control, to improve concentration, and in turn to maximise the effectiveness of their efforts (Zimmerman, 2000). As a number of researchers have emphasised, when the accomplishment of ultimate goals is sustained, setting up and attaining process sub-goals are significant in demonstrating progress and fostering learners’ self-confidence and interest in the tasks undertaken (Miller & Brickman, 2004; Zimmerman, 2000). However, there are no rules for formulating plans. This investigation found that the students planned their studies in accordance with their own perceptions of research tasks, their needs, and their knowledge about themselves as research students (e.g., their strengths and weaknesses in research skills).

Nevertheless, self-discipline is required to carry out the plans. In addition, the use of self-monitoring and concentration managing strategies is necessary for students to attain their planned goals.

Self-monitoring is another important strategy to enhance the efficiency of one’s learning. The significance of self-monitoring has been emphasised by numerous researchers (see discussions in Section 2.2.2.1, p. 28). By means of self-monitoring students check on the effectiveness and efficiency of their learning and research activities, reflect upon the learning process to identify the causes for their learning outcomes, and observe their affective reactions to their learning experiences (Section 5.2.1.2). The self-monitoring process enables students to be aware of their slow progress (if it was experienced) at the earliest possible time, and helps them to recognise the factors that facilitate or impede their progress and to understand the causes of unfavourable learning outcomes. The execution of self-monitoring is likely to motivate students to adjust their learning activities or learning strategy use in order
to enhance the efficiency and effectiveness of their learning (Lan, 1996; Pintrich, 1999; Winne, 2001).

This study found that, as a result of self-monitoring, students may discover that often the inefficiency in their learning and the unfavourable learning outcomes are caused by self-related factors such as a lack of concentration, a lack of research skills or the theoretical basis required by their research, or inadequate investment of effort. According to the literature on causal attributions (Section 2.3.1.2), these causes are all self-controllable. Internal and controllable attributions promote students’ feelings of control and thus enhance their motivation, effort investment, and persistence at the academic tasks (Schunk, 1994; Weiner, 1986, 2001). However, it is worthwhile to note that the tendency of this group of Mainland Chinese students to attribute low efficiency and unfavourable learning outcomes to the factors within themselves may not be shared by students from other backgrounds, as the discussions in Section 2.5.2.3 and Section 2.5.3 suggest.

Self-evaluating is a strategy relevant to self-control (Clifford, 1999). It refers to the process whereby students assess the quality of their research by comparing the outcomes of their learning and research to the criteria set by institutions or their self-perceived criteria. It also involves students self-assessing the quality of themselves as researchers. By self-evaluating the quality of their research and thesis writing, students are able to identify on their own the areas for further improvement and to decide on the application of subsequent learning strategies (Section 5.2.1.3). By assessing the quality of themselves as researchers, the students recognise their own strengths and weaknesses and determine the focus for self-improvement. The significance of self-evaluating lies in the feedback that it provides students. Confirmative self-evaluation outcomes reinforce students’ self-confidence and promote self-satisfaction whereas negative self-evaluation results inform students of the need to modify their learning behaviours or strategies in the subsequent learning processes in order to achieve better performance (Schunk, 1994; Zimmerman, 2000).

Interpersonal strategies involve help-seeking, consulting, feedback-seeking, and networking (Section 5.2.3.1). The application of these strategies is closely related to an individual’s personality, self-confidence, learning style, and perceptions of interacting with others. Some students found that the strategies of help-seeking,
consulting, and feedback-seeking were important and effective in solving the problems encountered while others had a different perception and preferred to work things out on their own. It is the same with networking. Some students had a greater need than others to network with peers in order to seek intellectual inspiration, to diminish the feelings of isolation, or to handle the frustration experienced. Nevertheless, it seems beneficial for students to be aware of these alternative strategies and to apply them when the need arises, in accordance with their personal characteristics and their perceptions of the learning environment.

Applying strategies to maintain concentration, sustain a favourable affective state, and retain motivation appears to be highly desirable for PhD students. In line with the existing literature on doctoral students (Section 2.4.2.3), this study found that, doing independent research over an extended period, PhD students are likely to encounter all sorts of distractions (e.g., a disorganised learning environment, interruptions by others or health problems, work commitments, family commitments), to develop negative affective reactions to learning experiences (e.g., isolation, frustration, anxiety, disappointment, stress, homesickness, boredom), and to lose motivation. These problems have been found to be responsible for doctoral students’ failure to complete their studies within the stipulated time frame and withdrawal from their programs (Burns, Lamm & Lewis, 1999; Deem & Brehony, 2000; Delamont & Eggleston, 1983; Hockey, 1991, 1994; Parry & Hayden, 1994; Tinto, 1993). Acknowledging the importance of students’ control over their own feelings, some researchers suggested that supervisors help PhD students develop strategies to manage negative feelings (Styles & Radloff, 2000a, 2000b). Nevertheless, this study found that the students were able to apply a variety of learning strategies to handle their affective and motivational problems (Sections 5.2.3.2-5.2.3.4).

For example, to maintain or improve their concentration, some students created an organised learning environment by systematically managing the resources collected for their studies, some students strategically managed their time to improve learning efficiency, and other students tried to minimise the distraction of noise or other interruptions by studying in a quiet place or changing their learning environment (e.g., studying at home instead of in the office). To deal with negative feelings and sustain a constructive mood for studying, some students executed self-adjusting to regulate their affective state, some students tried to ease the feelings of frustration or
anxiety by self-talking, and others took a break from study, depending on their needs. To retain motivation, the strategies of being persistent, thinking positively, and self-praising were applied by some students.

It was observed that the participants’ application of concentration managing strategies, emotion managing strategies, and motivation retaining strategies was strongly influenced by their personal variables and their interactions with the learning environment. Therefore, individuals differed largely in their selection of specific strategies. Regardless of the individual differences, the significance of applying strategies to manage concentration, emotion, and motivation is remarkable. Furthermore, the execution of self-determination plays an important role in the use of these strategies.

6.2.1.2 Strategies for enhancing self-teaching

Doctoral learning emphasises learners’ autonomy (Johnson, Lee & Green, 2000; Phillips, 1994; Ryan & Zuber-Skerritt, 1999). In other words, enrolled in PhD programs which do not contain a coursework component, students doing independent research under supervision are expected to take responsibility for learning what is demanded by their research. Consistent with the existing literature on doctoral students (see discussion in Section 2.4.2.2), this study found that the difficulties encountered by this group of Chinese PhD students in doing the research were mainly caused by their weaknesses in theoretical and methodological preparation for their studies. To cope with the problems, the students needed to develop relevant research skills and to learn domain-specific knowledge (Pearson, 1996) as well as to advance their understanding of methodology. To achieve academic success, it is crucial that students are able to independently undertake the required learning. The participants in this study demonstrated that they used a variety of learning strategies to facilitate their learning of theoretical and methodological knowledge as well as their development of research skills.

It was found that resourcing was central to the participants’ learning. This strategy involves students consulting written materials or other information media when they identify gaps in their knowledge base or encounter problems in the course of researching. By resourcing, the participants learned not only content knowledge of
the field but also discursive knowledge of their disciplines, English academic writing skills as well as methodological knowledge and research skills. Furthermore, the application of resourcing facilitated their decision-making and problem-solving.

The participants’ use of resourcing showed that they were analytical and attentive in their reading. Depending on the need, they paid attention to not only the what but the how in the reading. In other words, in addition to comprehending the content of the readings, the participants observed what language the other researchers use in their specialised field, how they structure their writings, how they analyse data, and/or how they present their projects. These observations contributed to the participants’ development of writing and research skills and inspired solutions to problems. For example, when experiencing writer’s block, one of the participants (F2) applied the resourcing strategy with the intention of seeking inspiration from her reading and overcoming the blockage. Nevertheless, the participants did not use the strategy of resourcing in isolation but in combination with other strategies such as practising, consulting or using imagination, depending on the goals to be attained. Moreover, the participants developed alternative strategies to meet their goals when the use of resourcing was not effective. This involves the processes of self-monitoring.

Seeking training is another popular strategy that the participants applied to assist them in self-teaching. This strategy was mainly used to learn practical skills such as specialised data analysis techniques, operating data analysis or bibliography software, and modern literature search skills. The participants also indicated that receiving training in generic methodologies and research methods (e.g., interviewing) in the initial stages of candidature was necessary for the Chinese students who were inexperienced in researching. This study found that some students did not realise that they needed the training until they encountered problems, while others who had a good self-knowledge were able to act proactively to prepare themselves for the forthcoming research tasks by seeking training in the skills that they needed. Although formal or systematic training in research skills was desirable, it was not always accessible to the students because of funding issues, especially training for specialised data analysis methods or software. The students in this study indicated that they benefited most from the free training provided by university libraries.
Nevertheless, the participants’ learning strategy use showed that the mastery of research skills and the development of research competence were achieved, to a great extent, through the actual process of doing the research. This involved the strategies of practising, learning through trial and error, and publishing while doing the research. Practising refers to the process whereby students internalise knowledge by relating theory to practice, and in turn transform declarative knowledge into applicable procedural knowledge and skills. For example, one of the participants (M1) who sat in on the courses for the data analysis method he used acknowledged that receiving the training itself did not mean that he was able to apply the method and he expected to seek assistance from his supervisor and a peer who was good at it. However, when he actually carried out the data analysis, he found that the application of the method was not as difficult as he had imagined and that he learned to use it through the process of analysing the data. In addition to the enhanced understanding of methodological skills, the participants further developed their English academic writing abilities through the process of writing their PhD thesis. The significance of practising in enhancing understanding and skill development has been recognised in research on occupational training (Warr & Allan, 1998) and is consistent with the view that practising is essential for cognitive development (Bruning et al., 2003; Hunt & Ellis, 2004).

Learning through trial and error is the procedure in which students experiment with their own ideas and learn from their own performance in order to complete a research activity or to solve problems. Given the originality of their research and the independent nature of doctoral learning, some participants found that sometimes they were in a situation where they were the only person who could help themselves out. The strategic use of learning through trial and error exhibited the students’ creativity, ability to take risks, belief in their own ability to accomplish the tasks, and willingness to take responsibility for their own learning. Furthermore, the fact that they learned from their own errors indicated that the students had executed self-monitoring and were analytical and critical of their own thoughts and actions. Learning through trial and error appeared to be an important part of learner autonomy.

Publishing while doing research refers to activities involving students publishing journal articles based on their research or presenting their work at seminars or
conferences. The participants’ varied intentions underpinning their application of this strategy (Section 5.2.2.5) suggested that publishing was multi-functional. The process of preparing for publishing itself contributed to the development of writing skills and encouraged students to think carefully about their research. Receiving feedback from a wide audience was another benefit associated with publishing, which could contribute to improving the quality of the research. In addition, publishing provided evidence of their research competence and in turn promoted students’ self-confidence. Some participants also appreciated that publishing would build up their academic profile and benefit future career development. However, the participants acknowledged that writing for publishing was time-consuming. Therefore, to apply this strategy requires students to execute time management skills.

In social science disciplines, writing the thesis is integrated in the research process (Brown, 1994; Gottlieb, 1994; Torrance & Thomas, 1994). To facilitate their thesis writing, the participants applied a range of strategies, which included following guidelines; modelling; focusing on the structure of the thesis; starting to write as early as possible; writing continuously; writing it up first, regardless of the quality; and revising. These strategies served the students’ needs from different perspectives. By following the guidelines provided by the university or school and modelling their thesis on publications in the field or other students’ theses, the participants ensured that their writing conformed to the disciplinary discourse. The strategy of modelling also assisted the students to learn new writing skills and provided solutions to problems such as how to deal with interview data. By focusing on the structure of the thesis, the students developed an overview of their thesis, which enabled them to organise materials for the best presentation, thus strengthening their arguments. The participants were highly motivated to complete the thesis as early possible. To achieve this goal, they adopted the strategies of starting to write as early as possible; writing continuously; and writing it up first, regardless of the quality. It appeared that, when writing the first draft, the students focused on completing the thesis and tended to ignore the quality of the writing. Consequently, they emphasised that revision was important. Revising the thesis enabled the students to improve the thesis quality in terms of polishing the language and improving the structure and writing techniques. More significantly, the process of revising sometimes stimulated new ideas and in turn increased the depth of thought.
This discussion reveals that students are able to develop their own strategies to improve the efficiency of their learning and to facilitate their self-teaching and problem solving. Nevertheless, this study supports the previous literature on learning strategies (Section 2.3) which found that the effectiveness of learning strategy use is maximised only when the strategies adopted are in congruence with the students’ personal variables and the demands of the learning context.

6.2.2 Implications for supervisors

The findings of this study support the argument that, in cross-cultural settings, it is constructive to focus on what students do in the context rather than assume that they behave in certain ways as defined by their background cultures (Biggs, 2003; P. S. C. Chan, 1999). The investigation of the participants’ learning strategy use showed that culture-biased assumptions about students’ learning behaviours could cause supervisors to misunderstand the intentions of students’ strategic use of help-seeking, consulting, and feedback-seeking. Furthermore, it could make supervisors fail to recognise the root underlying the problems that their students encountered, and break down effective communication between the supervisor and supervisee. This was well illustrated by F5’s description of her experience (p. 254).

When F5 discussed her concerns about developing a research topic with her supervisor, he appeared to assume that she was asking him to give her a topic. However, he did not realise that her intention was only to seek his guidance such as by suggesting books to read. The supervisor’s misunderstanding of F5’s intention seemed to be influenced by the stereotyped view that Chinese students are passive learners and tend to depend on teachers to solve their problems (Ballard & Clanchy, 1991; Samuelowicz, 1987). Nevertheless, the analysis of the participants’ perceptions of learning contexts and their use of interpersonal strategies showed that they expected their supervisors to provide guidance, encouragement, and intellectual inspiration rather than ready-made solutions to their problems.

The participants in this study indicated that the supervisors who understood them as individuals were in a better position to assist them in their studies. An understanding at the personal level involves knowing about the student’s personality, academic abilities, work ethic, and needs. For example, understanding her needs and problems
with analysing data, F1’s supervisor organised for her to seek assistance from external experts, which significantly facilitated the efficiency of F1’s strategic use of consulting and feedback-seeking from academics other than her supervisors.

Furthermore, this study found that some students were encouraged by their supervisors to use particular strategies, such as goal setting, establishing priorities, setting up deadlines, and thinking positively. These strategies were important for the students to plan their studies, manage their time, and retain their motivation. This finding suggests that supervisors, as experienced researchers, were able to help their students to improve learning efficiency by suggesting effective learning strategies, in addition to routine supervision.

6.2.3 Implications for institutions

In line with the suggestions made by other researchers (e.g., Parry & Hayden, 1994), the popularity of seeking training on research methods and skills indicates the need for institutions to provide free formal methodological training to PhD students at the beginning of their candidature, especially those who have limited experience in doing research. Less experienced research students in this study include not only those who did their Master’s degrees overseas but also those who completed their Master’s in Australia but the degrees involved neither a significant component of research nor any systematic training in methodology. With regard to experienced research students, training in specialised data analysis methods that they applied appears to be desirable whereas systematic training in methodology could be redundant. Experienced research students in this study are those who obtained an Honours degree or a Master’s degree by research.

As far as less experienced research students are concerned, they indicated the need to learn generic knowledge about methodologies and research skills as well as principles about research methods. For example: What is methodology? What research methods are being used in the discipline? What is involved in justifying one’s research design? What are the principles for conducting interviews? Are there specific requirements on how to handle interview data in the thesis? These could be suggested topics for training. Nevertheless, the relevance of the training to students’ research appears to be paramount. In addition to training in methodology, workshops
on critical appraisal of the literature could be beneficial, especially for students who perceive that knowledge is either right or wrong.

Although this study has revealed that formal methodological training is desirable for PhD candidates, it is not suggested that the completion of courses on research methodologies become a compulsory component or prerequisite for a PhD. One suggestion is that institutions provide methodological training as a form of learning assistance and encourage students to attend it voluntarily in the initial stages of their study or when the need arises. There are a number of rationales underlying the suggestion. First, the participants’ learning strategy use revealed that seeking training provided only assistance in their self-teaching and that the absence of training could be compensated for by their use of other learning strategies, such as resourcing, practising, learning through trial and error, and consulting. This fact indicates that training is desirable but not essential in PhD study. Second, evidence in this study showed that the actual process of doing research improves students’ understanding of research methodology and enhances their research skills. Moreover, undertaking courses on methodology itself does not guarantee that students are able to master and apply what is learned. Therefore, receiving training is facilitative rather than decisive. Last but not least, the ability to learn independently is emphasised in doctoral learning (Johnson, Lee & Green, 2000; Phillips, 1994; Ryan & Zuber-Skerritt, 1999). The students should be encouraged to decide on their own how they would like to carry out their learning. Mandatory attendance at training courses could discourage students’ motivation to learn and adversely impact on the effectiveness of the training. As Buckley and Hooley (1988) argue, it is the students who have absolute responsibility to ensure a good use of the resources available to them when the need arises.

In addition to formal training in research methodology, the findings of this study further suggest that informal on-going methodological assistance is needed, especially for analysing data. The participants’ use of interpersonal strategies revealed that both experienced and less experienced research students tended to require more external assistance at the stage of data analysis than at any other stage of their research. The difficulties encountered in analysing data were mainly associated with applying specialised data analysis techniques and interpreting data. In this study, the participants sought help, consultation or feedback from their
supervisors, other academics, and/or peers. Despite the diversity of the helping agents, it was observed that the students’ access to intellectual resources other than their supervisors was limited. Only one of the participants (F1), assisted by her supervisor, was able to seek advice from a number of academics who had expertise in the data analysis methods she used whereas other students’ use of interpersonal strategies only engaged one or two peers or other academics.

Providing informal, on-going methodological assistance requires institutions to bring their rich intellectual resources into play. Institutions could either organise specialised methodological groups for their RHD student cohort or publicise the expertise of the academics who are interested in helping with students’ methodological problems. Nevertheless, it is the students’ choice whether to make use of these resources.

This discussion highlights that institutions are in a position to ensure that resources are accessible and known to their students and encourage them to utilise the resources. However, it is the responsibility of students to have themselves benefit from the resources available (Buckley & Hooley, 1988).

6.3 Conclusions

The findings of this qualitative study show that investigation of learning strategies is a powerful tool for revealing students’ development of autonomy in the learning process. By adopting the learning strategies conforming to their personal characteristics and contextual demands, the students effectively made use of varied internal and external resources to assist their independent learning. Although they shared similarities in using learning strategies, their idiosyncratic selection of specific learning strategies was of greater interest and had significant implications for both students and supervisors.

Furthermore, this study found that theoretical and methodological preparation for PhD study was the most significant influence on the students’ learning experience. Specifically, students who were less experienced in researching and were doing a PhD in a field different from their previous academic studies tended to encounter problems of theoretical deficiency, insufficient methodological knowledge, and
underdeveloped research skills. Nevertheless, the actual process of doing the research served to enhance their theoretical and methodological knowledge as well as assist in development of their research skills.

Although no obvious cultural influences on the participants’ learning strategy use were observed, Chinese students’ typical characteristics of diligence, persistence, self-discipline, self-motivation, and willingness to take responsibility for their own study contributed to the efficiency of the participants’ learning strategy use. Moreover, the students who completed their Master’s degrees in China tended to lack independence at the early stage of their candidature, which appeared to be an influence of their perceptions of teacher-student relationships developed through their previous educational experience. However, these students gradually developed a higher level of independence when they understood that they were expected to be autonomous in learning. The development of independence started to emerge in the second or early third year of the candidature. Nevertheless, the students who obtained their Master’s degrees in Australia showed a preference for independence throughout their candidature and were able to keep a balance between dependence and independence in line with their personal qualities and perceptions of the learning context.

With reference to the existing literature on learning strategies, this study found that PhD students’ learning strategy use shared commonalities with undergraduates in metacognitive and social/affective strategies but differed in cognitive strategies. The distinctiveness of these PhD students’ cognitive strategies suggests that it was important for them to develop learning strategies which facilitate self-teaching and development of research competence. Furthermore, it appeared that motivation and self-efficacy functioned differently in PhD students’ learning strategy use from that of students in classroom settings.

Overall, the findings of this study have a number of implications for students, supervisors, and institutions. First, to meet the demands of independent learning in social science disciplines, it is crucial for PhD students to develop effective learning strategies to improve their learning efficiency and enhance their self-teaching. Second, in cross-cultural settings, contextualised understanding rather than culturally-biased assumptions of the students’ learning behaviours would benefit the
effectiveness of supervision. Moreover, the students in this study emphasised that the supervisors who understood them as individuals at the personal level better assisted their learning. In addition, supervisors could help their students to improve learning efficiency by introducing effective learning strategies. Lastly, it appears that there is a need for institutions to provide formal methodological training for less experienced research students in the early stages of their candidature as well as informal on-going methodological assistance for both experienced and less experienced research students.

This study provides insights into the learning processes of Chinese PhD students of social sciences in Australian universities, through the lens of their learning strategy use. However, the conclusions drawn from its findings should be considered in the light of a number of limitations. In addition to the justifications made in Section 3.4.5, it is necessary to take the following restrictions into account.

First, this study was carried out with a small number of participants from the same ethnic background, which limits its relevance to this particular group of students. Transferring the findings beyond this study should be practised with caution.

Second, this study investigated the doctoral learning process solely from the students’ perspectives but did not involve the supervisors’ perspectives. This inevitably biased its findings. For example, language competency and cultural differences have given rise to great concerns in the existing literature on NESB PhD students (Section 2.5.8). However, they were not found to have an obvious influence on the participants’ learning strategy use. This is possibly because the students were not explicitly aware of such influences or they perceived these issues differently from their supervisors and/or fellow researchers.

Third, the focus on the learning processes, to some extent, caused the role of supervision in the students’ learning strategy use to be ignored. Although the findings reveal that the supervision received influenced the individual’s application of learning strategies, this study did not attempt to explore the phenomenon in greater depth.
Lastly, this qualitative study concentrated on discovering the learning strategies used by the participants and the factors relevant to their use. However, it did not examine the correlation between the strategies and influential factors, which could be an area to explore in the future by means of quantitative methods. In line with the restriction, this study sheds limited light on how the participants’ learning strategies are related to the diverse personal and contextual variables.

Despite its limitations, this study makes a contribution to the literature of the three areas on which it was established. First, it extends the research on learning strategies to the context of doctoral students’ learning. This study reveals a range of learning strategies that these Chinese PhD students used to extend their learner autonomy. Furthermore, systematic examination of the students’ learning strategy use casts light on the doctoral learning process. Next, this study has introduced a fresh perspective to the literature on doctoral students, which has been dominated by investigation into the supervision process. Lastly, this study provides an in-depth, emic understanding of the learning processes of Chinese PhD students studying in Australian universities. Nevertheless, to advance the understanding of Chinese PhD students’ autonomy, additional investigation into their learning strategies is necessary.

### 6.4 Future research

Further research on PhD students’ learning strategy use is recommended to verify the current findings and to enhance the understanding of the role of learning strategy use in the development of doctoral students’ autonomy. In the light of its limitations, this study provides the following proposals. First, comparative studies which involve both Chinese PhD students and their counterparts from diverse backgrounds (including non-Chinese international students as well as local students) would provide refined results about the effects of cultural difference on their learning strategy use. Moreover, findings of such studies would further advance current understanding of doctoral students’ learning strategy use in general.

Second, studies taking into account both the students’ and their supervisors’ perspectives would enrich the understanding of Chinese PhD students’ learning strategy use. Moreover, such studies would reveal the similarities or discrepancies between the students’ and supervisors’ perceptions about language and culture issues,
and improve the understanding of the influence of supervision on students’ application of learning strategies.

Third, studies investigating the students’ learning strategy use and the factors influencing their learning strategies by means of both qualitative and quantitative research methods would provide more powerful interpretations of the phenomena. In consequence, a comprehensive understanding of how their learning strategies are related to the personal and contextual variables would be achieved.

To conclude, this investigation of Chinese PhD students’ learning strategies reveals that they are autonomous learners. The findings indicate that theoretical and methodological preparation for PhD study was the most significant influence on the students’ learning experiences. In particular, students who were less experienced in researching and were doing a PhD in a field different from their previous academic studies tended to encounter problems of theoretical deficiency, insufficient methodological knowledge, and underdeveloped research skills. Nevertheless, by applying varied learning strategies, the students were able to attain a command of domain and methodological knowledge and develop research competence through the process of doing the research.
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Appendix 1  The notice calling for participants

Required ! - Mainland Chinese PhD students
(The short notice used by GUPSA)

Are you a Mainland Chinese PhD student? How do you learn to do research and to write a dissertation here in Australia? Have you found some effective learning strategies? Would you like to share your learning experience with and learn from other fellow Mainland Chinese PhD students? If you do, you would like to accept my invitation. I am a PhD student in the Faculty of Education conducting a research on “Research Learning Strategies Used by Mainland Chinese PhD Students in Australian Universities” Your participation will involve you completing a questionnaire (15 min), attending a focus group to share your experiences with others (90 min), and attending three Individual interviews at 6-8 weeks’ intervals (45 min each). All the discussions and interviews will be audio-taped. I assure you that all your information will be treated with strictest confidentiality and anonymity. You may contact my principle supervisor, Dr. Kit-Ken Loke (387 55964), for further information or myself Chun-yan.Yang@mailbox.gu.edu.au,
Phone: 371 44474 (H) and 387 55735 (W)
If you would like to participate and assist me in my research, I shall send you an information package. Thank you in advance for your participation.
Appendix 2  Detailed information on the study

About Chunyan’s Project

I am conducting a study on “Research Learning Strategies Used by Mainland Chinese PhD Students in Australian Universities”.

Your participation will involve you completing a background questionnaire, attending a series of individual interviews - Storytelling, Stimulated Recall and Semi-Structured Interviews. The interviews will be audio-taped for future analysis. All the interviews will mainly focus on your PhD research learning experiences.

Specifically, in Storytelling, I would like you to talk about your PhD learning experiences in detail, such as the stages of your PhD research development, your targets or goals of each stage, what you did in order to achieve the targets, how you did it, and what made you do it in such a way, what the new things you might have learned and how you learned it, the ups and downs you experienced on your PhD journey, and how you went through them, etc.

Before our interviews, I shall send you a storytelling guide to help you recall your experiences. While, in the Stimulated Recall, we will listen to the recording of your Storytelling. When we listen, you can stop the tape at any point you feel like to add more information or to make further clarification or comments on it. Also, I might ask you to elaborate on some points, too. If possible, the procedure of Stimulated Recall is expected to start within one week’s time after the Storytelling. Last, the Semi-Structured Interview is proposed to be carried out about 5-6 months later when the Stimulated Recall is completed.

In this procedure, I shall come to you with some more specific questions generated from the analyses of the first two interview recordings. And I shall also invite you to talk about your new experiences in the last 5-6 months, same as what we will do in the Storytelling. At that final stage, Stimulated Recall will not be conducted.

The arrangement of the interview sessions and the length of each session will all depend on your available time and convenience. I suppose the interviewing time, in total, can be about 8 hours or so. In the interviews, you can talk freely either in Mandarin or English or both. I assure you that all the given information about you will be treated with the strictest confidentiality and anonymity. For further information, you may contact me at chun-yan.yang@mailbox.gu.edu.au or 07-371 44474 (H).

Thank you in advance for your invaluable assistance and time.
Appendix 3  The informed consent package

Information Sheet

Research Learning Strategies Used
by Mainland Chinese PhD Students in Australian Universities

Chief Investigators:  Dr. Kit-Ken Loke (Principal supervisor)
School of Cognition, Language and Special Education, Mt Gravatt Campus, Griffith University, Brisbane Qld 4111
07 387 55964
K.Loke@mailbox.gu.edu.au

Dr. Gary Birch (Associate supervisor)
School of Cognition, Language and Special Education, Mt Gravatt Campus, Griffith University, Brisbane Qld 4111
07 387 55749
G.Birch@mailbox.gu.edu.au

Assistant Investigator: Chunyan Yang
PO BOX 360 NATHAN QLD 4111
07 387 55735
Chun-yan.yang@mailbox.gu.edu.au

Purpose: This study is to investigate the research learning strategies (RLSs) of Mainland Chinese (MC) PhD students in Australian universities, with an attempt to obtain a further understanding of the nature of the learning process at doctoral level and of the cognitive and metacognitive processes involved in the research learning process. This study is undertaken to meet higher degree requirements leading to the degree of PhD.

Participation: As you are a current MC PhD student in an Australian university, we request your cooperation in filling the Biodata Questionnaire about your education and research experiences. We would also like you to participate in the following procedures of three forms of interview. The first is Story Telling, in which you are
expected to tell about your PhD learning story. It can last for 1 to 2 hours. The
second is Stimulated Recall, in which you are asked to listen to the record of your
Story Telling and to make elaboration. It can last for 1.5 to 3 hours. The third is
Semi-Structured Interview, which will be conducted in 2-3 rounds at irregular
intervals and each session should take about 45 minutes. All the interviews will be
audiotaped by the researcher. All participation is entirely voluntary and all answers
will be treated in the strictest confidence. All questionnaires will be destroyed after
the successful completion of my PhD degree. All participants may request feedback
on the results of the study at its completion.

**Benefits:** The results of the study will inform educators, supervisors and future PhD
students from MC and other countries of the nature of PhD learning processes, which
may assist them with their respective tasks.

**Risks:** Due to the restrictive nature of the selection of participants, participants may be
identifiable. However, as specified above, measures will be taken to ensure the anonymity of
their identity. Furthermore, participants may find it uncomfortable discussing their
experiences with the PhD process. All participants will have a right to debrief with the
investigator involved, if this is required, and may withdraw from the study at any point
without explanation.

Griffith University requires that all participants be informed that if they have any
complaints concerning the manner in which a research project is conducted, it may
be given to the researchers, or, if an independent person is preferred, either: the
University’s Research Ethics Officer, Office for Research, Bray Centre, Griffith
University, Kessels Road, Nathan, Qld 4111, telephone (07) 3875 6618; or, the Pro
Vice-Chancellor (Administration), Bray Centre, Griffith University, Kessels Road,
Nathan, Qld 4111, telephone (07) 3875 7343.

You may contact the researchers at any time for further information on the above listed
numbers. Thank you for your assistance with this research project.
Appendix 3 (continued)

Informed Consent

Research Learning Strategies Used
by Mainland Chinese PhD Students in Australian Universities

Chief Investigators: Dr. Kit-Ken Loke (Principal supervisor)
School of Cognition, Language and Special Education, Mt Gravatt Campus, Griffith University, Brisbane Qld 4111
07 387 55964
K.Loke@mailbox.gu.edu.au

Dr. Gary Birch (Associate supervisor)
School of Cognition, Language and Special Education, Mt Gravatt Campus, Griffith University, Brisbane Qld 4111
07 387 55749
GBirch@mailbox.gu.edu.au

Assistant Investigator: Chunyan Yang
PO BOX 360 NATHAN QLD 4111
07 387 55735
Chun-yan.yang@mailbox.gu.edu.au

This study is to investigate the research learning strategies (RLSs) of Mainland Chinese (MC) PhD students in Australian universities, with an attempt to obtain a further understanding of the nature of the learning process at doctoral level and of the cognitive and metacognitive processes involved in the research learning process. This study is undertaken to meet higher degree requirements leading to the degree of PhD. All participation is entirely voluntary and all answers will be treated in the strictest confidence. All questionnaires will be destroyed after the successful completion of my PhD degree.

As you are a current MC PhD student in an Australian university, we request your cooperation in filling a Biodata Questionnaire about your education and research experiences. We would also like you to participate in the following procedures of three forms of interview. The first is Story Telling, in which you are expected to tell about your PhD learning story. It can last for 1 to 2 hours. The second is Stimulated Recall, in which you are asked to listen to the record of your Story Telling and to make elaboration. It can last for 1.5 to 3 hours. The third is Semi-Structured Interview, which will be conducted in 2-3 rounds at irregular intervals and each session should take about 45 minutes. All the interviews will be audiotaped by the researcher. Please note that all participants have a right to debrief with the investigators involved, if this is required, and may withdraw from the study at any point without explanation.
Please indicate your willingness to participate in the study by signing the statement below and returning this form with your completed questionnaire. You may remove the information sheet attached and keep it for your own records.

I, _______________________________ , have read the information sheet and the consent form. I agree to participate in the project entitled Research Learning Strategies Used by Mainland Chinese PhD Students in Australian Universities and give my consent freely. I understand that the study will be carried out as described in the information statement, a copy of which I have retained. I realise that whether or not I decide to participate is my decision and will not affect my current studies. I also realise that I can withdraw from the project at any time and that I do not have to give any reasons for withdrawing. I have had all questions answered to my satisfaction.

Signatures:

_________________________________                     _______________
Participant                                                   Date

_________________________________                     _______________
Investigator                                                   Date
Appendix 4  Biodata questionnaire
(Note: Only currently enrolled PhD students who are from Mainland China need to fill in this form.)

Biodata Questionnaire

Part 1  Basic Information

Name: ________________________________________

Gender:  ( ) Male       ( ) Female

Age:    ( ) 25-30     ( ) 31-35     ( ) 36-40     ( ) over 40 years old
### Part 2  Previous Educational Experiences

<table>
<thead>
<tr>
<th></th>
<th>First Degree</th>
<th>Second Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>2a Title of your degree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2b Name of the university where you obtained your degree(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2c Name of the city where the university is located</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2d Language of instruction</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2e Were you required to carry out a piece of research (in addition to or instead of coursework) to obtain the degree? (Please tick one)

- ( ) Yes.
- ( ) No.

2f Were you required to write up a thesis (of about 10,000 to 20,000 words or more)? (Please tick one)

- ( ) Yes.
- ( ) No.

### Part 3  Study Experiences in Australia

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3a How long have you been in Australia?</td>
<td>______ years ______ months</td>
</tr>
</tbody>
</table>

3b Prior to your PhD study, did you undertake other studies at an Australian university? (Please tick)

- ( ) No.
- ( ) Yes.

Please list the degree(s) which you have obtained in Australia and the name of the university:

Did the programme(s) involve a research component?

- ( ) Yes.
- ( ) No.
### Part 4 Present PhD Study Status

#### 4a Project information:
- University:
- Faculty:
- Discipline:
- PhD research topic:

#### 4b Registration status (Please tick):
- ( ) Provisional candidate:  
  - ( ) Less than 3 months
  - ( ) 3-6 months
  - ( ) 6-9 months
  - ( ) more than 9 months
- ( ) Confirmed candidate:  
  - ( ) 1st year after confirmation
  - ( ) 2nd year after confirmation
  - ( ) 3rd year after confirmation
  - ( ) over 3 years after confirmation

#### 4c Present main research activities (Please tick appropriate ones)
- ( ) Research proposal development:  
  - ( ) Reviewing the literature
  - ( ) Formulating a research problem
  - ( ) Identifying research topic, focus and questions
  - ( ) Conceptualising a research design,
  - ( ) Constructing data collection instrument(s)
  - ( ) Writing up the research proposal
  - ( ) Others, please specify:
- ( ) Intensive research:
  - ( ) Collecting data
  - ( ) Processing data, including analysing data, interpreting data, etc.
- ( ) Dissertation writing:
  - ( ) Conceptualising the framework of dissertation
  - ( ) Drafting the dissertation
  - ( ) Revising final dissertation draft
Part 5  Previous Research Experiences

<table>
<thead>
<tr>
<th>Prior to your present study, have you done other research? (Please tick)</th>
<th>( ) No.</th>
<th>( ) Yes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where did you do your previous research?</td>
<td>( ) In China</td>
<td>( ) In Australia</td>
</tr>
<tr>
<td>( ) In other countries, please specify:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For what purposes did you do your previous research?</td>
<td>( ) For an academic degree</td>
<td>( ) For employment</td>
</tr>
<tr>
<td>( ) For others, please specify:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In what language did you report your previous research?</td>
<td>( ) In Chinese</td>
<td>( ) In English</td>
</tr>
<tr>
<td>( ) In others, please specify:</td>
<td></td>
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</table>

(If you agree to participate in the future procedures of Story Telling, Stimulated Recall and Semi-structured Interview as specified in the information sheet, please complete the following part, and I shall contact you again.)

Part 6  Contact Details

Name: ________________________________________________

Mailing Address: _________________________________

Phone: (         ) _____________________________

Email: ____________________________________________

This is the end of the questionnaire.

Thank you for your cooperation and assistance.
Appendix 5  Storytelling guide (for 1st pilot)

Every stage in our life is a unique story and each story has its own chapters (i.e., different phases of it). I would like you to think about your PhD learning story and its chapters. Please write down the duration of each chapter in the left column and the title you give to it in the middle column. In the right column, if you like, please write down any comments which may help you recall.

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Research Phase</th>
<th>Comments</th>
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</table>

Now please tell me about your PhD learning story in as much detail as possible in each phase. Please feel free to start your story from any phase, as you like. In each phase, please cover the following aspects:

1. What did research mean to you during this phase?
2. What were the typical activities you did during this phase? And how did you carry out each of them?
3. What was the relationship between your perception of research and your activities during this phase?
4. What did you learn specifically during this phase?
5. What did you do in order to learn each of them?
6. Please describe in as much detail as possible a situation in which you had learned something new.
7. What made you decide to learn in the way you just have described?
Appendix 6  Storytelling guide (for 2\textsuperscript{nd} pilot)

My PhD Journey

Our life is a long journey, made up of many short journeys of different destinations (goals). Each short journey has its own stages with different targets, activities, ups & downs, achievements, etc. I would like you to talk about your PhD journey and its stages in the interview.

Please identify the stages of your PhD journey and their duration and fill them in the following form. The other columns of the form provide you with the topics that I shall invite you to talk about in detail. You may use the form to make notes of what you will be talking about in the interview.

<table>
<thead>
<tr>
<th>Research Stage</th>
<th>Time Period</th>
<th>Performance &amp; Achievements</th>
<th>New Things I Learned</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>What were my goals or targets of each stage?</td>
<td>What did I do to achieve the goals or targets?</td>
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</table>


Appendix 7  Storytelling instructions (applied)

My study is about research learning strategies used by our Mainland Chinese PhD students in Australian universities. To investigate this topic, I am using three types of interview to collect data, which are Storytelling, Stimulated Recall and Semi-Structured Interviews.

Today, we are doing the first interview, Storytelling. That is, the story of your PhD research and experiences. I would like you to tell me about your experiences in learning to develop your PhD research in as much detail as possible. Please feel free to talk about your learning experiences in any way you like. Don’t be afraid of giving too much detail; I’m interested in the details of your learning experiences.

When you are telling me your stories, I shall not interrupt you or ask questions unless it is necessary, but I shall take some notes of your stories.

OK, that’s all that I have to tell you.

Is there anything else you would like to know before we begin?
30/06/2002  Reading F1’s ST Transcription [File- Data-RawTrans-ST-F1-Lined Ed]

<table>
<thead>
<tr>
<th>Time Ref.</th>
<th>Topic</th>
<th>Contents</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Feb. 2001 | Started my PhD [L23] | **Change of learning environment**-  
I was offered scholarship at Griffith so I came to Griffith. [L24]  
I moved to Brisbane from the city I lived before, […] And then joined the School of Marketing. [L39-40] | The attitude to research was changed.  
**Q**- Why did you become interested in research after your honours studies?  
The attitude to a further degree changed. **Q**- What did it mean for you by doing a PhD? |
| My research topic [L30] | **Reasons for starting a PhD**-  
before I did my honours […] I wasn’t going to do research, any further research, further degree because I didn’t think it was necessary in our field. […] but after my honours I was quite interested in research. [L26-28]  
All the conditions were working well for me, why not do a PhD. [L29] | From your words, it seems to me that deciding on your PhD topic was an effort-free decision. Am I right?  
**Q**- Have you ever changed your topic |
| | **How to decide the topic**-  
I sort of extended from my honours topic. [L31]  
The specific that I was looking at actually came out from my honours research. [L33-34] |  |  |
<table>
<thead>
<tr>
<th>Feb. 2001</th>
<th><strong>Reviewed … the literature</strong> [L40][L51][L127-128] [L205-206] [L370-386]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reasons for deciding on the topic</strong>-</td>
<td></td>
</tr>
<tr>
<td>By the time I finished my honours, I reviewed a lot of literature in the two areas that I’m interested in, which were relationship marketing and internet marketing. [L31-33]</td>
<td></td>
</tr>
<tr>
<td>I was doing some interviews with those business […] executives […] in Australia, and one of the things they mentioned was that besides all the benefits that internet provide for businesses, there also problems, especially in building relationships with […] the customers and suppliers, and so I thought, well, this could an interesting topic. [L34-38]</td>
<td></td>
</tr>
<tr>
<td><strong>Literature review-</strong></td>
<td></td>
</tr>
<tr>
<td>It’s back to February last year. […] by that time, I actually have already reviewed all the literature. Not all of them, but most of them. [L40-41]</td>
<td></td>
</tr>
<tr>
<td>After I started, I just kept on doing literature review, and then when, you think that all the relevant literature has been reviewed […] [L51-52]</td>
<td></td>
</tr>
<tr>
<td>[For literature review] just read a lot of articles and books that are relevant to your topic. [L373]</td>
<td></td>
</tr>
<tr>
<td>How I read? I just read (laugh). I don’t understand what you’re asking. [L375]</td>
<td></td>
</tr>
<tr>
<td>I take notes sometimes, yeah, and highlight those points that are relevant, highly relevant to my research. Erm. And seems these different ideas from different people. [L379-380]</td>
<td></td>
</tr>
<tr>
<td>People all have different ideas. Yeah, so you got to not to believe what they say, not totally anyway, because one person says something might be contradicting another person, so you would put the idea into the context, these ideas coming from. [L384-386]</td>
<td></td>
</tr>
<tr>
<td>It [data analysis at first data collection stage] was a busy period of</td>
<td></td>
</tr>
<tr>
<td>You talked about your literature review very briefly.</td>
<td></td>
</tr>
<tr>
<td><strong>Q-</strong> Could you please tell me more about it?</td>
<td></td>
</tr>
<tr>
<td>- How did you find the relevant references?</td>
<td></td>
</tr>
<tr>
<td>- What kind information did you look for from you literature review before the data collection stage?</td>
<td></td>
</tr>
<tr>
<td>- What did literature review mean to you before the data collection stage?</td>
<td></td>
</tr>
<tr>
<td>- From your point of view, how was literature review related to your research?</td>
<td></td>
</tr>
<tr>
<td>- How did you judge whether all the relevant literature has been reviewed?</td>
<td></td>
</tr>
<tr>
<td>- How would you like to describe you literature review process?</td>
<td></td>
</tr>
<tr>
<td><strong>Q-</strong> During the data analysis at first</td>
<td></td>
</tr>
<tr>
<td>Feb. 2001</td>
<td>Given a seminar &amp; Audiences</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td></td>
<td><strong>Time of giving a seminar &amp; Audiences</strong></td>
</tr>
<tr>
<td></td>
<td>my supervisor organised a seminar on the first day or second day I arrived to give a seminar to the School or the people who were interested. [L41-43]</td>
</tr>
<tr>
<td></td>
<td>My supervisor organise seminars for me. Like, sometimes he’d invite me to give a talk. For example, we had a professor, […] he was very very good in my area, he was highly recognised and highly respected professor in my area. […] my supervisor asked him to gave a talk to the Uni that he was working with. On the same day, he’d organised a seminar for me. […] gave a talk about my research topic in front of the experts, in front of the professors… [L400-407]</td>
</tr>
<tr>
<td></td>
<td>data collection stage, you went back to the literature, what kind information were you after? / What were the focuses of your reading?</td>
</tr>
<tr>
<td></td>
<td>How did you read the literature?</td>
</tr>
<tr>
<td></td>
<td>What did reviewing the literature mean to you at this stage?</td>
</tr>
<tr>
<td></td>
<td>Q- What caused you to go back to the literature at the beginning of the second stage of data collection?</td>
</tr>
<tr>
<td></td>
<td>What kind of information were you after? / What were the focuses of your reading?</td>
</tr>
<tr>
<td></td>
<td>How did you read at this stage?</td>
</tr>
<tr>
<td></td>
<td>What did reviewing literature mean to you at this stage?</td>
</tr>
</tbody>
</table>
### Appendix 9 Extract of stories

30/06/2002 Extract of F1’s ST Transcription [File: Data-RawTrans-ST-F1-Lined Ed]

<table>
<thead>
<tr>
<th>Time Ref.</th>
<th>Topic</th>
<th>Contents</th>
<th>Participant’s Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb. 2001</td>
<td>Started my PhD [L23]</td>
<td><strong>Change of learning environment:</strong> I was offered scholarship at Griffith so I came to Griffith. [L24] I moved to Brisbane from the city I lived before, […] And then joined the School of Marketing. [L39-40]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Background for starting a PhD:</strong> Before this [the PhD study], I did my honour studies in another university and I’ve got first class honours A. Ah: well, before I did my honours when I was doing my other studies, I wasn’t going to do research, any further research, further degree because I didn’t think it was necessary in our field. Ah;, but it turned out after my honours I was quite interested in research, so I thought, well, All the conditions were working well for me, why not do a PhD. That is basically how I decided to do my PhD. [L25-30]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>My research topic [L30]</td>
<td><strong>Background for the topic:</strong> In terms of my research topic, I, ah: (.) I sort of extended from my honours topic, because by the time I finished my honours, I reviewed a lot of literature in the two areas that I’m interested in, […], and the specific that I was looking at actually came out of honours research. [L30-34] I was doing some interviews with those business executives, ah, in Australia, and one of the things they mentioned was that besides all the benefits that internet provide for businesses, there also problems, especially in building relationships with, you know, the customers and suppliers, and so I thought, well, this could be an interesting topic. [L34-38]</td>
<td></td>
</tr>
</tbody>
</table>
Literature review:
It’s back to February last year. […] by that time, I actually have already reviewed all the literature. Not all of them, but most of them. [L40-41]
After I started, I just kept on doing literature review, and then when, you think that all the relevant literature has been reviewed, you went on and did your first stage data collection. [L51-53]
It [first stage interview] was a busy period of time because when you listened to what they said, you probably would go back to literature and check it again. If it’s not in the literature, you might like to […] either eliminate or included in your research objectives, so I think, it’s very trying. [L126-130]
I started at the second stage […] thinking about the data I’ve got from the first stage and review the literature again. So it’s updated form those three months I interviewed people. And then based on the literature and all that, we developed a framework which in second stage can be called a model. [L204-208]
[For literature review] just read a lot of articles and books that are relevant to your topic. [L373]
How I read? I just read (laugh). I don't understand what you're asking. [L375]
I take notes sometimes, yeah, and highlight those points that are relevant, highly relevant to my research. Errn. And seems these different ideas from different people. [L379-380]
People all have different ideas. Yeah, so you got to not to believe what they say, not totally anyway, because one person says something might be contradicting another person, so you would put the idea into the context, these ideas coming from. [L384-386]
Appendix 10 Interview guide for the stimulated recall interview

Method: Stimulated Recall Interview

Interviewee: F2  Date:  Place:
Interviewer: CYYang (R)  Time:  Length:

Interview Guide for 2nd Stage (F2)

Focus: what learned, how learned, changes, reasons [with a reference to each topic mentioned in ST]
Answers expected: narration, response.
Assistant Materials: F2 Storytelling transcript, its extract & F2 Storytelling recording.

Questions: [Developed on the basis of F2’s Storytelling in relation to my research problems]

Topic: Doing a PhD [Extract P1]

1. From your point of view, what do you think a PhD is?
   - What did a PhD mean for you when you started your PhD study?

2. Later on you mentioned that ‘for me, doing this PhD is not an easy thing [L44-45]’. This statement indicates a lot of things. Could you please talk more about it besides the problems associated with time, the internet technique and supervision relationships?

Topic: Lack of time [Extract P2]

Topic: Writing [Extract P3]

1. You set up a task for yourself that ‘I must write 500 words every day’. Sometimes you could carry it out, sometimes you wrote much more than that
amount, and sometimes you couldn’t but it appears in your talking that you still stick to this rule. Could I know why you would like to keep this rule of ‘write 500 words every day’?
- What were you thinking about when you set up this rule for yourself?
- How is this writing practice related to your research development?
- What do you write about?
- How do you write?
- When you could not write up to 500 words in a day, what were the reasons?

2. You keep writing very rough drafts about your experiments.
- What role do you think this writing is playing in your study?
- How were you deciding to do this?

3. It seems that writing has been a continuous activity throughout your PhD study, would you please tell me more about your writing experiences?
- Besides the experiences in writing for your Masters, have you had any new experiences in writing your PhD?
- If yes, what new experiences have you had? Could you please give me an example?
- If no, pass.
- Have you encountered any difficulties in writing your PhD?
- If yes, what were the difficulties?
- What did you think caused these difficulties?
- How have you coped with them?
- If no, pass.

**Topic: Data Collection [Extract P4]**

1. When you are collecting your data, the internet techniques have caused you problems. As you said, there was nothing you could do to change this situation, so what have you done to cope with this disadvantage to keep your experiment going ahead?

2. Up to date, do you think that you have learned anything new from your data collection process?
- If yes, what have you learned?
- How did you realise that learning happen?
- If no, pass.

3. You mentioned a few times that you keep your research going by trying. Would you please give me some examples on how you have improved your project or your knowledge of how to do a research by trying?
- What did you do?
- How did you do it? Successfully or not?
- What was your reaction to it?
- How did you keep going?
- In the trying process, what have you been thinking about?

4. When we were talking about the interview method, you mentioned you got to know it by reading. Could I know what you have read about it?
- How have you applied the knowledge you got from the reading to your research practice?

5. Besides reading about interviews, have you done anything else in order to master this method?
- If yes, what have you done?
- How were you deciding to do that?
- If no, pass.

6. Have you learned anything from conducting the interviews?
- If yes, what was it?
- How did you realise that learning happen?
- If no, pass.

**Topic: The process [Extract P5]**

1. You mentioned that ‘At the right beginning, I found the topic is very big and didn’t know where to start. Now many of my thoughts have been very different from those I had at the beginning’. Could you please tell me more about these differences?
- What were the significant changes that your thoughts have gone through? / What were the differences of your thoughts between now and then?
- In which way do you think they are different?
- What caused the changes of your thoughts?

2. To sum up, you described this process as a clear-unclear-clear-unclear-clear process. Could you please talk about this changing process in more detail? To help me understand it better, could you please give me some examples where such a changing process existed?
- What was clear to you at first and it then became unclear?
- When did it become unclear?
- How did it become clear again later on?
- What caused these changes?
- How did you realise these changes happen?
Topic: Literature research [Extract P5]

1. Could you please tell me more about how the more you read at the first stage, the more it would be helpful for your writing later on?
   Or: From your point of view, what help would the reading at the first stage provide for your later-on writing?

2. You found that at the starting stage, it was most important to understand your topic and some important things in the area. Could you please spell out what were the important things?
   - What did you do in order to understand your topic and the important things in the area at that time?

3. I’d like to know more about your literature research experience. Could I ask you a few more questions on it?
   - How did you decide what references you should go after?
   - How did you find your references?
   - When you read the references, what do you focus on?
   - Have you ever changed the focus of your reading since you started your PhD up to now?
     - If yes, what were the changes?
     - What caused each of the changes?
     - If no, pass.
   - How did you read your references? / When you were reading, what did you do?
   - Have you been reading in the same way as described?
     - If yes, pass.
     - If no, what are the other different ways?
     - Why made you do the reading differently?

4. Did you think you learned something special for conducting the literature research?
   - If yes, what did you learn?
   - How did you learn it or them?
   - If no, pass.

5. Did you think you learned something from the literature research?
   - If yes, what did you learn?
- How did you realise that learning happen?
- If no, pass.

6. How would you like to describe your experiences in the literature research process?
- Have you ever experienced any difficulties in the literature research process?
- If yes, what were they?
- What caused these difficulties?
- How did you cope with it?

**Topic: Research design [Extract P6]**

1. As far as your research is concerned, what made you think that the tool you are using was better than other tools?

2. After the second stage, what changes did you make to improve your design?
   - What caused these changes?
   - How were you deciding to make these changes?

3. The research design process, from your first stage to the third stage sounded like difficulty-free, was it so?
   - If yes, pass.
   - If no. What were the difficulties you encountered?
   - How did you cope with it?

4. Could you please tell me more about how you improve the research design by actually doing the project?

5. Did you learn anything especially for your research design?
   - If yes. What did you learn?
   - How did you learn it or them?
   - If no, pass.

6. Did you learn anything from your research design?
   - If yes. What did you learn?
   - How did you realise that learn happen?
   - If no, pass.
1. Though the research proposal you developed before the confirmation seminar was not much useful now, to help me have a better understanding about your research proposal development process, could you please tell me more about what you did to write up your research proposal at that time?

2. How would you like to describe that process of developing your research proposal?
   - Did you face any problems at that time?
   - If yes. What were the problems?
   - What caused these problems?
   - How did you cope with them?
   - If no, pass.

3. How many drafts did you write for your research proposal?
   - How were they different from each other?

4. You said that in your research proposal, you were not very clear about how to approach the topic though it seemed you were clear about it at that time. In which way did you perceive it was not very clear?
   - From your point of view, what caused this unclearness?

5. What changes have you made to your original proposal since you started your research?
   - What caused these changes? / What were you thinking about before you decided on the changes?

6. Did you learn anything for developing your research proposal?
   - If yes. What did you learn?
   - How did you learn?
   - If no, pass.

7. Did you learn anything from developing your research proposal?
   - If yes, what did you learn?
   - How did you realise that learn happen?
   - If no, pass.
**Topic: Supervision [Extract P6]**

1. You went to see your supervisors when you have problems. Could you please give me some examples of for what problems you went to see your supervisors?

2. How do you think the supervision you have received is related to your PhD studies?

**Topic: Data analysis [Extract P6]**

1. Besides whether you need to transcribe all of the interviews, have you thought about how to analyse your data?

2. To what extent do you think you have prepared yourself for the analysis?

**Topic: Research methodology [Extract P7]**

Ending:

Is there anything else you would like to talk about but was not covered?

Thank you very much for your assistance and time!
Appendix 11 Instructions for the stimulated recall interview

Based on your Storytelling recording, I have generated two documents. One is the Transcript and the other is the Extract of your stories organised under the topics raised by you.

The purpose of today’s session is to seek clarification and further elaboration on your stories by going through the Extract. When we look at the extracts under each topic, I would like you to make comment, elaboration, or clarification on any point of them. After you have talked about the topic, if necessary, I would like to ask you some questions about it before we go to the next topic. All of these will help me to get a further understanding of your PhD learning experiences.

The other thing I would like to mention is that since these are only the extracts of your stories, if you would like to refer to the original story transcript, please feel free to do so. The line numbers in the brackets at the end of each extract are provided for referencing. Furthermore, if you would like to listen to the recording, we will play it.

Do you have any question about this?

OK, thank you very much. Could we start now?
Appendix 12 Semi-structured interview guidelines

(Note: This guideline was designed for developing individual semi-structured interview guides. It outlined the general issues that would be covered in the individual interviews. If the issue listed had been discussed in detail with a particular interviewee in the last two interviews, it would be disregarded in the third interview. Prompts and probes would be listed in each individual interview guide or added in the course of interviewing.)

Purpose:

- To fill up the gap identified in the data collected in the first two stages.
- To verify the researcher’s interpretation of the data collected in the first two stages.

(Two major types of questions will be included: questions derived from the perceived issues that emerged so far in the preliminary analyses, as well as questions on their learning experiences since the last data collection)

Opening questions:

- Current status of the students’ studies.
- The students’ learning experiences since the last data collection.

Issues to look into

Backgrounds:

1. More information on the first two degrees (major, completing year, research experiences)
2. Motivation for completing the PhD degree.

Methodology:

1. Positive and negative experiences in research design, data collection, analysis and interpretation.
2. With regard to the positive experience, what contributed to it?
3. With regard to the negative experience, what caused it? How did you cope with it?

**Academic writing:**

1. Perceptions of academic writing.
2. How it was learned.
3. Perceptions of writing in English.
4. The other aspects of the writing (e.g., organising or structuring the thesis, …).

**Supervisory experiences:**

1. How was the supervisory relationship developed?
2. The experiences.
3. Cultural issues in the supervisory relationship.

**Meeting with other people and using the facilities available:**

1. Nature of the contacts with people other than supervisors
   - Besides your supervisors, have you ever met with other people for your study?
     If yes, who were they? How did you get to meet with them? What did you talk about with them? If the meeting was for problem solving, how effective?
     If not, why?
2. Experiences and perceptions of other academic activities (conferences, publication, postgraduate activities, etc)
3. Experiences of attending workshops or training sessions on learning skills and computer skills.

**Cultural issues:**

1. Did you think whether being a Chinese student makes your experiences of the PhD study experiences different from other students? If there were differences, what were the differences? What caused the differences, i.e., culture, educational experiences, personal qualities, contextual reasons or …? If there were not differences, why?
### Appendix 13 Transcription notation

**Transcription Notation**

<table>
<thead>
<tr>
<th>Notation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(.)</td>
<td>The shortest hearable pause, less than about 0.2 of a second.</td>
</tr>
<tr>
<td>(..) (…)</td>
<td>Approximately timed pauses: half a second and one second respectively</td>
</tr>
<tr>
<td>(5 secs)</td>
<td>Example of exactly timed pauses.</td>
</tr>
<tr>
<td>(      )</td>
<td>Empty brackets indicate unclear speech or noise to which no approximation is made.</td>
</tr>
<tr>
<td>[words]</td>
<td>Added by the researcher to clarify meaning.</td>
</tr>
<tr>
<td>[words]</td>
<td>The words describe the omitted content for confidentiality.</td>
</tr>
<tr>
<td>[…]</td>
<td>Content was omitted when transcribing.</td>
</tr>
<tr>
<td>[laugh]/[phone]</td>
<td>A description enclosed in the brackets indicates a non-speech sound or description of the context.</td>
</tr>
<tr>
<td>…</td>
<td>Indicates that material has been left out of the extract.</td>
</tr>
<tr>
<td>wa:s, ah::</td>
<td>Colons show that the speaker has stretched the preceding letter of sound. The more colons the greater the extent of the stretching.</td>
</tr>
<tr>
<td>bu-</td>
<td>The word was cut off because the topic was changed.</td>
</tr>
<tr>
<td>=</td>
<td>Equal signs, one at the end of a line and one at the beginning, indicate no gap between the two lines.</td>
</tr>
<tr>
<td>↑</td>
<td>An upward arrow indicates a rising tone.</td>
</tr>
<tr>
<td>↓</td>
<td>An downward arrow indicates a falling tone.</td>
</tr>
<tr>
<td>.</td>
<td>Full stop indicates a ‘natural’ ending.</td>
</tr>
<tr>
<td>,</td>
<td>Comma indicates a comma-like pause.</td>
</tr>
<tr>
<td><strong>Word</strong></td>
<td>Stressed words by the interviewee.</td>
</tr>
</tbody>
</table>
Appendix 14 Member check procedure and summary

This part presents the information about member check of the first two sets of interview data. Member check procedure: Transcripts of tape-recorded interviews, together with copies of the recordings, were returned to participants to check for accuracy. Participants were given an opportunity to add, change or withdraw any part or the interview data.

In the following form, the researcher provides a list of participant codes and a brief summary of the kind of comment made to the transcripts by the participants.

<table>
<thead>
<tr>
<th>Participant Codes</th>
<th>Member Check Register of Transcripts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Storytelling</td>
</tr>
<tr>
<td>F1</td>
<td>Correction of spelling, grammar and sentence structure to clarify meaning</td>
</tr>
<tr>
<td>F2</td>
<td>Correction of spelling</td>
</tr>
<tr>
<td>F3</td>
<td>Correction of spelling</td>
</tr>
<tr>
<td>F4</td>
<td>Correction of spelling and punctuation</td>
</tr>
<tr>
<td>F5</td>
<td>Deletion of a brief comment on her Master’s study; Deletion of redundant words; Correction of spelling and a couple of expressions to clarify meaning.</td>
</tr>
<tr>
<td>M1</td>
<td>Authenticated without any change</td>
</tr>
</tbody>
</table>

Note: F = Female; M = Male
Appendix 15 Letter from F4

Chunyan,

You asked why I was so determined [to do the PhD]. I believe the main reason is that I hate giving up on things which I think are good for my career.

To be honest, doing PhD is the most challenging experience of my life. First, I was not well for a few years. … When the scholarship was finished, I experienced financial difficulties. … However, I believe doing PhD is not easy for anybody. No pain, no gain. The excuse for giving up can only be that “It’s not good for me.” I think that, since other students are able to overcome their problems, I have no reason not to overcome mine. I shall never give up in the face of difficulties because withdrawal will result in endless regrets. Moreover, the feeling of regret is much more unbearable than that of coping with difficulties.

Furthermore, I love teaching. In teaching, I hope that I am able to clearly and thoroughly explain the questions [raised by students]. If there are any questions that I am not able to clearly explain, I can’t help thinking about them, researching them. I never like to readily accept the existing conclusions. I think doing PhD and doing academic research conform to my personality. As long as the conditions for research are available, it is not impossible to achieve results.

Last, I have realised from my previous work experience that I did not like doing purely administrative work. In comparison, university is a place where your duties will involve least administrative work (This point of view might have been out of date). In order to continue with my teaching in university, I must have a PhD degree. If I did not have it, I would have to work in other fields, which I may not like. Of course, I have other interests. However, no matter whatever else interest I have, I think I must accomplish the PhD study, a very significant undertaking. It will benefit my future development in any field.

This letter is translated by the researcher.

The signature is covered for privacy.
Appendix 16 Part of the report of all free nodes

NODE LISTING

Nodes in Set: All Free Nodes

Created: 24/09/2002 - 7:14:48 PM
Modified: 23/07/2004 - 7:31:59 PM
Number of Nodes: 342

1. about meeting frequency
   Description: how often the participants meet their supervisors

2. About writing
   Description: the experience of writing was not reported together with problems encountered

3. achievement motivation
   Description: motivation for doing the PhD

4. acknowledging learning is time-consuming
   Description: understanding of the nature of learning

5. advice seeking - supervisor
   Description: perceived role of supervisor; learning strategies

6. age
   Description: factors influencing the research experiences

7. acknowledging isolation as an inherent
   Description: perception of isolation experienced

8. analysing
   Description: reading strategies

9. approachable
   Description: positive experiences of supervision; characters of supervisors

10. Associating with other PhDs
    Description: learning strategies; social strategies

11. attitudes towards feedback

12. attitudes towards supervisors' advice
    Description: how the advice is dealt with, indicating students' active engagement in the learning process

13. authority of supervisor
    Description: students' interpretation of supervisors' perception of their role responsibility
14  avoidance strategy  
   **Description:** learning strategies; social strategies; dealing with the interaction with supervisors

15  being clear of the role of supervisor  
   **Description:** the importance of knowing supervisors’ responsibility and the role they play in the process of supervision where more than one supervisors are involved

16  being critical  
   **Description:** how to be critical, different perceptions between the participant and her supervisor; perceptions of being critical

17  being frank  
   **Description:** factors influencing supervision relationship

18  being in the mood  
   **Description:** learning strategies; affective strategies

19  being patient  
   **Description:** learning strategies; affective strategies

20  being prepared  
   **Description:** learning strategies; communication strategies; how to communicate with supervisor

21  being selective  
   **Description:** seems to be the inherent requirement of the PhD process; to be discriminating

22  bibliography software  
   **Description:** what learned for the PhD and through doing the PhD; computing skills

23  boring  
   **Description:** feelings about the research process

24  building up self-confidence  
   **Description:** self-confidence; personal quality

…
Appendix 17 Report of tree nodes

NODE LISTING

Nodes in Set: All Tree Nodes

Created: 24/09/2002 - 7:14:48 PM
Modified: 24/09/2002 - 7:14:48 PM
Number of Nodes: 73
1 (1) /F1's Research process
2 (1 1) /F1's Research process/Initial stage
3 (1 1 1) /F1's Research process/Initial stage/Initial stage
4 (1 2) /F1's Research process/Data collection
5 (1 2 1) /F1's Research process/Data collection/First stage
6 (1 2 2) /F1's Research process/Data collection/Second stage
7 (1 3) /F1's Research process/Data Analysis
8 (1 4) /F1's Research process/Dissertation writing
9 (1 5) /F1's Research process/Literature review
10 (1 6) /F1's Research process/Proposal writing
11 (1 7) /F1's Research process/Other issues
12 (1 7 1) /F1's Research process/Other issues/Conferences
13 (1 7 2) /F1's Research process/Other issues/Presentations
14 (1 7 3) /F1's Research process/Other issues/Association with others
15 (1 7 4) /F1's Research process/Other issues/Perceptions of research
16 (1 7 5) /F1's Research process/Other issues/Perceptions of PhD
17 (1 7 6) /F1's Research process/Other issues/Motivation
18 (1 8) /F1's Research process/Deciding on the topic
19 (2) /F2's Research process
20 (2 1) /F2's Research process/Other issues
21 (2 1 1) /F2's Research process/Other issues/Motivation
22 (2 1 2) /F2's Research process/Other issues/Perception of PhD
23 (2 1 3) /F2's Research process/Other issues/Problems
24 (2 1 4) /F2's Research process/Other issues/Problems & strategies
25 (2 2) /F2's Research process/Dissertation writing
26 (2 3) /F2's Research process/Data collection
27 (2 4) /F2's Research process/Initial stage
28 (2 5) /F2's Research process/Deciding on the topic
29 (2 6) /F2's Research process/Literature review
30 (2 7) /F2's Research process/Proposal writing
(2 8) /F2's Research process/Data analysis
(3) /F3's Research process
(3 1) /F3's Research process/Deciding on the topic
(3 2) /F3's Research process/Literature review
(3 3) /F3's Research process/Other issues
(3 3 1) /F3's Research process/Other issues/Problems & strategies
(3 3 2) /F3's Research process/Other issues/Perceptions of PhD
(3 3 3) /F3's Research process/Other issues/Association with others
(3 4) /F3's Research process/Data collection
(3 5) /F3's Research process/Data analysis
(3 6) /F3's Research process/Dissertation writing
(3 7) /F3's Research process/Proposal writing
(4) /F4's Research process
(4 1) /F4's Research process/Initial stage
(4 2) /F4's Research process/Data analysis
(4 3) /F4's Research process/Data collection
(4 4) /F4's Research process/Other issues
(4 4 1) /F4's Research process/Other issues/Motivation
(4 4 2) /F4's Research process/Other issues/Distractions
(4 5) /F4's Research process/literature review
(4 6) /F4's Research process/writing
(4 7) /F4's Research process/deciding on the topic
(4 8) /F4's Research process/research proposal
(4 9) /F4's Research process/Dissertation writing
(5) /F5's Research process
(5 1) /F5's Research process/Other issues
(5 1 1) /F5's Research process/Other issues/Background information
(5 1 2) /F5's Research process/Other issues/Settling down
(5 1 3) /F5's Research process/Other issues/Association with others
(5 1 4) /F5's Research process/Other issues/Anxiety
(5 1 5) /F5's Research process/Other issues/Distractions
(5 1 6) /F5's Research process/Other issues/Perceptions of PhD
(5 2) /F5's Research process/deciding on the topic
(5 3) /F5's Research process/Literature review
(5 4) /F5's Research process/Data collection
(5 5) /F5's Research process/writing
(6) /M1's Research process
(6 1) /M1's Research process/Other issues
(6 1 1) /M1's Research process/Other issues/Background information
(6 2) /M1's Research process/Data collection
(6 3) /M1's Research process/Dissertation writing
(6 4) /M1's Research process/Data analysis
(6 5) /M1's Research process/Literature review
# Appendix 18 Profiles of participants

<table>
<thead>
<tr>
<th>Participants Codes</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
<th>M1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Female</td>
<td>Female</td>
<td>Female</td>
<td>Female</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>Age range</td>
<td>25-30</td>
<td>36-40</td>
<td>25-30</td>
<td>Over 40</td>
<td>36-40</td>
<td>31-35</td>
</tr>
<tr>
<td>Years in Australia by 2002</td>
<td>&gt; 4 years</td>
<td>&gt; 13 years</td>
<td>Almost 4 years</td>
<td>&gt; 11 years</td>
<td>&lt; four months</td>
<td>2 years</td>
</tr>
<tr>
<td>Degrees in China</td>
<td>Bachelor</td>
<td>Bachelor</td>
<td>Bachelor</td>
<td>Bachelor</td>
<td>Bachelor + Masters</td>
<td>Bachelor + Masters</td>
</tr>
<tr>
<td>Degrees in Australia</td>
<td>Masters (Honours)</td>
<td>Masters by coursework</td>
<td>Masters by research</td>
<td>Masters by coursework</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Degrees in other English-speaking countries</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Masters by research</td>
<td>-</td>
</tr>
<tr>
<td>Research experience in China</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Research experience in Australia</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Research experience in other English-speaking countries</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Receiving scholarships</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes (only for the 2nd year)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Mode of attendance</td>
<td>Full-time</td>
<td>Part-time</td>
<td>Full-time</td>
<td>Part-time</td>
<td>Full-time</td>
<td>Full-time</td>
</tr>
<tr>
<td>Origin of topic</td>
<td>Honours study</td>
<td>Job-related</td>
<td>Master’s study</td>
<td>Job-related</td>
<td>Master’s study (for the 1st topic); Work experience (for the 2nd topic)</td>
<td>Job-related</td>
</tr>
<tr>
<td>Research activities at first two interviews (mid-2002)</td>
<td>Data collection</td>
<td>Data collection</td>
<td>Data analysis</td>
<td>Data analysis</td>
<td>Preparing for a research proposal</td>
<td>Data collection</td>
</tr>
<tr>
<td></td>
<td>Data analysis Writing thesis</td>
<td>Data analysis Writing thesis</td>
<td>Data analysis Writing thesis</td>
<td>Writing thesis</td>
<td>Writing thesis</td>
<td>Data analysis Writing thesis</td>
</tr>
<tr>
<td>Research activities at third interviews (mid-2003)</td>
<td>Completed successfully</td>
<td>Data analysis Writing thesis</td>
<td>Writing thesis</td>
<td>Data analysis Writing thesis</td>
<td>Preparing for a research proposal (t/c)</td>
<td>Writing thesis</td>
</tr>
<tr>
<td>Completion</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>On-going</td>
<td>On-going</td>
<td>Yes</td>
</tr>
<tr>
<td>Completion year</td>
<td>2002 (&lt; 2 years)</td>
<td>2004 (3 years of full-time equivalent)</td>
<td>2004 (about 3.5 years)</td>
<td>N/A</td>
<td>N/A</td>
<td>2003 (3.5 years)</td>
</tr>
</tbody>
</table>

Note:  
\( t/c = \) topic changed,  
\( N/A = \) Not Available
### Appendix 19 Metacognitive strategies

Learning strategies in the category of Metacognitive Strategies

<table>
<thead>
<tr>
<th>No.</th>
<th>Subcategories</th>
<th>Definitions</th>
<th>Specific strategies</th>
<th>Exemplar data bites</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Processes involving using one’s metacognitive resources to check on the effectiveness and/or efficiency of learning activities, and to observe one’s affective state</td>
<td><strong>Checking on the effectiveness and/or efficiency of studying</strong></td>
<td>F2:ST:Para15, 17 F5:ST:Para40 F4:SR:Para118-119</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Checking one’s affective state</strong></td>
<td>F1:SR:Para248 F5:SR:Para163-165 F5:SSI:Para63</td>
</tr>
</tbody>
</table>

Note: * The definitions of the strategies are adapted from the literature (see Table 2.2).
## Appendix 20 Cognitive strategies

### Learning strategies in the category of Cognitive Strategies

<table>
<thead>
<tr>
<th>No.</th>
<th>Subcategories</th>
<th>Definitions</th>
<th>Specific strategies</th>
<th>Exemplar data bites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Resourcing*</td>
<td>Activities of referring to various information media to seek assistance when learners identify a gap in their available knowledge or face a problem</td>
<td>Seeking help from written materials (such as written documents, manuals, other students’ theses or other non-social sources)</td>
<td>F1:SR:Paras193; F2:SR:Para58; F3:ST:Paras134-135; F4:SR:Paras91, 95; F4:SSI:Para103; F5:SR:Paras205-206; M1:ST:Para26</td>
</tr>
<tr>
<td>3</td>
<td>Learning through trial and error</td>
<td>Processes in which learners experiment own ideas and learn from their own performance in order to complete a research activity, or to solve problems</td>
<td>Trying out one’s thoughts, analysing the performance and then learning from it</td>
<td>F2:ST:Para31; F2:SSI:Para22; F3:ST:Para35; F4:SSI:Para103</td>
</tr>
<tr>
<td>4</td>
<td>Seeking training</td>
<td>Intentions or actions of seeking opportunities to receive formal or systematic instructions in what to be learned</td>
<td>Attending relevant courses, workshops, and/or trainings in other forms</td>
<td>F1:SR:Para185; F2:SR:Para68; F3:SSI:Paras55-56; F4:SR:Para13; F5:SSI:Paras208-213; M1:SR:Para26</td>
</tr>
<tr>
<td>5</td>
<td>Self-questioning</td>
<td>Activities of asking oneself questions when learners try to work out how to carry out certain research activities, face a problem, or learn new knowledge</td>
<td>Asking oneself questions</td>
<td>F1:SR:Paras40-41; F2:SR:Paras137-138; F3:ST:Para25; F5:SR:Para230; M1:ST:Para22-24</td>
</tr>
<tr>
<td>6</td>
<td>Modifying</td>
<td>Procedures involving making changes (to research design, research focus, etc) in response to changed conditions</td>
<td>Making changes to the original research design (e.g., research population scope, research focus, etc) in accordance with the improved understanding of the field or realisation of one’s own strengths</td>
<td>F1:SR:Para47; F2:ST:Para17; F3:SR:paras122-127; M1:SR:Para26</td>
</tr>
<tr>
<td>7</td>
<td>Learning from daily encounters</td>
<td>Strategies involving paying attention to the happenings in daily life, observing how other people do things, and thus to learn what is useful for conducting one’s research</td>
<td>Learning interviewing techniques by watching interview programs on TV</td>
<td>F3:SR:Para143</td>
</tr>
<tr>
<td>No.</td>
<td>Strategy</td>
<td>Description</td>
<td>Relevant Sections</td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Using imagination</td>
<td>Mental processes stretching one’s thinking beyond the routine to stimulate the emergence of new ideas</td>
<td>M1:ST:Para26</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Diagramming</td>
<td>Practices involving drawing diagrams, flowcharts, or concept-maps to organise one’s thinking or to find solutions to problems</td>
<td>F3:ST:Para165</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Thinking of it all the time</td>
<td>Mental activities involving prolonged cognitive engagement with the problems to be solved or the research tasks in hand</td>
<td>F1:SR:Para431, F3:ST:Para35, F4:SSI:Para48</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Taking thesis examination into consideration</td>
<td>Strategies used to filter or handle sorts of feedback on one’s research received from others, or to ensure the quality of one’s work meeting the assessment criteria</td>
<td>F1:SSI:Para34, F1:SR:Para411</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Elaboration strategies*</td>
<td>Procedures enhancing understanding by means of integrating new information into an elaborated knowledge network</td>
<td>F1:SR:Para75, F3:ST:Paras64-66</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Repeating</td>
<td>Procedures involving repetitively processing the same information in order to reach understanding</td>
<td>F2:SR:Paras157-158, F4:SR:Paras120-121, F5:ST:Para36</td>
<td></td>
</tr>
</tbody>
</table>
Note: * The definitions of the strategies are adapted from the literature (see Table 2.2).
### Appendix 21 Social/affective strategies

#### Learning strategies in the category of Social/Affective Strategies

<table>
<thead>
<tr>
<th>No.</th>
<th>Subcategories</th>
<th>Definitions</th>
<th>Specific strategies</th>
<th>Exemplar data dites</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Concentration managing strategies*</td>
<td>Devices implemented to control or diminish the influence of negative emotional factors (e.g., isolation, frustration, anxiety, disappointment, stress, homesickness, boredom and the like), and thus maintain a constructive mood towards studying</td>
<td>Resource management</td>
<td>F1:SR:Para203 F2:SR:Para64 F3:ST:Paras64-68 M1:SR:Para34</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Self-talking</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Being patient</td>
</tr>
<tr>
<td></td>
<td>Motivation retaining strategies*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mental or behavioural activities executed to uphold one’s motivation in face of difficulties or to keep oneself motivated in the years-long process</td>
<td>Being persistent</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thinking positively</td>
<td>F2:SR:Para83, 180 F5:SSI:Para19</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self-praising</td>
<td>F2:SR:Para81</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: * The definitions of the strategies are adapted from the literature (see Table 2.2).
Appendix 22 Matrix Intersection Search results (1): Metacognitive strategies & participants

<table>
<thead>
<tr>
<th>Nodes</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>(8 2 1 1) /learning/Strategies/Metacognitive Strategies/planning</td>
<td>3 3 2 3 3 2</td>
</tr>
<tr>
<td>(8 2 1 1 1) /learning/Strategies/Metacognitive Strategies/planning/advance planning</td>
<td>2 2 1 3 2 2</td>
</tr>
<tr>
<td>(8 2 1 1 2) /learning/Strategies/Metacognitive Strategies/planning/goal setting</td>
<td>0 2 0 2 1 1</td>
</tr>
<tr>
<td>(8 2 1 1 3) /learning/Strategies/Metacognitive Strategies/planning/establishing priorities</td>
<td>0 0 1 1 1 1</td>
</tr>
<tr>
<td>(8 2 1 1 4) /learning/Strategies/Metacognitive Strategies/planning/selective attention</td>
<td>1 2 0 0 2 1</td>
</tr>
<tr>
<td>(8 2 1 1 4 1) /learning/Strategies/Metacognitive Strategies/planning/selective attention/scanning</td>
<td>0 1 0 0 1 1</td>
</tr>
<tr>
<td>(8 2 1 1 4 2) /learning/Strategies/Metacognitive Strategies/planning/selective attention/reading with a different focus</td>
<td>1 1 0 0 1 0</td>
</tr>
<tr>
<td>(8 2 1 1 4 3) /learning/Strategies/Metacognitive Strategies/planning/selective attention/reading with a purpose</td>
<td>0 1 0 0 2 0</td>
</tr>
<tr>
<td>(8 2 1 2) /learning/Strategies/Metacognitive Strategies/self-monitoring</td>
<td>1 3 0 2 3 3</td>
</tr>
<tr>
<td>(8 2 1 2 1) /learning/Strategies/Metacognitive Strategies/self-monitoring/checking on effectiveness of studying</td>
<td>0 2 0 1 2 0</td>
</tr>
<tr>
<td>(8 2 1 2 2) /learning/Strategies/Metacognitive Strategies/self-monitoring/checking on efficiency of studying</td>
<td>0 1 0 1 2 1</td>
</tr>
<tr>
<td>(8 2 1 2 3) /learning/Strategies/Metacognitive Strategies/self-monitoring/self-reflecting</td>
<td>0 1 0 0 2 1</td>
</tr>
<tr>
<td>(8 2 1 2 4) /learning/Strategies/Metacognitive Strategies/self-monitoring/checking one’s affective state</td>
<td>1 0 0 0 2 1</td>
</tr>
<tr>
<td>(8 2 1 3) /learning/Strategies/Metacognitive Strategies/self-evaluating</td>
<td>0 3 2 3 1 1</td>
</tr>
<tr>
<td>(8 2 1 3 1) /learning/Strategies/Metacognitive Strategies/self-evaluating/quality of the work</td>
<td>0 3 2 3 1 0</td>
</tr>
<tr>
<td>(8 2 1 3 2) /learning/Strategies/Metacognitive Strategies/self-evaluating/quality of self as a researcher</td>
<td>0 1 1 0 1 1</td>
</tr>
</tbody>
</table>

Notes: 1. This matrix was generated by NVivo through the Matrix Intersection Search of “Metacognitive Strategies & Participants”.
2. Numbers in the columns of Participants show the number of documents coded at the nodes.
3. (8 2 1 1) = the address of the node in an NVivo tree node
### Appendix 23 Matrix Intersection Search results (2): Cognitive strategies & participants

<table>
<thead>
<tr>
<th>Nodes</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
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Notes: 1. This matrix was generated by NVivo through the Matrix Intersection Search of “Cognitive Strategies & Participants”.
2. Numbers in the columns of Participants show the number of documents coded at the nodes.
3. (8 2 2 1) = the address of the node in an NVivo tree node
### Appendix 24 Matrix Intersection Search results (3): Social/affective strategies & participants

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Notes: 1. This matrix was generated by NVivo through the Matrix Intersection Search of "Social-Affective Strategies & Participants".
2. Numbers in the columns of Participants show the number of documents coded at the nodes.
3. (8 2 3 1) = the address of the node in an NVivo tree node