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**The Relationship between Self-Regulated Learning
and the Use of Online Portfolios in
an Online Learning Environment**

A thesis presented in partial fulfilment of the requirements for the degree of

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ABSTRACT

Self-Regulated Learning (SRL) theory provides an explanation for how learners control and direct their thoughts, feelings, and actions in relation to their learning goals and is considered to be an important requirement for successful learning. Using online portfolios is believed to enhance SRL skills. This longitudinal study conducted over one academic year examined postgraduate students' SRL skills in relation to their use of online portfolios within an online learning environment, and how they perceived the value of online portfolios. Factors that affected students' self-efficacy beliefs and perceptions of their ability to be successful in using online portfolios were also studied.

A mixed methods research design with an explanatory sequential approach involving three phases was used in the study. In the first phase, at the start of academic year, a questionnaire was used to assess students' initial SRL skills and their perceptions of the usefulness of online portfolios. Sixty-four students participated in this phase. Two SRL groups comprising students with high and low SRL scores were drawn from this sample. A three-person sub-sample of each SRL group was interviewed in the second phase in order to examine in greater depth the nature of SRL skills for those with high and low SRL scores. For the third phase, a follow-up questionnaire was used towards the end of the academic year to examine whether students' SRL skills and their perceptions of the usefulness of online portfolios changed over the period of their enrolment in the postgraduate course. For this third phase, 92 students participated.

The results revealed that SRL had a strongly positive relationship with students' perceptions of the usefulness of online portfolios and the relationship between the two variables over time was reciprocal – that is, both constructs influenced each other. The

results also showed a significant increase in students' reported SRL skills and in their positive perceptions of the value of online portfolios over the year.

Students attributed the increase in these two variables to using online portfolios to help set their own learning goals, control their own learning, and reflect on their learning. They identified a range of factors, including course support, motivation, peer support, and lecturer support, as helping them to construct and use their online portfolios. However, they identified lack of technology skills and time constraints as the main problems in constructing and using their online portfolios.

The findings of the present study indicated that students' skills across the three aspects (forethought, performance, and self-reflection) of SRL, the three stages of the use of online portfolios (collection, selection, and reflection), and the three elements of learning (personal, behavioural, and environmental) were interrelated. Such findings have important implications for students and university course coordinators to make better use of online portfolios, and for teaching and learning in a university online learning context, particularly in relation to the use of online portfolios as a tool for both storing (product) and reflecting (process) on artefacts of learning. This contribution in turn will help students to better regulate their learning behaviour.

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CHAPTER ONE

INTRODUCTION AND OVERVIEW

1.1 Introduction

The purpose of this study was to investigate the relationship between self-regulated learning (SRL) and the use of online portfolios by postgraduate university students in an online learning environment. In addition, the study explored the relationship between students' SRL skills and their perceptions of the usefulness of online portfolios within this environment. The study also examined factors that affected students' self-efficacy beliefs and perceptions of their ability to be successful in using online portfolios.

1.2 Rationale for the Study

Self-regulated learning plays an important role in academic success (Schunk, 2001; Schunk & Zimmerman, 2008; Zimmerman, 2002; Zimmerman & Schunk, 2001a) and is related to individuals' cognitive and metacognitive skills and strategies for effectively managing and controlling their own learning in order to attain their goals. However, it has been argued that knowledge of cognitive or metacognitive strategies alone is not enough to gain academic success; students must be motivated to *use* those strategies (Pintrich & De Groot, 1990; Zimmerman, 2011). Motivation is an essential aspect associated with learning outcomes because motivational factors contribute to students' persistence with learning behaviours that are designed to attain specific learning goals. High levels of motivation can increase students' (1) *attention* to their learning processes; (2) *task choices*; (3) *effort* with their attempts to learn difficult tasks; and, (4) *persistence* on time-consuming tasks (Zimmerman, 2011).

The use of online teaching and learning approaches is increasing in universities, and the role of individual motivation and SRL will play an important part in supporting successful learning outcomes. Artino and Stephens (2009) have shown that motivation is essential for online learners to sustain appropriate and adaptive learning skills and strategies in this learning environment.

Online portfolios defined as electronic collections of learning evidence (Barrett, 2000), are examples of online learning. Online portfolios are said to promote students' critical thinking (Abrami et al., 2008), to help foster effective goal orientation and self-reflection (Blackburn & Hakel, 2006), and to motivate students to learn (Lin, 2008). A growing body of research highlights the importance of SRL skills in an online learning context (e.g., Barnard-Brak, Lan, & Paton, 2010; Barnard, Paton, & Lan, 2008), and provide evidence of a link between SRL skills and the use of online portfolios (e.g., Abrami et al., 2008; Alexiou & Paraskeva, 2010; Blackburn & Hakel, 2006).

Little is known, however, about (1) how the skills that support effective online portfolio use align with SRL skills among postgraduate students studying in an online learning environment; (2) how students' perceptions of the usefulness of online portfolios are related to their SRL skills across the three phases of motivation presented by Zimmerman (1998b), namely forethought, performance, and self-reflection; and, (3) what factors influence students' motivation to learn how to create and use online portfolios effectively.

The purpose of this study was to make a unique contribution to SRL and online portfolio research by examining the relationship between these variables with postgraduate university students studying in an online learning environment. This was because the use of online portfolios will no doubt increase at university level, the

findings from this study will be very important to tertiary course planners as they incorporate online portfolio use into their courses.

1.3 Theoretical Framework of the Study

Self-regulated learning forms part of the social cognitive framework of motivational theory (Schunk, 2012; Schunk, Meece, & Pintrich, 2014). The social cognitive framework has evolved over the years from the initial work of Bandura (1986).

The social cognitive view focuses on individuals' perceptions, beliefs, and goals, such as self-efficacy (Bandura, 1997), expectancies and task values (Wigfield & Eccles, 2000), and achievement goals (Wigfield & Cambria, 2010). These motivational variables are considered to be influenced by social contexts and interactions (Kaplan, Katz, & Flum, 2012). Schunk et al. (2014) described motivation as "the process whereby goal-directed activities are instigated and sustained" (p. 5). Individuals are motivated by working toward their own goals and motivation is important for sustaining their learning-related behaviours.

In social cognitive theory, individuals' motivation and self-efficacy beliefs are important in pursuing learning-related goals. The notion of individual responsibility in learning is considered to be an important aspect of social cognitive theory (Bandura, 1989). Effective and successful learners are those who take responsibility for their own learning behaviours. The concept of personal responsibility is bound within the notion of self-regulated learning; taking personal responsibility requires that students have the skills to regulate, control, manage, and monitor their learning and learning-related behaviours.

Self-regulated learning is defined as the extent to which learners generate their thoughts, feelings, and actions to attain their learning goals through participating cognitively, motivationally and behaviourally in their own learning processes (Zimmerman, 1986; 1998a). Researchers in the area of SRL have sought to explain what tasks students do, as well as how and why students work to attain their goals and how they are able to control their own learning processes. These activities of attaining goals are linked to students' motivation.

Self-regulated learning is associated with academic achievement because it involves the self-directed processes that enable learners to transform their mental abilities into academic performance competencies (Zimmerman, 2002; 2008b). According to Zimmerman (2008b), students can use SRL strategies as proactive processes to acquire academic skills. The effective use of such strategies is generative and leads to students having enhanced motivation for future learning tasks (Zimmerman & Moylan, 2009). Proactive processes involve the willingness to set goals, select and deploy strategies, and self-monitor effectiveness. Self-regulated learners are believed to achieve better academic outcomes than those learners who are less self-regulated in their approach to learning (Schunk, 2001; 2008; Schunk & Zimmerman, 2008). Self-regulated learning strategies are not only beneficial in formal academic environments; they are also valuable in regard to lifelong learning contexts (Zimmerman, 2002; Zimmerman & Schunk, 2001a).

1.4 The Link Between Self-Regulated Learning and Online Portfolio Use

Self-regulated learning refers to cognitive and metacognitive strategy use, which Zimmerman (1998b) classified into three phases: forethought, performance, and self-reflection. The forethought phase occurs before learning takes place, with activities such

as goal setting and strategic planning; the performance phase occurs when learning strategies are used to pursue a goal; and the self-reflection phase occurs when learners evaluate the effectiveness of strategies in relation to achieving their goals, and then reflect on the efficacy of their behaviours in the first two phases.

These three SRL phases are similar to the processes of effective portfolio use, which involves the cycle of planning (goal setting), doing (producing), and reflecting (self-monitoring) (Meyer, Abrami, Wade, Aslan, & Deault, 2010) or of collecting, selecting, and reflecting (Barrett, 2010). A portfolio, particularly an online portfolio, can be used as a tool for developing SRL skills because of its inherent reflective nature. As Barrett (2010) and Jones (2010) noted, the key aspect of portfolio use is reflection, where learners assess their work and consider their strengths and weaknesses in order to engage in self-improvement. This link between SRL and online portfolio use is discussed further in the literature review in Chapter Two.

1.5 The Aims of the Study

The aims of this study were to examine SRL in relation to the use of online portfolios in an online learning environment; to explore the relationship between students' SRL and their perceptions of the usefulness of online portfolios; and to ascertain the personal (e.g., self-efficacy, motivation), behavioural (e.g., time management skills), and environmental (e.g., course support) factors that influenced the construction and use of students' online portfolios.

1.6 Context of the Study

The context of the study was a postgraduate professional practice programme, delivered in blended (online and face-to-face) mode, for educational practitioners to develop specialist skills to support learners who have a range of special needs.

The postgraduate diploma was developed and is delivered by two New Zealand universities. The programme uses an evidence-based, inter-professional and inquiry-based learning model with a range of flexible learning options that allows students to participate while they are working as teachers in the field. The inter-professional aspect of the programme provides an opportunity to study collaboratively within a community of learners, so that the specialist teachers learn *with*, *from*, and *about* each other. The inquiry-based aspect of the programme allows students to manage their own learning through setting their individual learning goals against the course competencies. This programme was chosen because of its blended and inquiry-based approach and, in particular, because it made use of online portfolios. The online portfolios in this programme use the Mahara open source software platform (<http://www.mahara.org/>).

Mahara was developed by the New Zealand e-Portfolios project in 2006, funded by the New Zealand Tertiary Education Commission (Lamont, 2008). Mahara was designed as a learning portfolio, managed by the user, and can be used to support the users' lifelong learning and development (Brown, Anderson, Simpson, & Suddaby, 2007; Lamont, 2008). The user can create, store, present and share as well as reflect on artefacts of their learning in their online portfolios. The user can have a single page or collection of pages and add different artefacts to those views. Mahara allows users to have permission control, which means the user can manage what items and information others can see.

Using online portfolios requires some degree of computer skills. Studies (e.g., S. J. Lee, Srinivasan, Trail, Lewis, & Lopez, 2011; Tosh, et al., 2005) show that technology skills are essential in constructing an online portfolio. Without these skills the requirement to use online portfolios would be a disadvantage for students who are new to this learning path. To help students successfully construct and use an online portfolio, the course provided a variety of supports for students to select according to their needs and learning situations. Course supports provided in the programme included:

- 1) An online group forum. For example, a peer support forum. Students could share ideas, issues, and experiences of their learning and their use of online portfolios in this forum.
- 2) Digital guides, videos and manuals. This consisted of a webpage containing all associate support materials, including a guidebook and video guides, which detailed step-by-step 'how to' create and use the online portfolios.
- 3) Face-to-face workshops in regional areas to help students learn how to use online portfolios. These meetings were called Geographical Area Network (GANs) meetings. The GANs meetings' agenda included workshops on online portfolios which provided hands-on – technical support, workshops on technical difficulties, discussion on assignments, course content and any other course-related issues, time-management issues relating to work and study, and other issues or concerns.
- 4) Block courses and email support. The block courses were organised to provide face-to-face interaction among students, lecturers, technicians, and peers to help with individual needs. The block courses were held

biannually: the first in February and the second in August. Throughout the year students could also email support staff at any time.

This support was provided in the course to help students understand the course structures and to motivate them to construct and use their online portfolios.

1.7 Research Questions

Five research questions were addressed and treated within a mixed-method research design. The first three research questions involved the collection of quantitative data and the last two involved the collection of qualitative data. The research questions were as follows:

1. Is there a relationship between students' SRL and their perceptions of the usefulness of online portfolios?
2. Do students' initial SRL skills relate to their subsequent perceptions of the usefulness of online portfolios?
3. Do scores for both students' SRL skills and their perceptions of the usefulness of online portfolios increase during the course, and, if so, do the scores for the high SRL group increase more than the scores for the low SRL group?
4. From students' perspectives, does the use of online portfolios increase their SRL skills?
5. What factors help or hinder students in the construction and use of their online portfolios?

The rationale for each of these research questions is discussed in Chapter Two.

1.8 Significance of the Study

This study is important because postgraduate students who study part-time at a distance are expected to be independent, highly motivated, and strategic in order to achieve their learning goals. Research indicates that successful students are those who are relatively well self-regulated. To sustain the motivation and effort required to complete a postgraduate course in an online environment while working in a full-time job requires well developed self-regulation skills. Relatively little is known about the levels of self-regulation among postgraduate students working in such a context.

Further, the increasing use of online portfolios offers both advantages and challenges for students. Online portfolios offer the advantage of facilitating the ongoing development of self-regulation skills. However, the reciprocal nature of the relationship between online portfolio use and self-regulation can pose a challenge for those students who have less well-developed self-regulation skills. This study is unique in that the relationship between self-regulated learning and perceptions of the usefulness of online portfolios was examined with postgraduate students who were working in a challenging programme with a limited amount of time. Effective learning strategies were paramount in these circumstances.

This study has the potential to contribute to the improvement and enhancement of online portfolio use by postgraduate university students. The findings will add to the existing literature on how postgraduate professional students regulate their learning behaviour and are motivated to learn within an online learning context, especially with the use of online portfolios.

Finally, at a practical level, information gained in this study will be of potential value to course coordinators and students. The coordinators can use the information to identify

the best practices for motivating students to actively use SRL skills and to adopt effective use of online portfolios.

1.9 Overview of the Study

The remainder of this study consists of five chapters. Chapter Two reviews relevant literature, including theory and research on learning and motivation, and social cognitive theory. SRL and its link to online learning and online portfolios are also addressed, followed by the research questions and their rationales. Chapter Three presents the methodology and research design for the study, along with data gathering tools, procedures, and proposed data analyses. Chapter Four presents the findings and implications of the study. Chapter Five discusses the key findings of the study in relation to the research questions. Finally, Chapter Six presents the conclusions and provides suggestions for future research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The purpose of this study was to investigate the relationship between postgraduate students' self-regulated learning (SRL) and their perceptions of the use and usefulness of online portfolios. To examine this relationship in depth, it was important to ascertain a theoretical framework relevant to the context of postgraduate online learning.

This chapter begins with an overview of contemporary motivational perspectives. It then explains why social cognitive theory has been employed as the overarching theoretical framework for this study, followed by an explanation of SRL and its cyclical phases. The focus then moves to online learning and its relationship to SRL and the use of online portfolios in learning and teaching, followed by how online portfolios link to SRL. The chapter concludes with a summary of key points and the research questions.

2.2 Contemporary Motivational Perspectives on Learning

Motivation plays an important role in learning and academic achievement, because it influences students' learning behaviour (Schunk et al., 2014). Motivation refers to the internal process that energises, directs, and sustains behaviour (Krause, Bochner, Duchesne, & McMaugh, 2010; Schunk et al., 2014). It is about goal-directed activities that are sustained over time, and these sustained goal-directed activities influence students' learning and behaviour (Schunk et al., 2014; Schunk, Pintrich, & Meece, 2008).

Schunk et al. (2014) have clarified several specific and important elements of motivation. First, motivation is a process rather than an end-product activity. It can be observed only through an individual's actions, such as effort, persistence, and choice of tasks. Second, motivation requires goals to direct an individual's actions. Third, motivation requires physical or overt actions (e.g., effort and persistence) and mental activities (e.g., planning and organising). These important elements of motivation are essential for students when they are pursuing their learning goals, such as graduating with a postgraduate qualification, or engaging in a new learning path, such as using online portfolios.

Historically, motivational perspectives focused mostly on people's responses based on their desire (will), their instinct or emotion, and environmental stimuli. However, such explanations tended to overlook the distinction between motivation and learning (Schunk, 2012). These classical motivational perspectives have been strongly challenged in recent years by a number of researchers (e.g., Bandura, 1997; Pintrich, 2003; Schunk, 2012; Schunk et al., 2014; Zimmerman, 2011). Krause et al. (2010) raised a concern that within classical motivational perspectives, students are generally extrinsically motivated and engage in surface rather than deep learning approaches. In contrast, within cognitive perspectives, motivation and learning are different, though related. Individuals might learn skills without being motivated, or they might be motivated but not learn (Schunk, 2012).

Contemporary views of motivation have explained individual motivation by examining their cognitive perspectives (Bandura, 1997; Schunk et al., 2014). Contemporary theories of motivation are diverse, but they share a number of assumptions including the following: motivation involves cognition, behaviour, and emotion; individuals construct their motivational beliefs; motivation is reciprocally related to learning, achievement,

and self-regulation; it is influenced by personal, social, and contextual variables; it changes with individual development; and it reflects individual, group, and cultural differences (Schunk et al., 2014).

Social cognitive theory has been a major focus of recent motivational research (Pintrich, 2003) and has been adopted by a number of researchers (e.g., Bandura, 1989; Pajares, 2008; Pintrich, 2004; Schunk, 1991; Wigfield & Cambria, 2010; Zimmerman, 1989) because it relates to academic achievement, learning situations, and learners' cognitive processes, such as self-efficacy beliefs.

The focus of this study is drawn from social cognitive theory, which assumes that an individual's motivation is influenced by their cognitive processes and the social environment (Bandura, 1986; 1997). An individual's behaviour "is extensively motivated and regulated by the ongoing exercise of self-influence" (p. 248) and environmental factors, and these factors, in turn, influence their subsequent beliefs about their ability to achieve a particular task (Bandura, 1991). Within social cognitive theory, self-efficacy beliefs and self-regulatory processes – namely self-observation, self-judgment, and self-reaction – are major constructs that are situational and domain specific (Pintrich, 2003), and they play an important role in learning and motivation (Bandura, 1991; Zimmerman, 1989).

Students in this study were adults studying at postgraduate level in an online learning environment. They needed to be highly strategic in their learning approaches. Researchers have found that graduate students are highly motivated and self-efficacious compared to undergraduate students because they have some degree of university experience (Artino & Stephens, 2009). However, an argument has been made by Zusho and Edwards (2011) that university students might have less motivation to learn and

fewer opportunities to self-regulate because of the increasing use of information technologies that could distract them from learning.

Several attempts (e.g., Nilsen, 2009; Pintrich, 1995; Tait, 2009) have been made to understand university students' learning behaviour and how to encourage them to be highly self-regulated in order to maintain their motivation to achieve their learning goals. Recent research (Hartnett, 2010) has found that university students' motivation is multidimensional. However, no attempt has been made to examine how university students' cognitive processes, such as self-efficacy beliefs and motivation, are reciprocally related to their learning behaviour and context, especially within a postgraduate study context. Before examining this relationship, it is necessary to discuss social cognitive theory, because it is the overarching theoretical framework that has guided this study.

2.3 Social Cognitive Theory

Social cognitive theory includes a powerful motivational strand that relates to students' motivational beliefs, academic achievement, and their surrounding learning environment (Pintrich, 2003). It was first proposed by Bandura (1986) when he suggested that learners are actively able to take control of their own learning if they choose to engage in particular tasks. Bandura (1986; 1989) described key concepts in social cognitive theory that individuals are capable of: (1) symbolic representation – that is, they use symbols to help them to understand their environment, (2) vicarious learning from observing others, (3) forethought, which is being able to think about and explain something before it happens, (4) self-regulation of motivation and behaviour, and (5) self-reflection and evaluation of behaviour, which may lead to increased or decreased self-efficacy.

In his groundbreaking examination of social cognitive theory, Bandura (1986) concluded that the behaviour of individuals is mostly “motivated and regulated by internal standards and self-evaluative reaction to their own actions” (p. 20). From Bandura’s conclusion, Schunk et al. (2014) have highlighted the distinction between learning and motivation within social cognitive theory – that individuals might not demonstrate knowledge or skills they learn by observing others unless they are motivated to do so by personal and situational factors.

Bandura (1986; 1989) explained individual behaviour within a process of reciprocal influences, or reciprocal interactions among internal and external factors, as well as behaviour itself. In this model of social cognitive learning, three elements – personal, such as cognition, behavioural, and environmental factors – are involved in individual responses to learning (see Figure 2.1), and each element is a two-way interaction. This important triadic framework of Bandura’s is useful in examining how university students motivate and regulate their learning behaviour in relation to the construction and use of online portfolios.

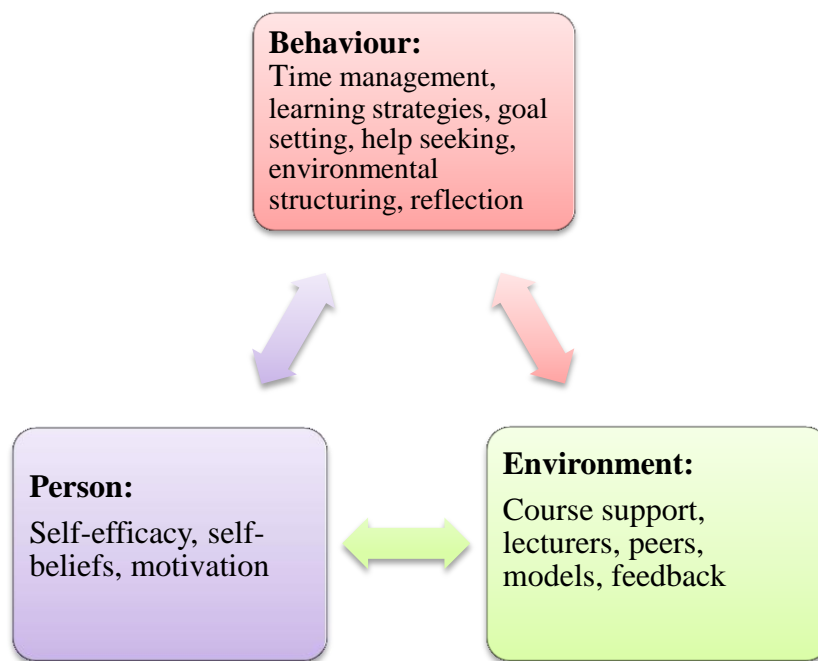


Figure 2.1. Reciprocal interactions of personal, behavioural, and environmental factors within social cognitive theory

According to Bandura (1986; 1989), self-beliefs may affect one's action and one's action may affect one's beliefs. Similarly, external factors or the environment may affect one's beliefs and behaviour, and these beliefs and behaviour may lead to change in one's environment.

Schunk (2012) also identified and described the reciprocal interactions among these three factors. He explained that when learners believe in their ability to do a particular task (person), they will put in effort and persist in that task (behaviour). In turn, when they accomplish the task (behaviour), their self-efficacy is enhanced (person). This is also applied in a negative learning situation. For example, if learners are not confident in their capability in a particular task, they might avoid that task or they might not try hard enough to complete it (person → behaviour). These learners might end up with decreased self-efficacy (behaviour → person). Further, when learners use a variety of support and feedback provided by their peers or teachers (environment) to evaluate their

behaviour or learning progress (environment → behaviour), their self-efficacy could be decreased if their progress is not satisfactory or increased if they are doing well in particular tasks (environment → person). This changed self-efficacy would affect future goals or learning.

According to Zimmerman (1989), when individuals are able to *control* these three factors – personal, behavioural, and environmental – they are self-regulating. Being able to control their own learning occurs as students monitor their own learning by evaluating the achievement of their self-set goals and by altering their behaviour and learning strategies, if necessary, to achieve these goals.

There were two main reasons for selecting social cognitive theory as the basis for developing this study. First, the purpose of the study was to examine how students' motivation and self-efficacy (personal factors) affected their use of online portfolios (behavioural factors) and available support (environmental factors). The foundation of the reciprocal causation concept of social cognitive theory could help to explore the interactions among these variables by drawing on Zimmerman's (1989) postulation that individuals are self-regulated when they control their own personal, behavioural, and environmental influences. Another reason for using social cognitive theory therefore was to discover how postgraduate students studying in an online environment controlled these three factors to motivate and regulate themselves in using online portfolios.

2.4 Self-Regulated Learning

Self-regulated learning theory has been developed to try to explain why some students fail and others succeed despite their limitations in mental ability, social environmental background, or quality of schooling, and why they show initiative, perseverance, and adaptive skills in achieving their goals (Zimmerman, 2001). Zimmerman (1986) defined

SRL as the extent to which learners generate their thoughts, feelings, and actions to attain their learning goals through participating cognitively, motivationally, and behaviourally in their own learning processes. These processes involve applying self-directive processes and self-beliefs, which allow learners to transform their mental abilities into academic skills (Zimmerman, 2001; 2002; 2008b).

Similarly, Pajares (2008) stated that SRL is a metacognitive process that forces students to expand their thinking to understand and assess the results of their actions and to plan alternative pathways to success. In addition, Schunk (2001) defined SRL from a social cognitive theoretical perspective, saying SRL refers to learning that results from students' self-generated thoughts and behaviours, which they use systematically to achieve their learning goals.

Self-regulated learning is associated with the development of learning processes that generate thoughts and behaviours that direct the way each person goes about the tasks involved in achieving their own goals. Drawing on these SRL definitions, self-regulated learners can be specifically identified.

Pintrich (1995) stated that self-regulated learners present three main characteristics: *control*, *goal*, and *individual student*. First, they attempt to control their own behaviour, motivation and affect, and cognition. Second, they try to accomplish their own goals. Third, they try to be in control of their own actions as individuals, rather than their actions being a requirement of others. Self-regulated learners seek to control their behaviour and environment to accomplish their goals.

Similarly, Svinicki (2010) noted that self-regulated learners are different in the way that, as learners, they work toward their learning goals by applying the cognitive strategies that they think will help them learn efficiently and effectively. They also enhance their

learning by using motivational and metacognitive strategies that they know will match their learning of particular material in a specific situation (Zimmerman, 1990; 2001).

According to Pintrich (1995), personal control of behaviour and environment is the key element that distinguishes SRL from other theories. That is, students are self-regulating when they are actively involved in choosing or creating a learning environment that best supports their learning, as well as choosing when and how they need instruction. Self-regulated learners also enhance their learning by using motivational and metacognitive strategies that they know will match their learning of particular material in a specific situation (Zimmerman, 1990; 2001). To be self-regulated, learners have to have their own learning goals and take responsibility for their own learning by controlling their own thoughts, behaviour, and environment.

Zimmerman (1989) explained that SRL strategies within social cognitive theory were not being determined merely by personal processes, such as self-efficacy. These processes are assumed to be influenced by environmental and behavioural factors in a reciprocal fashion. According to Zimmerman (1989), each SRL strategy aims to improve students' personal, behavioural, and environmental elements. For example, goal setting and planning help students to improve their self-efficacy, outcome expectations (personal), self-evaluation and self-monitoring enhanced behavioural function (behavioural), and their immediate learning environment by seeking help (environmental).

From a social cognitive view, learner choice is viewed as a critical element of SRL (Zimmerman, 1989; 1994; 1998a; 2000a) (see Table 2.1). Zimmerman developed the conceptual framework for studying self-regulation, which placed the emphasis on the choices that are available for learners. According to this framework, the concept of SRL

is fully possible when all aspects of the learning task are not controlled by others (Schunk, 2000; 2012). When learners have freedom to choose why, how, when, what, where, and with whom to complete a learning task and they can answer the questions why, how, when, what, where, and with whom they are learning, they can engage in SRL. Therefore, SRL skills can vary from low to high, depending on how much choice learners have (Schunk, 2000; 2012).

Table 2.1

A Conceptual Framework for Studying Self-Regulation

Scientific Questions	Psychological Dimensions	Task Conditions	Self-Regulatory Attributes	Self-Regulatory Sub-processes
Why	Motive	Choose to participate	Self-motivated	Goal setting and self-efficacy
How	Method	Choose method	Planned or automatised	Task strategies, self-instruction
When	Time	Choose time limits	Timely and efficient	Time management
What	Behaviour	Choose outcome behaviour	Self-aware of performance	Self-observation, self-judgment, self-reaction
Where	Physical environment	Choose setting	Environmentally sensitive and resourceful	Environmental structuring
With whom	Social	Choose partner, model, or teacher	Socially sensitive and resourceful	Selective help seeking

Adapted from “Dimensions of Academic Self-Regulation” (Zimmerman, 1994, p. 8)

Zimmerman (1994; 1998a) pointed out that all elements in the framework presented in Table 2.1 are related. The scientific questions in the left column are linked to the psychological dimensions in the second column, and these then reflect on to the learner to make a decision on the task in the third column. The consequences of these three columns lead to self-regulation attributes in the fourth column, and then the related sub-processes of SRL. For example, the question “Why” or “Why should I learn?” (see column 1) engages the learner’s motivation (see column 2). When the learner has motivation to learn, he or she will decide to participate in the task (see column 3) and this leads him or her to be a self-motivated learner (see column 4). This self-motivation is evident through goal-setting and self-efficacy SRL sub-processes (see column 5). This process can be similarly applied to the other questions in column 1. SRL sub-processes (column 5) are related to SRL phases (Figure 2.2).

2.4.1 Cyclical nature of self-regulated learning

Initially in social cognitive theory (Bandura, 1986; 1991), it was proposed that SRL involves the operation of self-observation (or self-monitoring), self-judgment, and self-reaction. Self-regulated learners would observe their learning progress (self-observation), evaluate whether their progress met the standard or goal employed (self-judgment), and choose to act or not act in a particular way, which they believed would help them to make further progress. However, Pintrich (2000) suggested four dynamic phases of self-regulation: forethought, planning and activation; monitoring; control; and reaction and reflection.

The self-regulation processes outlined by both these scholars are incorporated in the three dynamic and intertwined phases described by Zimmerman (1998b; 2002; 2008a), who labelled the phases of the self-regulatory processes as forethought, performance,

and self-reflection. It seems that Zimmerman's SRL phases are mostly in line with the triadic interaction in social cognitive theory (Bandura, 1986) because both the SRL structure and the triadic framework involve learners' cognitive processes, their learning behaviour, and learning situation, and all these elements are interrelated (Zimmerman, 1989). The links among the SRL phases and the three sets of social learning factors were also discussed by Schunk (2012), who asserts that Zimmerman's SRL framework expands the three factors in social learning theory.

To cover all these elements, Zimmerman's (1998b; 2001) SRL framework was applied to this study because the three phases reflect well the entire process of SRL. In fact, Zimmerman and Moylan (2009) illustrate the connection of the framework and SRL phases (see Figure 2.2). Further, Zimmerman framework reflects the interaction of personal, behavioural, and environmental factors, which are highlighted in social cognitive theory.

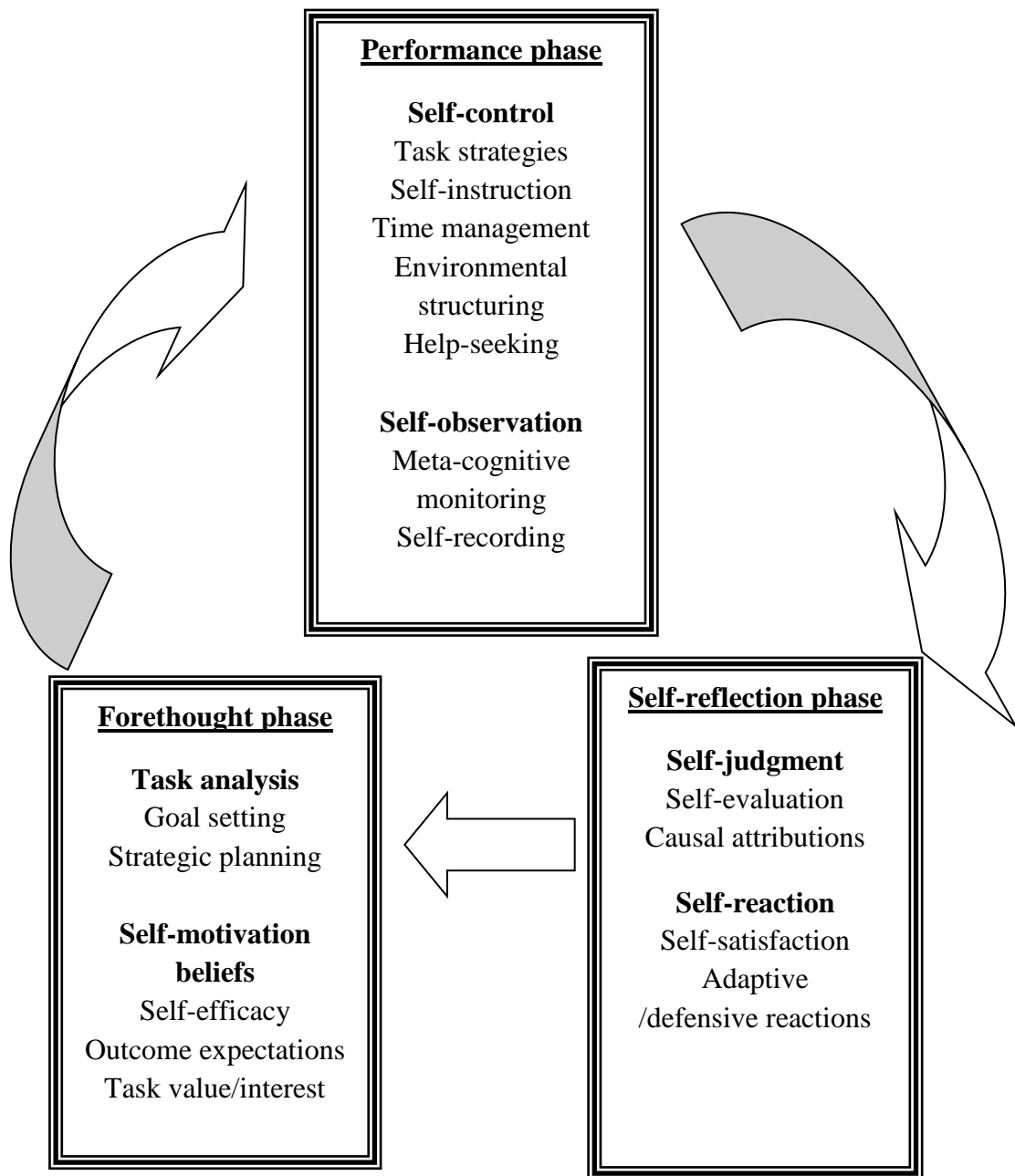


Figure 2.2. Three related phases of self-regulation: Forethought, performance, and self-reflection (Zimmerman & Moylan, 2009, p. 300)

The three SRL phases (Figure 2.2) make up a continuous process. Throughout these phases, students learn to become self-aware of their performance and to self-monitor their progress, which might lead to decisions to make changes. The three phases and their components are described below.

Forethought Phase

The forethought phase is viewed as a powerful set of learning processes and beliefs that drive the learner to learn and set the stage for their learning (Zimmerman, 1998b). Consequently, these have an impact on the effort students bring to a learning situation (Zimmerman, 1998b; 2002). The phase involves two important components: task analysis and self-motivation beliefs.

Task analysis

Task analysis consists of goal setting and strategic planning, both of which are critical to academic success. Goals are the aims of an action and involve a specific standard and a time limit (Locke & Latham, 2002; Zimmerman & Moylan, 2009), or “what an individual is consciously trying to accomplish” (Schunk, 1990, pp. 71-72). It therefore includes goal setting and the modification of goals if necessary. Students have a clear view of expected outcomes, such as writing 1,000 words per day for several days in order to complete a long essay on time.

Setting goals influences performance on a task (Locke & Latham, 1990). Within SRL, learners set goals for themselves to work towards, so that they achieve their particular learning outcomes (Zimmerman, 2008a). While they are working towards their goals, they adjust the cognitive strategies that they think are appropriate for themselves to complete the task at the expected standard.

Self-setting of goals is a useful SRL skill to facilitate task completion. Self-set goals are “governed by curiosity and intrinsic motivation to display one’s competence” (Paris & Ayres, 1994b, p. 27). Compared with goals set by others, self-set goals lead to higher expectations to accomplish tasks and greater skill acquisition (Locke & Latham, 2002; Schunk, 2012). Further, research has found that self-set goals enhance self-efficacy and

performance (Schunk, 1985; 1990), and learners who set goals for themselves are more likely to set higher goals (Locke & Latham, 2002).

Self-set goals also promote learners' commitment. When learners set goals for learning, they commit themselves to work towards those goals (Locke & Latham, 1990; 2002). With commitment to a goal, outcomes are likely to be better (Schunk, 2009; 2012). Two aspects that are involved in attaining high goal commitment are that (1) learners are convinced the goals they set are important, and (2) they think that those goals are attainable (Locke, 1996; Locke & Latham, 2002). Therefore, commitment to goals is critical, particularly when goals are specific and difficult (Locke, 1996; Locke & Latham, 2002).

Understanding the nature of goals is therefore important in the SRL phases. Goals can be proximal, specific, and challenging (Locke, 1996; Schunk, 1990; 2009; 2012). Proximal goals involve breaking long-term goals into short-term goals. For example, when learners intend to finish an essay in a particular topic within two weeks, they could break the topic into sub-topics and allocate time for each. When learners achieve these short-term goals, they increase their self-efficacy and motivation (Schunk, 1990; 2012). According to Latham and Seijts (1999), proximal goals provide clear markers of progress for learners and result in increased self-efficacy.

Specific goals refer to goals that are set to be achieved to a required standard within a certain time period. For example, in a mathematics class, instead of aiming only to engage in a task, learners who have specific goals might try to get scores, say, of 60 correct on the task in the next 30 minutes (Latham & Locke, 1991).

Another property of goals is their level of difficulty. Goals can be easy, difficult, or impossible (Latham & Locke, 1991; Locke & Latham, 1990). Challenging goals require

a large amount of effort, leading to a higher level of performance (Latham & Locke, 1991; Locke & Latham, 2002). Research has found that learners who set specific and challenging goals subsequently had higher performance (Latham & Brown, 2006; Latham & Seijts, 1999) and felt satisfied with their work (Latham & Brown, 2006).

Self-regulated learners are more likely to set challenging short-term goals that are relevant to their study and use strategies for allocating time to tasks to ensure completion. According to Zimmerman (2002; 2008a), self-regulated learners set goals that are specific, proximal, and challenging for themselves, whereas those with fewer SRL strategies set vague and unstructured goals. Further, self-regulated learners are more committed to their goals and make an effort to attain those goals, compared to learners who are not self-regulated. Goal setting influences other components in the three SRL phases (Zimmerman, 2008a). Once goals are set, self-regulated learners tend to apply other learning strategies to achieve them effectively.

Strategic planning is closely linked to goal setting. It is the process of selecting advantageous learning methods that are appropriate for the particular task and environmental setting to help learners reach their desired goals (Zimmerman & Moylan, 2009). For example, after a high SRL learner set a specific, proximal goal, such as writing 1,000 words a day, he or she would plan their writing strategies, such as setting the context to generate ideas and using mind mapping to develop and organise those ideas. These strategies are linked to the performance phases.

Self-motivation beliefs

Self-motivation beliefs come from students' knowledge of themselves in various learning contexts (Zimmerman, 2002; Zimmerman & Moylan, 2009). They involve three main constructs: self-efficacy, outcome expectations, and task value/interest.

Self-efficacy is the belief that individuals have in their capabilities to learn at certain designated levels, and it heavily affects their choice of actions (Bandura, 1986; 1997). Students who perceive themselves as capable are more likely to choose to participate in a task and expend greater effort and persistence on that task, particularly a challenging task. However, students who hold doubts about their ability might avoid trying to do a task. Self-efficacy in this study refers to students' beliefs in their capability and confidence in using online portfolios.

Self-efficacy can be conceptually related to self-competence, expectations of success, and self-confidence (Schunk, 1990; 2009; 2012). For example, students feel that they can master the course demands when they read a course outline. Students' belief in their capability influences their self-set goals and their selection of learning strategies. Research has found that self-efficacious students set high goals for themselves (Zimmerman, Bandura, & Martinez-Pons, 1992) and tend to apply effective learning strategies compared to students with low self-efficacy (Zimmerman & Bandura, 1994).

Self-efficacy, therefore, has an impact on learning. There is greater effort, participation, and persistence shown by students with high self-efficacy, which enhances their learning (Schunk, 2012). However, this is not the case for students who doubt their capabilities, especially because self-efficacy influences students' choices (Schunk, 2009; 2012) and students' choices are crucial in SRL (Zimmerman, 1989; 1994; 1998a; 2000a).

Further, high self-regulated learners perceive themselves as self-efficacious and react more positively to learning endeavour than less self-regulated learners (Zimmerman, 1989; 1998b). Additionally, Kitsantas, Winsler, and Huie (2008) found that self-efficacy was important, particularly for first-year university students, when they needed to adapt their learning skills to higher education. They also found that academic

achievements could be predicted by self-efficacy during the first year of university study.

Another component of self-motivational beliefs is outcome expectations. This component refers to personal beliefs about the consequences of their learning (Bandura, 1997) and it is closely related to self-efficacy beliefs (Schunk, 2012). However, they are different in terms of their meaning (Schunk & Zimmerman, 2006). Self-efficacy refers to perceived capabilities in performing the tasks and focuses on current competence on a given task, whereas outcome expectations are the belief about the anticipated outcomes of those tasks, which is concerned about the future (Phan, 2014; Schunk, 2012; Wigfield & Eccles, 2000). For example, when students feel that they can master the course, they will expect to achieve that.

Task value/interest is the third factor influencing self-motivational beliefs. Value/intrinsic interest refers to “the students valuing of the task skill for its own merits” (Zimmerman, 2002, p. 68) – that is, they find it useful, valuable, or interesting. Interest and enjoyment in a task keeps learners persevering at it and they are more likely to achieve the expected outcomes. Task value/interest is important in focussing attention (Hidi & Ainley, 2008). Existing studies (Ding, Sun, & Chen, 2013; Wigfield & Eccles, 2000) have found that task value/interest is positively linked to students’ intentions to engage in a task. Task value also influences learning strategies. Both Neuville, Frenay, and Bourgeois (2007) and Zimmerman (2000a) found that interested students were more likely to be motivated to plan and report the use of learning strategies for completing a task than those without interest. This is linked to the performance phase.

In summary, subcomponents in the forethought phase (goal setting, strategic planning, self-efficacy, outcome expectations, and task value/interest) are related and work in combination in influencing learners' motivation and their academic achievements. Research has shown that achievement goals predict outcome expectations and task values (Plante, O'Keefe, & Théorêt, 2013), and lead to academic achievement (Wigfield & Eccles, 2000). Further research findings (Ding et al., 2013; Phan, 2014; Pintrich & De Groot, 1990; Zimmerman, 2000b) have revealed that self-efficacy, outcome expectations, and task value contribute to students' engagement in tasks and encourage students to apply reflective thinking practice and deep learning strategies to their learning situations.

The forethought phase involves personal factors that influence students' learning behaviour to achieve their goals. This phase is a key aspect of learning, which enables them to control and influence the strategies used in the performance and self-reflection phases.

Performance Phase

The second phase of self-regulation is the performance phase. This involves the many learning processes that occur during learning efforts that have an effect on the learners' concentration and performance (Zimmerman, 1998b; 2002). This phase is influenced by the forethought phase (Zimmerman, 2002). When students set their learning goals, believe in their capability to attain those goals, expect positive outcomes, and are interested in the task, they will select appropriate learning strategies to achieve the goals. These processes help learners stay focused and perform well on a task. Self-control and self-observation are two major aspects of the performance phase.

Self-control

Zimmerman (2008b) discusses the concept of self-control methods, which are ways that students can “overtly and covertly” strengthen their learning (p. 281). This refers to the selection of specific learning strategies by learners to help themselves (Zimmerman, 2002). While reactive learners work on the tasks without preparing any learning strategies, proactive learners deploy strategies that they have selected during the forethought phase. The key parts of self-control include strategies that relate to the task itself, and those that students use for self-instruction, time management, environmental structuring, and help-seeking (see Figure 2.2).

Task strategies refers to the choice of specific methods or strategies for addressing specific components of a task or making complex tasks into simple tasks, and systematically reorganising tasks. These can be note-taking, test preparation, and reading comprehension. Self-instruction is used to guide a person’s thoughts and actions as they make progress through a task or course (Zimmerman & Moylan, 2009). It is the way that learners tell themselves how to proceed on a learning task (Zimmerman, 1998a) – for example, how to solve a mathematics problem. Schunk (2001) pointed out that self-instruction can help students improve their self-efficacy and learning performance. Time management strategies are selected to ensure time is used effectively to accomplish learning tasks (Zimmerman & Moylan, 2009), such as setting specific goals, estimating time requirements for a task, and prioritising tasks. Environmental structuring is a self-control method that learners use to ensure that they have appropriate learning environments to improve their concentration and screen out distractions (Zimmerman & Moylan, 2009).

Help-seeking is an aspect of self-control that involves regulating the social environment to promote learning (Zimmerman & Moylan, 2009). This refers to the process of asking for help. When self-regulated learners are having difficulties, they are willing to ask for help from others they believe can help them overcome the difficulty. Although asking for help is a key aspect of the learning process, seeking help can be adaptive or non-adaptive (Newman, 2008). Newman (2008) explained that before asking questions, adaptive help-seekers will reflect on what questions are necessary, what they should ask specifically, and who they should ask. This is in contrast to non-adaptive help-seekers, who might ask questions that are not necessary, or do not know who can provide the appropriate answers for their questions. Consequently, adaptive help-seeking is viewed as a strategy of SRL (Newman, 2002; Zimmerman & Schunk, 2001b). Highly self-regulated learners are more adaptive than low self-regulated learners.

Self-observation

The other set of SRL performance behaviours relates to self-observation. Self-observation refers to self-experimentation (Zimmerman, 2002), because it involves learners' examining their own participation and outcomes in a learning situation, and possibly making changes or trying new strategies. This includes metacognitive monitoring and self-recording.

Metacognitive monitoring is the informal mental tracking of a person's performance processes and outcomes (Zimmerman & Moylan, 2009). Self-recording, on the other hand, refers to creating formal records of learning processes and outcomes, such as performance records in logs, charts, and portfolios (Zimmerman & Moylan, 2009). Proactive learners carry out self-observation (Zimmerman, 2008a). They are aware of how much time they spend on studying and on a particular task and keep those records

both mentally and physically. These are all performance behaviours, which lead to students' reaction in the self-reflection phase.

The performance phase involves behavioural factors that students use – both cognitive (task strategies) and metacognitive (monitoring) strategies to understand their learning. These factors influence and are influenced by personal factors in the forethought phase.

Self-Reflection Phase

The self-reflection phase involves the learning processes that occur after learning efforts in the forethought and performance phases; it influences learners' reaction to their own learning experience (Zimmerman, 1998b; 2002). The self-reflection phase consists of two major components: self-judgment and self-reaction.

Self-judgment

A key form of self-judgment is self-evaluation. According to Zimmerman (1998b) and Zimmerman and Moylan (2009), self-regulated learners want to evaluate how well they perform on a task and how they compare to either a standard or to others. Self-evaluations naturally lead to another form of self-judgment called causal attribution, which refers to beliefs about the cause of failures or successes (Alderman, 2008; Zimmerman, 2002).

Attributions are classified according to three dimensions: internal-external, stable-unstable, and controllable-uncontrollable (Weiner, 1992). Internal causes are factors within the person, such as ability and effort, while external causes can be environmental factors, such as teacher support or peer distractions. The terms stable and unstable refer to whether the cause cannot change over time (stable), such as ability and task difficulty, or whether it can be modified (unstable), such as effort and preparation.

Controllable and uncontrollable causes refer to whether causes can be controlled. Some internal causes can be perceived as either stable or unstable, and either controllable or uncontrollable. For example, ability is considered as internal, stable, and uncontrollable, while effort is internal, unstable, and controllable (Bar-Tal, Raviv, Raviv, & Bar-Tal, 1982; Weiner, 1992; 1996). Similarly, task difficulty is considered as external, stable, and uncontrollable, whereas preparation is considered as external, unstable, and controllable.

Causal attributions influence students' self-efficacy beliefs and persistence on subsequent similar learning tasks. For example, if students believe that their failure in a particular task is the consequence of their lack of abilities, the students are unlikely to try hard on the next similar tasks. However, if they think the failure comes from their lack of effort, they are likely to try harder next time. This example also applies in the case of success.

According to Alderman (2008), causal attributions can influence a person's expectations and behaviour. While high-achieving students normally attribute their outcomes to internal-unstable-controllable causes, which lead them to have high expectations and confidence, low-achieving students tend to attribute their poorer/weaker results to external-stable-uncontrollable causes, which lead them to have low expectations and confidence. This means that attributing a poor grade to limitations in ability can undermine motivation, because it implies that efforts to improve on a future task will not be effective. In contrast, attributing a poor score to controllable processes, such as the use of an appropriate solution strategy, will sustain motivation because it implies that a different strategy might lead to success and that the learner has the power to improve (Zimmerman, 1998b; 2002). This means that self-regulated learners will tend

to attribute their failures to causes that can be corrected and attribute their successes to ability.

Self-reaction

Self-reaction is made up of self-satisfaction and adaptive/defensive reactions. Self-satisfaction is defined as the cognitive and affective reactions to a person's self-judgment (Zimmerman & Moylan, 2009). An increase in self-satisfaction can enhance motivation, whereas a decrease can undermine further efforts to learn (Schunk, 2001). Adaptive responses refer to the adjustments students make to increase the effectiveness of their learning strategies. In contrast, defensive responses involve "efforts to protect one's self-image by withdrawing or avoiding opportunities to learn and perform" (Zimmerman, 2002, p. 68). Learners with adaptive reactions show a willingness to engage in further learning methods, whereas those with defensive reactions avoid further efforts to learn, and might drop a course in which they are feeling challenged.

Combined, the three SRL phases outlined above make up a continuous process, consisting of the development of a set of constructive behaviours and motivation that affect students' learning. The studies outlined above have mostly examined students' personal factors in relation to learning outcomes (e.g., Ding et al., 2013; Phan, 2014; Plante et al., 2013). However, they did not cover personal factors in relation to students' strategies, both cognitively and metacognitively.

2.4.2 Research on self-regulated learning

Self-regulated learning has a strong explanatory power for numerous learning contexts, from primary school students to university students. Research has found that young children can develop metacognitive strategies and use these strategies for their learning (Roebers, Schmid, & Roderer, 2009; Throndsen, 2011). Further, Metallidou and

Vlachou (2010) found that fifth and sixth grade students who had high value beliefs in mathematics used more cognitive and metacognitive strategies and were more motivated than those with lower value beliefs. They also found that high motivational beliefs increased students' ability in seeking help. These studies showed that cognitive and metacognitive strategies were influenced by students' motivational beliefs.

Research on SRL within a university context has also found that self-efficacy beliefs have a strong power to improve university students' positive learning outcomes (DiBenedetto & Bembenuddy, 2013; Klomegah, 2007; Latham & Brown, 2006; Lynch, 2006), and influenced students' learning strategies and their persistence in learning (Liao, Edlin, & Ferdenzi, 2014; Nilsen, 2009; Virtanen & Nevgi, 2010).

Other SRL skills research, such as help-seeking (Geller & Bamberger, 2012; Newman, 2008), causal attribution (Hawi, 2010), task value and interest (Beth & Taylor, 2009; Hidi & Ainley, 2008), and the effect of properties of goals on learning (Latham & Sejts, 1999; Sejts & Latham, 2001), have also been investigated within a university study context. However, they have focused mainly on subcomponents of SRL in relation to learning outcomes. Subcomponents across the three SRL phases in relation to learning behaviours need to be further explored because students' personal and behavioural factors are all related and influence each other across the three SRL phases (Zimmerman, 1989).

Convincingly, DiBenedetto and Zimmerman (2010) investigated self-regulatory processes across the three SRL phases of Zimmerman's model, but with science high school students. They found that all three phases were related. Students who were higher achievers had higher SRL; they used self-regulatory strategies more frequently, were more satisfied with their work, and were more adaptive than those who were low achievers. However, these studies did not consider the connection between SRL phases

and triadic factors of social cognitive learning theory, especially within a postgraduate learning context.

Self-regulated learning can help to explain educators' or teachers' understanding of how students learn in a range of learning contexts. In particular, recent developments in SRL have been highlighted within a university learning context (Zusho & Edwards, 2011). Self-regulated learning is also highly applicable in the online learning environment, where sometimes students might feel isolated and are forced to rely heavily on the skills or strategies they have.

The pedagogical framework that underpins the programme within this study is aligned with a social constructivist approach. A social constructivist framework provides an opportunity for students to set their own learning goals and select their own learning materials for their personalised learning plan. Social constructivism requires multiple opportunities for interactive communication including both synchronous and asynchronous communication modalities, and this can be achieved online through chat rooms, wikis and forums. Online learners can work individually and collaboratively (Folden, 2012).

A social constructivist collaborative learning approach within an online learning environment provides an opportunity for learners to direct their own learning and interact with others in order to achieve their learning goals. The technology provides the affordances for the learner to take responsibility for their own learning and become self-regulated learners, through the use of quizzes, optional course content, forums, glossary tools, wikis, chat-rooms and online portfolios.

The postgraduate programme, which was the context of the current study, is based on a social constructivist collaborative learning approach. The programme uses a Blended

Community of Inquiry and Inter-professional Practice (BCIIP) approach to support learning in an online learning context. The programme provides the blending of face-to-face (block courses and regional meetings) and online learning (a Moodle teaching site and students use of MyPortfolio). A learner-centred and evidence-based approach is used to support self-directed and self-reflection of learning (inquiry learning), allowing for interaction, communication, and collaboration cross and within endorsement areas (interpersonal learning). This overall supports the development of professional identities (the community of practice). The next section addresses the online learning environment.

2.5 The Online Learning Environment

Inglis (2008) defined online learning as learning that takes place via a computer attached to an intranet or internet. Online learning uses technology, such as the internet, to facilitate learning processes (Nichols, 2008), providing an opportunity for students to learn through reflection and interaction among themselves and with teachers.

Online learning has been prominent in the 21st century (Harasim, 2000). Many university courses are now taught online, either partly or totally (Allen & Seaman, 2008). Learning management systems (LMSs) have been introduced widely as online learning platforms that accommodate existing web-based learning environments to support online learning (Cavus, 2009; Nichols, 2008; Passerini, 2008). These online learning platforms are software packages that enable the management and delivery of learning content and resources to students, and are often closed systems that require user accounts and permission to access the learning space.

The content and use of LMSs are focused totally on the course requirements, but can provide students with choices. From a university perspective, an LMS is employed to

increase the efficiency of teaching, enrich student learning, and support the idea of constructivist pedagogies (Cavus, 2009; Black, Beck, Dawson, Jinks, & DiPietro, 2007). Learning Management systems can play a role in supporting students to learn from each other, including reflecting on others' work, and can help students to construct and build new knowledge through online interaction and discussion activities. Further, having a repository for all course materials provides students with an opportunity to develop their own learning processes. However, Siemens (2004) pointed out that in reality learning skills, in particular SRL, might be limited by using such systems because the LMSs are designed more for administrators than learners. Within LMS design, the instructors organise course content and materials, and have access to all information stored for their course. However, the learners have limited space and opportunities to explore other areas and directions of personal interest. Access depends on current enrolment with the institution, and it is managed around course structures. Students have access only to the courses they are enrolled in and only for the duration of these courses. Once they have finished the courses they are no longer be able to use the system.

From the characteristics of an LMS as outlined above, it becomes evident that the system might not provide learning opportunities for all students in terms of personal interest, context and goals. Self-regulated learning strategies might not be fully supported by using an LMS. To enhance learning through using technologies, the emphasis should be put on the learner's needs rather than technology (Coates, James, & Baldwin, 2005). Overcoming some of the limitations of an LMS has occurred with the shift to Web 2.0 and the use of online portfolios.

Rosen and Nelson (2008) describe Web 1.0 and Web 2.0 as phases of internet usage. Web 1.0 was the first phase, which focused on presenting information, whereas Web 2.0

enabled both presentation and creation. Web 1.0 was used frequently in the early 1990s and was characterised by having large amounts of information presented on the web, allowing the user to read only (Kesim & Agaoglu, 2007; Rosen & Nelson, 2008). Instructors using Web 1.0 technology could create pages and show relationships among items, and users could follow their links to gain the relevant information.

Web 2.0, on the other hand, is a read-write approach that involves collaboration and creating information (Rosen & Nelson, 2008; Solomon & Schrum, 2007). Using Web 2.0 technology, such as wikis, blogs, and online portfolios, students can create and share their own ideas, as well as participate in a variety of online activities, such as creating, editing, commenting on, and collaborating in an online community. It is openly accessible for anyone who has an internet connection. The difference between Web 1.0 and Web 2.0 is summarised in Figure 2.3 below.

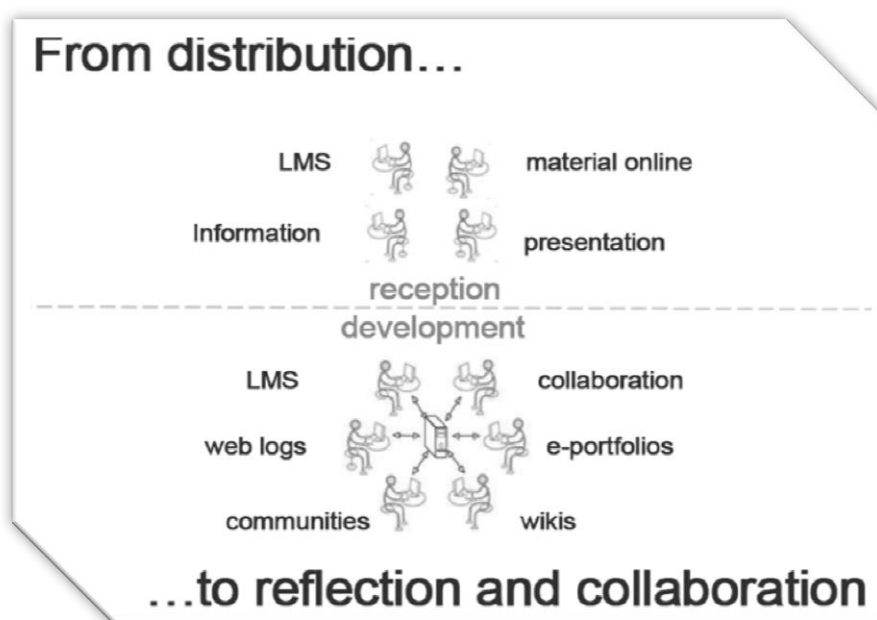


Figure 2.3. Landscape of online learning: The shift from Web 1.0 to Web 2.0 (Ehlers, 2009, p. 298)

Figure 2.3 shows Web 1.0 and Web 2.0 approaches, which are located in different learning landscapes. LMSs are located within both Web 1.0 and Web 2.0 spaces. While LMSs in Web 1.0 can be used for information presentations, LMSs in Web 2.0 can be used for promoting collaboration and creation as well as for the more traditional information presentation. In line with the approaches in Figure 2.3, Ehlers (2009) and Mentis (2007) highlighted that Web 2.0 technology enables self-directed learning in social networks. The learners are active participants rather than passive receivers of information and are involved in reflecting on their learning process. The reflection and collaboration of learning within a Web 2.0 learning environment is linked to the notion of self-regulation, because learners can create their own knowledge base and have more direct control of their learning (Mayes & Fowler, 2006). Online portfolios as a Web 2.0 tool enable learners to engage in self-regulation of their learning. There is the possibility that for some, the use of online portfolios might result in feelings of isolation if they are left to rely on their own learning strategies. Teaching support is important in online courses to enable students to become self-regulated.

2.6 Self-Regulated Learning and the Online Learning Environment

The availability of Web 2.0 technologies in online education provides significant benefits for learning and teaching. Learning online helps to enhance group communication (Garrison, 2003), which gives students an opportunity to share interests and to compare and discuss concepts. Collaborating with different groups, cultures, and levels of experience can enhance the learning environment and provide learners with a wider network of contacts (Porter, 2004).

Several attempts have been made to examine students' motivation and SRL strategies within an online learning environment (e.g., Artino & Stephens, 2006; Artino &

Stephens, 2009; Greene & Azevedo, 2010). Artino and Stephens (2006) investigated the link between students' motivation (perceived task value and self-efficacy) and their use of learning strategies (elaboration, critical thinking, metacognitive strategies) in online courses at undergraduate and graduate levels. They found that perceived task value and self-efficacy were both significantly and positively related to students' use of learning strategies such as elaboration, critical thinking, and metacognitive learning strategies. They concluded that within an online learning environment, students' motivational beliefs and attitudes towards a task influence their learning strategies. This was the case for both undergraduate and graduate students.

However, Artino and Stephens (2009) found that the levels of online motivation and engagement were different between undergraduate and graduate students when looking at academic motivation and self-regulation in an online learning environment. While graduate students were more likely to report using critical thinking strategies during online learning, undergraduate students were more likely to procrastinate in their courses, even though they reported that they valued the course content and wanted to engage in more online courses in the future. According to Artino and Stephens (2009), graduate students had more experience as learners at university level and were more motivated than undergraduate students. Hartnett (2010) also investigated the motivation of online graduate students, using a case study approach. She found that both extrinsic and intrinsic motivation within these students co-exists, and concluded that "the motivation of online learners is complex and context dependent" (p. 228).

In summary, online learning has been introduced in learning situations because it meets the demand for flexibility and accessibility by students and instructors in today's learning and teaching environments. Importantly, it helps students become independent learners and, therefore, self-regulated learners (Barnard et al., 2008).

Therefore, SRL is an important construct to examine within an online learning environment, and especially for postgraduate students, who are expected to be strategic in their approach to learning. These students would have greater university experience than undergraduate and graduate students, would be more intrinsically motivated to learn, would value the task, and would more frequently use metacognitive learning strategies than the other two study levels (undergraduate and graduate) (Artino & Stephens, 2009). Furthermore, many postgraduate students are full-time workers and have to keep a balance with their family, work, and study. They have to be even more strategic and efficient in their learning. Therefore, they need to be more flexible in their approach to their study. Online learning is anytime and anywhere, which affords the flexibility and accessibility required by these students (Ally, 2008; Anderson, 2008). Online portfolios are increasingly being used as the technology of choice in online courses to enable personalised, life-long, anytime-anywhere learning.

2.7 Online Portfolios

The use of online portfolios as a Web 2.0 technology is increasingly being incorporated into online learning programmes (Stefani, Mason, & Pegler, 2007). Portfolios are defined as a collection of users' artefacts that have been gathered to demonstrate their learning over time (Butler, 2006; 2010; Johnson, Mims-Cox, & Doyle-Nichols, 2006). The artefacts can be any materials relevant to the users' development, such as research projects, photographs, videos, observations, and evaluations by others. They can be complemented by reflective comments on these artefacts. Originally, portfolios were used by artists or architects to present their work (Meeus, Questier, & Derks, 2006). Later, they were used in the educational area as a means of allowing learners to show their developing skills and achievements (Meeus et al., 2006).

Physical portfolios have developed into electronic or online portfolios and are “created in a computer-aided environment and incorporate not just text, but also digital images, websites, audio and video files” (Butler, 2010, p. 111). Barrett (2000; 2007), in her definition of online portfolios, also refers to the freedom that electronic technology affords for online portfolio developers, who can collect and organise a changing array of artefacts that represent their work and roles.

An online portfolio has advantages in terms of the variety of available media formats, accessibility, and more opportunities for collaboration and feedback (e.g., Barrett, 2000; Butler, 2006; Butler, 2010; Stefani et al., 2007). According to Stefani et al. (2007), there are three obvious differences between online portfolios and paper-based portfolios. First, when developing an online portfolio, it is easy to rearrange, edit, and combine material. In digital form, a developer can easily modify and collate an online portfolio to suit his or her individual needs for a particular purpose or at a particular time. Second, the online portfolio is a connected document, in which the developer can use hyperlinks to join documents together, linking between the portfolio elements and external sources and references. Last, the online portfolio is more portable, so is easy to transport, transfer, and use in different locations. Moreover, the digital form can be replicated and shared with others.

These advantages are verified by students’ opinions about online portfolios in Wickersham and Chambers’ (2006) survey. Students liked the ability to see other online portfolios because it helped them to learn about success and challenges and to share their thoughts with others. Simpson (2011) found that students perceived the usefulness of online portfolios over time.

Spendlove and Hopper (2006) also pointed out that online portfolios can support, enhance and facilitate the recording of processes, methods, and outcomes, which can be difficult with conventional portfolios. These differences indicate that there are advantages to using online portfolios over paper-based ones. However, the concept behind the two versions does not change. Both versions have the same key idea of reflective learning. When students reflect on their own learning processes and get appropriate feedback, they are better able to determine their own future learning goals (New Zealand Ministry of Education, 2009).

2.7.1 Types of portfolios

Researchers (Abrami & Barrett, 2005; Smith & Tillema, 2003; Stefani et al., 2007; Zeichner & Wray, 2001) have classified portfolios in several ways. Zeichner and Wray (2001) categorise them into a learning portfolio, which is used to show a student's abilities; a credential portfolio, which is used to demonstrate levels of proficiency on a set of teaching standards; and a showcase portfolio, which is used for employment purposes. Abrami and Barrett (2005) also identify three types, though they describe them as a process where a portfolio is used as:

- a) a personal learning management tool that supports how developers learn through various learning strategies and encourages individual development;
- b) a showcase, which focuses on the demonstration of learners' competencies and achievements; and
- c) an assessment, where a portfolio is used as an external evaluation or judgment tool.

However, Smith and Tillema (2003) and Stefani et al. (2007) have described four types.

Smith and Tillema (2003) group them as:

- a) a dossier portfolio, used for job collection or promotional purposes;
- b) a training portfolio, used to exhibit students' learning journey;
- c) a reflective portfolio, used to show evidence of growth and accomplishment for promotion and admission; and
- d) a personal development portfolio, used for self-evaluation and reflection.

Stefani et al. (2007) labelled them as a showcase portfolio, an assessment portfolio, a development portfolio, and a reflective portfolio. Although portfolios are used for different purposes, they can all provide significant benefits to users.

2.7.2 Advantages of online portfolios for learning

The use of online portfolios in higher education has grown because they are believed to support students' independent and lifelong learning skills (Barrett, 2010; Ehlers, 2009; Stefani et al., 2007). According to Strudler and Wetzel (2005), between 2003 and 2004 the Society for Information Technology and Teacher Education (SITTE) revealed that 108 presented papers focused on online portfolio use in pre-service education. Stefani et al. (2007) believe that online portfolios share some similarities to other aspects of online learning, such as lifelong learning, flexible and student-centred pedagogies, web-based teaching, and new forms of assessment. Ehlers (2009) included online portfolios in the landscape of Web 2.0 technologies, which are used to support learner-centred learning approaches, knowledge creation, collaboration, and reflection on learning. They all suggested that online portfolios are a learning tool that can be used to promote active learning skills for higher education students to help them learn independently and prepare them for life after graduation.

Developing a portfolio has a number of benefits for students. A portfolio documents students' development over a period of time (Abrami & Barrett, 2005; Smith & Tillema, 2003). The development of a portfolio encourages learners to take an active role that leads to more dynamic interaction among instructors and learners (Johnson et al., 2006). Similarly, benefits reported by Harris, Dolan and Fairbairn (2001), Barrett (2007), and Abrami et al. (2008) are that an online portfolio facilitates the development of student autonomy and better study skills and can be used as a focus for discussion, the development of reflective skills, and an assessment tool. By developing a portfolio, students have an opportunity to see their academic performance as either a strength or a weakness, and then dynamically improve.

Using online portfolios can be linked to motivation. Stefani et al. (2007) and Ntuli, Keengwe, and Kyei-Blankson (2009) stated that using online portfolios allows students to use a wide range of different learning modalities, such as video, audio, visual display, and printed documents, and all of these learning formats can have an impact on students' self-motivational beliefs. Driessen, Muijtjens, Van Tartwijk, and Van Der Vleuten (2007) found that in developing an online portfolio, the diversity of presentation modalities, the greater ease of use, and the better organisation and structure of contents meant that students' motivation was enhanced. Similar arguments have been made that an online portfolio can be used as an essential tool to engage and motivate students to learn (Lin, 2008), and help students to become more independent and interactive (Abrami & Barrett, 2005).

2.8 Self-Regulated Learning and Online Portfolios

The use of online portfolios can be linked to the three cyclical phases of the Zimmerman (1998b) model of SRL. Cheng and Chau (2013) concluded that using

online portfolios is a complex process that requires some degree of SRL skills. Barrett (2010) pointed out that reflection on evidence is a key aspect of online portfolios. Reflecting on evidence allows the portfolio users to evaluate their work in relation to the goals they have set and use this evaluation for setting future goals. The reflection is also included in the self-reflection phase of SRL (Zimmerman, 1998b; 2002). In the SRL processes, students set their own goals, apply learning strategies to work toward those goals, and then evaluate the outcomes. When students feel satisfied with their learning progress, they gain more confidence and set higher learning goals in the future (Schunk, 2012).

The link between SRL and online portfolios has been investigated by Chau and Cheng (2010), who examined teachers' and undergraduate students' views on online portfolios. They found that online portfolios related to three phases of independent learning: planning, monitoring, and self-reflection. They reported that using online portfolios provided students with choice about their learning, improved their technological competence and learning strategies, enabled them to use feedback from teachers and peers, and resulted in them perceiving the online portfolio as a product and process tool to improve their learning. Barrett (2010) distinguished between the product and process aspects of portfolios, whereby the *process* involves a series of activities and focuses on learning and reflection in a workspace, and the *product* refers to the end result of the online portfolio process, which focuses mainly on it being a showcase for accountability.

Alexiou and Paraskeva (2010) also examined the connection between SRL skills across the three phases and the use of online portfolios within an undergraduate context. In their study, students were required to complete designated activities following the cycle of SRL from forethought to performance, which in turn influenced self-reflection. From

these activities, students reported that the structuring of the online portfolio tasks motivated them to use the portfolio and also helped to support their learning.

It seems that the link between SRL and online portfolios is established at both undergraduate and graduate levels. However, the links among these variables have not been examined in a postgraduate learning context, where the learners are expected to be highly motivated and value the use of online portfolios. This study aimed to fill this gap by examining whether postgraduate students' learning behaviours were related to the use of online portfolios in terms of two aspects – the *process* and *product* of online portfolio use (Barrett, 2010).

However, to help students use an online portfolio effectively both for process and product, certain issues need consideration. These issues include clear instruction (Imhof & Picard, 2009; Smith & Tillema, 2003), and ways of showing students that maintaining an online portfolio can increase their development and give them greater control over their own learning (Imhof & Picard, 2009). Another issue relates to students' lack of technological skills in relation to using an online portfolio (Heath, 2005). Lee, Srinivasan, Trail, Lewis, and Lopez (2011) concluded that technological skills are a critical factor in successful online learning. Students who lack these skills could be frustrated.

These issues can influence student motivation to engage with online portfolios. Researchers (e.g., Tosh, Light, Fleming, & Haywood, 2005) suggested that students needed to see clear examples of online portfolios and their benefits in order to increase their motivation. Students' motivation is essential in learning online (Artino & Stephens, 2006), and according to the social cognitive theory of learning (Bandura, 1986), their motivation can be related to their perceptions of the usefulness of online

portfolios. The perceptions of the usefulness of online portfolios is very important in motivating students to construct and use online portfolios, which in turn has the potential to influence students' SRL skills and their self-efficacy. Phan (2014) stated that perceived usefulness might encourage students to engage deeply and use meaningful cognitive strategies in creating online portfolios.

As outlined above, effective use of online portfolios involves both *process* (reflective learning) and *product* (showcasing of learning) (Barrett, 2010), which in turn involves SRL. Self-regulated learning involves cognitive and metacognitive strategies that students use systematically to control their own learning (Zimmerman, 1998b; 2002). Cognitive strategies refer to task strategies employed to help learners learn effectively, such as rehearsal and problem-solving. Metacognitive strategies involve systematic decisions that learners make when considering which cognitive strategies should be used in particular learning situations (Schunk, 2012). These SRL strategies also involve strategies across three phases: forethought, performance, and self-reflection, as developed by Zimmerman (1998b; 2000a).

Reflection plays an important role in both online portfolio use and SRL. To make effective use of online portfolios and be self-regulated learners, students need to reflect on their learning evidence. However, their engagement can be influenced by their motivation and self-efficacy (Bandura, 1986; 1997). When students are highly motivated and self-efficacious they will expect more positive outcomes, and will use cognitive and metacognitive strategies to get the outcomes they expected (Schunk, 2012; Bandura 1986; 1997). In social cognitive theory (Bandura, 1986), students' learning behaviour can be explained by the interaction between personal (such as self-efficacy), behavioural, and environmental factors. What students believe can affect what they do and vice versa.

The aspects (process and product) of online portfolio use (Barrett, 2010), the three SRL phases of forethought, performance, and self-reflection (Zimmerman, 1998b; 2000a), and the triadic interaction of personal, behavioural, and environmental influences in social cognitive theory (Bandura, 1986) are most likely all inter-linked. As yet, the links between these three elements have not been established, especially within an online postgraduate learning context, where students are expected to be strategic in their learning. Therefore, this study aimed to fill this gap by examining the relationship between students' SRL skills and their perceptions of the usefulness of online portfolios in an online postgraduate learning context.

2.9 Chapter Summary

As the literature review has shown, SRL plays a major role in academic achievement, particularly at university level, where learning and teaching increasingly involve the use of technology. Online learning and online portfolio use are prevalent in tertiary study. A growing body of research focuses on students' motivation and their learning behaviour within an online learning environment (e.g., Artino & Stephens, 2006; 2009; Barnard et al., 2008; Hartnett, 2010), and in relation to the use of online portfolios (e.g., Abrami et al., 2008; Chau & Cheng, 2010; Lin, 2008).

It has been suggested that using online portfolios can enhance students' motivation (Lin, 2008), encourage greater self-management skills (Lopez-Fernandez & Rodriguez-Illera, 2009), and enhance SRL strategies (e.g., Alexiou & Paraskeva, 2010; Chau & Cheng, 2010). However, studies have not dealt with specific aspects of the relationship between the use of online portfolios in terms of *product/showcase* or *process/workspace* aspects (Barrett, 2010) and the three cyclical phases of SRL (Zimmerman, 1998b), particularly within social cognitive theory (Bandura, 1986). From a social cognitive view, students'

use of online portfolios and their SRL can be affected by personal, behavioural, and environmental factors. When students are highly motivated and self-efficacious they will engage more in using online portfolios and learning strategies to achieve their learning goals and improve their learning environment. The relationship between online portfolio use and SRL within social cognitive theory has not been established, especially among online postgraduate students.

The purpose of this study was to examine how postgraduate students in an online learning environment used online portfolios, and whether their online portfolio use affected and was related to their learning behaviour. The study also aimed to explore the relationship between students' SRL and their perceptions of the usefulness of online portfolios. This study will provide a unique contribution to improving and enhancing online portfolio use at tertiary study levels. In line with this, the study was undertaken to answer the following research questions:

1. Is there a relationship between students' SRL and their perceptions of the usefulness of online portfolios?

This research question aimed to discover if students' SRL skills affected their use and perceptions of online portfolios in relation to Barrett's (2010) framework of using online portfolios. According to Barrett, online portfolios can be used at a surface or product (storage) level, and at a deep, or process (reflection) level. At the surface level, users store the artefacts of their learning. At the deep level, users engage in more critical thinking and reflection on these artefacts as evidence of their learning, and as such move to a level where they appreciate the real value of portfolios to their learning. This question will uncover whether online postgraduate professional students use their online portfolios as a product/storage tool, or as a process/reflective tool, or as both.

2. Do students' initial SRL skills relate to their subsequent perceptions of the usefulness of online portfolios?

This research question aimed to discover the interrelationship between SRL and the perceptions of the usefulness of online portfolios – that is, whether initial perceptions of the usefulness of online portfolios was related to subsequent SRL, or whether initial SRL was related to subsequent perceptions of the usefulness of online portfolios, or whether their relationship was reciprocal. In social cognitive theory, people behave based on their attitude, beliefs, and values (Kaplan et al., 2012; Schunk et al., 2014). Based on this theory, it was believed that if students perceived online portfolios as useful, they would regulate their learning behaviour to use them at the deep level (reflection). Therefore, it was thought that the perceptions of the usefulness of online portfolios would be causally predominant over SRL.

3. Do scores for both students' SRL skills and their perceptions of the usefulness of online portfolios increase during the course, and, if so, do the scores for the high SRL group increase more than the scores for the low SRL group?

The rationale for this question was related to the literature showing that high SRL students are known to be proactive learners (Zimmerman, 2008b), and are believed to be more self-efficacious (Schunk, 2012) and persist at tasks longer than low SRL students (Pajares, 2008). Self-motivational beliefs within high SRL learners tend to be sustained even though the task at hand is difficult, because they generally prefer challenging tasks (Zimmerman, 1998b). Therefore, this question aimed to examine whether there were group differences between those students who started the course with higher SRL skills compared to those who started with low SRL skills. It was expected that high SRL students might increase their levels of SRL during the

programme more than the low SRL students because they were more proactive learners (according to Zimmerman, 2008b).

4. From students' perspectives, does the use of online portfolios increase their SRL skills?

The rationale for this question was derived from Barrett's (2007; 2010) statement that the key aspect of portfolio processes is reflection, where users reflect on their learning artefacts or learning outcomes. Similarly, Zimmerman (1998b; 2002) said that in the cyclical phases of SRL, self-reflection was an important phase that influenced the forethought phase in relation to subsequent learning behaviours. According to both researchers, reflection is a key element for both portfolio use and SRL strategies. Others (e.g., Abrami et al., 2009; Alexiou & Paraskeva, 2010) have also linked the use of online portfolios and SRL skills. However, the role online portfolios play in influencing students' SRL from the students' perspective needs to be further explored.

5. What factors help or hinder students in the construction and use of their online portfolios?

This question sought to discover if there were any important personal (e.g., motivation), behavioural (e.g., learning strategies), and environmental (e.g., family, learning contexts) factors that influenced students' construction and use of online portfolios. The rationale for this question was derived from literature that said using online portfolios was important to promote critical thinking (Abrami et al., 2009) and gave students an opportunity to reflect on their learning (Barrett, 2010). However, it has also been said that using them can be time-consuming (Wetzel & Strudler, 2006). Therefore, this question aimed to identify the factors that helped or hindered students' construction and use of their online portfolios.

The focus of the next chapter is on the research methodology employed in this study.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This study adopted a mixed methods approach in answering the research questions. In this chapter, the methodological principles and the methods employed are described. The chapter begins with a discussion of research methodology, which provides a theoretical and conceptual foundation for the research methodology employed. The research methods used are then discussed. These include details of the research samples and an explanation of the data gathering tools, as well as the data collection and analysis methods used. Finally, the ethical considerations for the study are addressed.

3.2 Research Methodology

Crotty (1998) suggested that in conducting research two overarching questions require attention: (1) What methodologies and methods will be used? and (2) Why have they been selected? While the first question refers to the choices of a particular methodology and methods, the second question refers to justifications of these choices.

These justifications involve a theoretical perspective, which refers to assumptions about reality. The theoretical perspective, or what some call the *paradigm* (e.g., Mertens, 2010; Morgan, 2007), guides and directs thoughts and actions for conducting research. The theoretical perspective informs the nature of reality (ontology), the nature of knowledge (epistemology), and procedures in gaining and understanding knowledge (methodology) (Mertens, 2010; 2015).

3.2.1 Theoretical perspective

The theoretical perspective that informs this study is pragmatism, which some claim to be the philosophical framework for mixed methods research (e.g., Evans, Coon, & Ume, 2011; Feilzer, 2010). Pragmatism is concerned with “what works or is efficient in a given situation”; it frees the researcher to evaluate whether the research is worth doing or whether the methods intended to be used can produce the desired results (Morgan, 2014, p. 26). Pragmatism focuses on being practical and allowing researchers to use multiple forms of data collection to answer their research questions.

Pragmatism also focuses on the nature of experience rather than the nature of reality, the outcomes of action rather than the nature of truth, and socially shared sets of beliefs rather than individual sources of beliefs (Morgan, 2007; 2014). According to Morgan (2014), pragmatists believe that individual actions cannot be separated from their past experience and the beliefs that come from those experiences. For Morgan, pragmatists “treat issues of intersubjectivity as a key element of social life. In particular, they emphasise creating knowledge through lines of action that point to the kinds of *joint actions* or *projects* that different people or groups can accomplish together” (Morgan, 2007, p. 72).

This study involved online postgraduate professional learners, who had different prior experiences and knowledge. They gathered to engage in the course and to participate in the shared experience of constructing and using an online portfolio, which showed a range of artefacts from their learning and through which reflection and the sharing process could demonstrate their own thinking about this learning.

With regard to epistemology, pragmatists believe that all knowledge is based on experience and is social knowledge (Morgan, 2014). Each individual’s knowledge is

unique depending on their own experience, and that unique knowledge comes from socially shared experience. The pragmatic epistemological view is relevant to this study, which took the perspective that students' self-regulated learning (SRL) skills were individually unique and that students' perceptions of the usefulness of online portfolios came from both their own experience and from interactions with others.

3.2.2 Mixed methods research

Mixed methods research is viewed as *the third methodology* (Johnson, Onwuegbuzie, & Turner, 2007, p. 129) or *the third movement* that has emerged alongside quantitative and qualitative approaches (Creswell & Garrett, 2008, p. 322). Johnson et al. (2007) provided the following definition of mixed methods research:

Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration (p. 123).

In highlighting the rationale for using mixed methods research, Creswell and Plano-Clark (2011) and Creswell and Garrett (2008) stated that the main reason for combining quantitative and qualitative approaches was to provide a better understanding of research problems than purely using either approach alone and this was the goal of employing mixed methods for this study. Quantitative methods could provide evidence of changes in learning skills and allow for statistical analysis of relationships among variables, whereas qualitative methods could provide deeper insight from the participants and add to the meaningfulness of the study.

Quantitative research involves measuring individual abilities, collecting scores from individuals, and employing procedures of psychological experiments and large-scale surveys (Creswell, 2008). This research approach is “a means for testing objective theories by examining the relationship among variables” (Creswell, 2009, p. 4). In quantitative research, researchers generally deal with a larger number of participants who can provide statistically meaningful data for the study, but the researchers have little personal interaction with them (Gay, Mills, & Airasian, 2009). Theories are tested deductively, and the findings from the study can often be generalised and replicated. There are a variety of research designs based on quantitative research methods. These include descriptive, correlational, causal-comparative, experimental, single-subject experimental studies, and surveys.

The current study employs a correlational research design for the quantitative approach. Correlational research is used to examine the relationships that exist between variables (Ary, Jacobs, & Sorensen, 2010; Schunk et al., 2014). This research design is in contrast to an experimental design, in which the variables in the study are manipulated to explore whether they affect each other.

This study aimed to examine the existing relationship between students’ SRL and their perceptions of the usefulness of online portfolios; therefore, the correlational research design was believed to be an appropriate approach. The quantitative findings of this study could be generalised to other groups of postgraduate students who study in a similar context to this study, while the qualitative findings could build a more comprehensive and detailed picture of SRL and students’ use of online portfolios.

Qualitative research is “a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem” (Creswell, 2009, p. 4). This research approach involves collecting, analysing, and interpreting comprehensive

narrative data to get in-depth information about a specific phenomenon (Gay et al., 2009). Participant numbers tend to be small, but the researcher gains in-depth understanding of participants' views. Thus, personal interaction is commonly involved in the data collection process. Examples of qualitative research include action research, case studies, ethnographic studies, and grounded theory studies.

The current study applied elements of qualitative research, especially semi-structured interviews with open-ended questions, to obtain the participants' view of their learning behaviours and online portfolio use. Gaining students' perspectives on changes in their learning within the online context and, more specifically, in relation to factors that impacted on online portfolio use could provide insights in relation to the questions under investigation in this study and inform the course coordinators in order to help future students learn independently. Thus, the qualitative data could provide further information on any relationships between SRL and perceptions of the usefulness of online portfolios as discovered through the correlational research.

Mixed methods research can be conducted through different designs (e.g., concurrent and sequential) (Creswell, 2009; Creswell & Plano Clark, 2011; Onwuegbuzie & Leech, 2004), depending on the research problem and questions (Creswell & Plano Clark, 2011). In the case of this study, the explanatory sequential design (Creswell, 2009; Creswell & Plano Clark, 2011) was selected. In this design, quantitative data were collected through the use of a survey and analysed first. Then the qualitative data were gathered through individual semi-structured interviews. A second quantitative questionnaire was utilised at the end of the study. The findings from all data sets were used to answer the research questions.

According to Creswell and Plano Clark (2011), the sequential design is normally presented as a two-phase study. This design was adapted as a three-phase study to include a follow-up quantitative component toward the end of the year.

The reason for employing this design was that the data needed to be collected and analysed in sequence: the results of the first phase (questionnaire) provided the basis for designing the approach of the second phase (semi-structured interviews) and the selection of participants for this phase. This is in contrast to concurrent designs where both quantitative and qualitative data are collected at the same time and are analysed after all the data have been collected (Onwuegbuzie & Leech, 2004).

The results from both the quantitative and qualitative methods used in this study were integrated during the discussion of the research findings. Figure 3.1 shows the mixed methods explanatory sequential design phases and the procedures used.

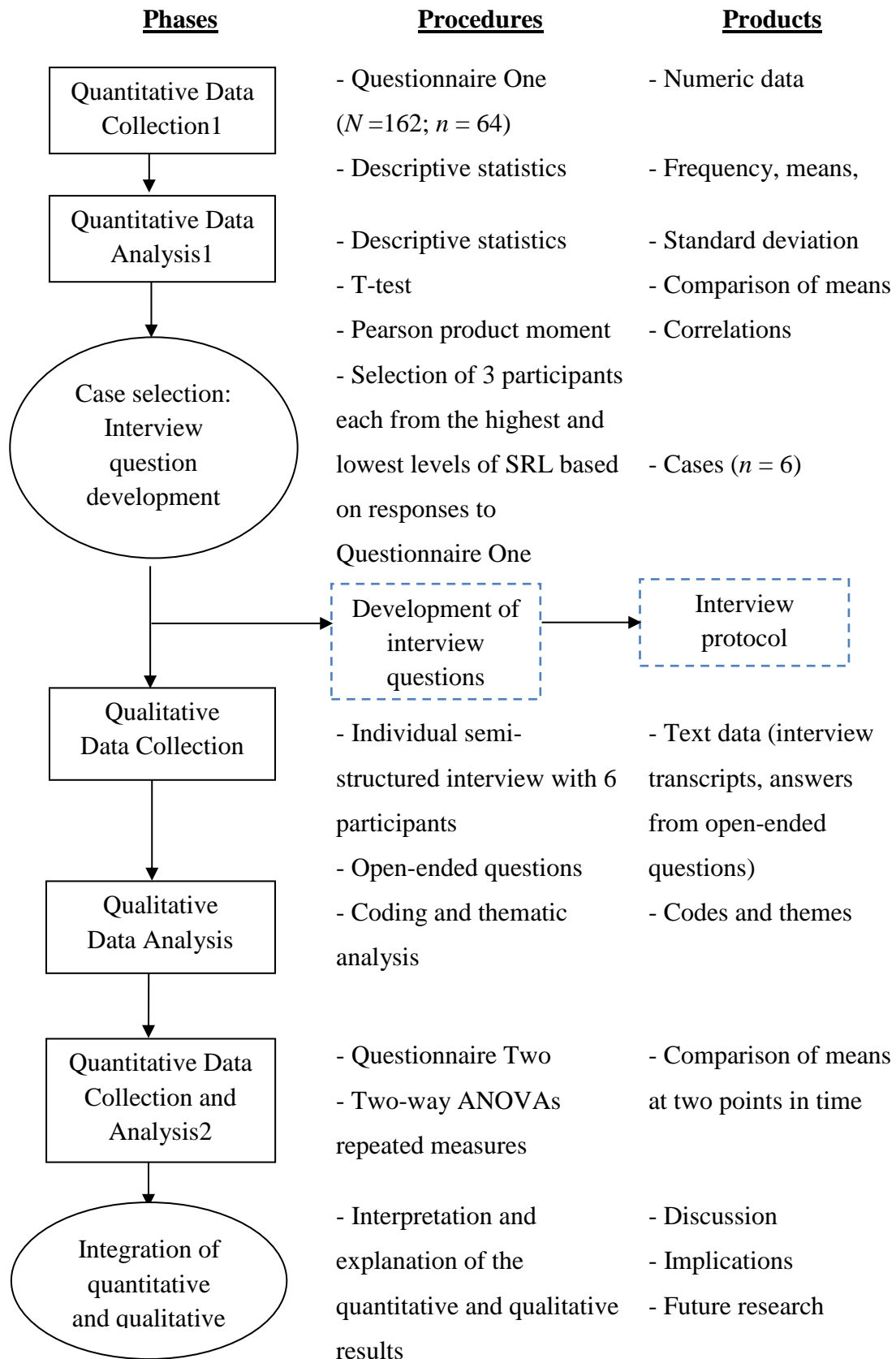


Figure 3.1. Procedures of data collection used in the mixed methods explanatory sequential design of this study. Adapted from Creswell & Plano Clark (2011, p. 121)

In the diagram in Figure 3.1, boxes and circles indicate the general flow of data collection and analysis while arrows show the sequence. Dashes in the second column detail the procedures for each stage in the sequence, and dashes in the third column identify products gained in each stage. With respect to the diagram, results from each set of data collection and analysis were used in responding to the research questions, as indicated in Table 3.1.

Table 3.1

Products of Data Collection and Analysis in Relation to Research Questions

Data Collection and Analysis	Products	Research Questions
<i>Quantitative data</i> - Questionnaire One	- Correlation between SRL and perceptions of the usefulness of online portfolios - Baseline for selection of interview participants	1. Is there a relationship between students' SRL and their perceptions of the usefulness of online portfolios?
<i>Qualitative data</i> - Interviews	- Correlation between SRL and perceptions of the usefulness of online portfolios	Elaborate on the correlation between SRL and perceptions of the usefulness of online portfolios
- Open- ended questions	- Perceptions of students' own SRL skills and online portfolio use	4. From students' perspectives, does the use of online portfolios increase their SRL skills? 5. What factors help or hinder students in the construction and use of their online portfolios.
<i>Quantitative data</i> - Questionnaire Two	- Cross-lagged correlation between SRL and the perceptions of the usefulness of online portfolios - Changes in SRL skills and perceptions of the usefulness of online portfolios	2. Do students' initial SRL skills relate to their subsequent perceptions of the usefulness of online portfolios? 3. Do scores for both students' SRL skills and their perceptions of the usefulness of online portfolios increase during the course, and, if so, do the scores for the high SRL group increase more than the scores for the low SRL group?

As shown in Table 3.1, initial quantitative data were used to examine students' SRL skills and their perceptions of the usefulness of online portfolios, and the relationship between the two variables. These data were collected to provide the answer to research question one regarding the relationship between students' SRL and their perceptions of the usefulness of online portfolios. This initial quantitative data phase also provided the basis for choosing participants to be interviewed, based on their reported levels of SRL skills (see Research Methods Phase Two, section 3.4.1). Qualitative data were collected through semi-structured interviews to provide a deeper insight into participants' views in terms of their SRL skills and their perceptions of the usefulness of online portfolios, and this was to elaborate the findings for research question one.

Open-ended questions were used to elicit students' thinking about whether their SRL skills in relation to the use of online portfolios had improved over the year. These data provided the answer for research question four—that is, from the students' perspectives, whether the use of online portfolios had increased their SRL skills. These data also related to research question five by identifying the factors that helped and hindered students in the construction and use of their online portfolios.

Another quantitative data collection method (Questionnaire Two) was used to investigate changes in students' SRL skills and their perceptions of the usefulness of online portfolios over a two-semester online course. These data provided answers for research questions two and three – whether students' SRL skills related to their subsequent perceptions of the usefulness of online portfolios, and whether students' scores for both SRL skills and their perceptions of the usefulness of online portfolios increased during the double semester course. It also allowed analysis of whether the scores for the high SRL group increased more than the scores for the low SRL group; as the high SRL group were expected to be highly self-efficacious, this could have

influenced their SRL skills. Details of the three phases of data collection and data analysis are outlined below.

3.3 Research Methods Phase One

Phase one of data collection involved measuring students' SRL skills and their perceptions of the usefulness of portfolios at the beginning of the programme. Questionnaire One was used to gather data in this phase.

3.3.1 Research population and sample

Since the study aimed to examine the relationship between SRL and perceptions of the usefulness of online portfolios by online postgraduate learners, students who studied in a postgraduate programme on special and inclusive education were chosen as the research population. The programme (see Chapter One for an explanation of this programme) was chosen because it is a blended course and makes use of online portfolios. At the beginning of the 2011 academic year, 171 students were enrolled in the programme; however, by the time the research began in April 2011, nine students had withdrawn. The remaining 162 students ($N = 162$) were all invited to participate in the research process in phase one.

Of the total of 162 students invited to participate, 93 (57.4 %) responded. However, only 64 of the 93 (68.8%) completed all SRL questionnaire sections, and therefore they comprised the sample ($n = 64$) for this phase of the study.

These 64 students were used to form three SRL groups: high, medium, and low. Even though only the high and low groups were eventually analysed, three groups were originally formed to ensure that the classification of students between high and low SRL groups was not based on very small differences in scores. The main reason to exclude

the middle group was the need to examine and contrast the two extreme groups (high and low SRL).

Students whose scores were equal to or greater than one-third of a standard deviation above the mean formed the high SRL group, and students whose scores were equal to or lower than one-third of a standard deviation below the mean formed the low SRL group. The reason for selecting students with one-third of a standard deviation above or below the mean was to minimise the degree of overlap in scores that often results from the median-split method that is frequently used to form high and low groups. Another reason to use the one-third of a standard deviation cut-off was to provide an adequate sample size to perform appropriate statistical analyses for addressing the research questions. The flow chart in Figure 3.2 shows how the research sample was drawn in this phase.

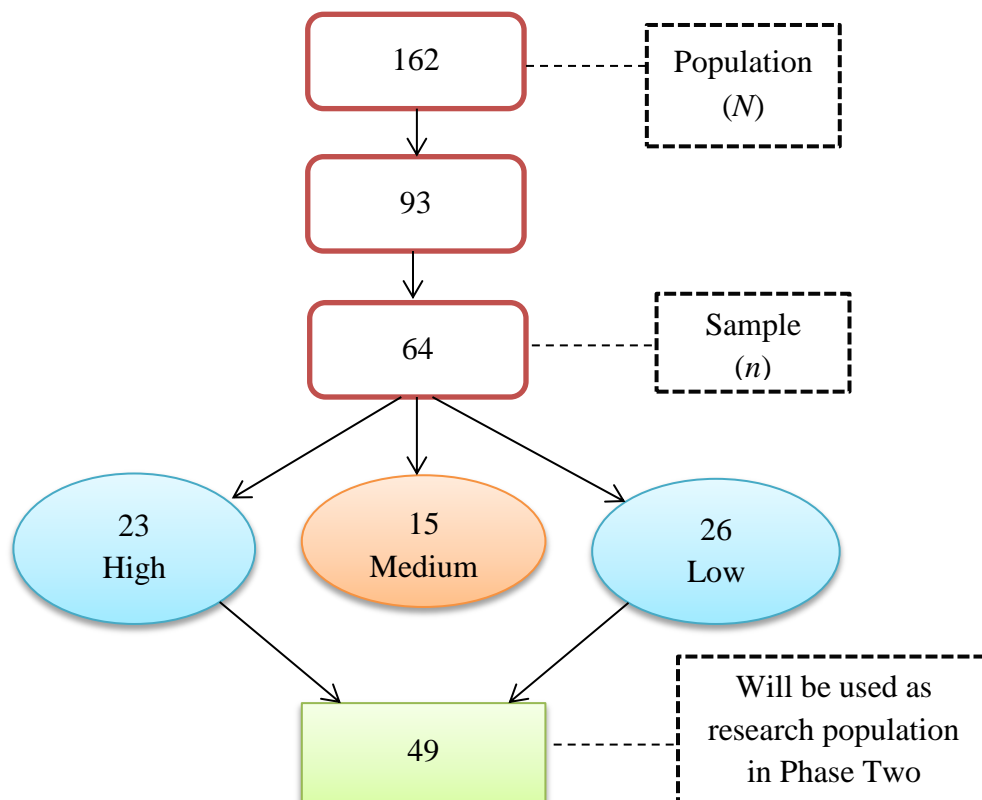


Figure 3.2. Research sample procedures for phase one of data collection

Demographic characteristics of the study participants are shown in Table 3.2. This table includes all students who answered Questionnaire One (93) and later Questionnaire Two (92), and not just those who were included in the final sample for phase one ($n = 64$).

Table 3.2

*Demographic Characteristics of Questionnaire Respondents**

Demographic Characteristics	Questionnaire			
	One ($n = 93^{**}$)		Two ($n = 92$)	
	Frequency	Percent	Frequency	Percent
<i>Gender</i>				
Male	10	10.8	9	9.8
Female	82	88.2	83	90.2
Total	92	98.9	92	100.0
<i>Age</i>				
21-30	6	6.5	5	5.4
31-40	16	17.2	18	19.6
41-50	31	33.3	32	34.8
51-60	36	38.7	34	37.0
More than 60	4	4.3	3	3.3
Total	93	100.0	92	100.0
<i>Years of experience working in special & inclusive education</i>				
Up to 5	38	40.9	40	43.5
6-10	16	17.2	17	18.5
11-15	14	15.1	11	12.0
16-20	2	2.2	7	7.6
21-25	14	15.1	7	7.6
26-30	4	4.3	2	2.2
31-35	3	3.2	4	4.3
36-40	1	1.1	3	3.3
Total	92	98.9	91	98.9

* Missing data were excluded

**This number includes those participants who did not complete all SRL sections of the questionnaire

*** Due to the data being rounding up or down, they do not add to exactly 100%

Table 3.2

Demographic Characteristics of Questionnaire Respondents(continued)*

Demographic Characteristics	Questionnaire			
	One		Two	
	(n = 93**)		(n = 92)	
	Frequency	Percent	Frequency	Percent
<i>Highest qualification</i>				
No formal qualification	1	1.1	-	-
Diploma	16	17.2	12	13.0
Bachelor's degree	41	44.1	44	47.8
Degree with Honours	4	4.3	4	4.3
Postgraduate diploma	16	17.2	16	17.4
Master's degree	15	16.1	16	17.4
Total	93	100.0	92	100.0
<i>Previous online learning course</i>	37	39.8	26	28.3

*Missing data were excluded

**This number includes those participants who did not complete all SRL sections of the questionnaire

*** Due to the data being rounding up or down, they do not add to exactly 100%

Most participants were women, aged 41-60, and had up to five years of working experience in special and inclusive education. Most of them held a bachelor's degree as their highest qualification. However, fewer than 40% of them had experience in an online learning course. The demographic data in relation to the sample SRL groups ($n = 64$) are further detailed in Chapter Four.

3.3.2 Data gathering tools

Since the study aimed to investigate the relationship between students' SRL and their perceptions of the usefulness of online portfolios, the Self-Regulated Learning Strategies and Portfolio Perceptions Questionnaire One (see Appendix G) was developed and used to gain information in three main areas: students' personal information, their SRL skills, and their perceptions of the usefulness of online portfolios.

Section one: Demographic data

Section one was used to gather students' demographic information, including their gender, age, highest qualifications, and personal experience in online learning, as well as the extent of their experience in inclusive education. Data gained from this section provided the overall characteristics of the sample, and also the differences between high and low SRL students.

Section two: Self-regulated learning skills

Section two was based on Zimmerman's (1998a) SRL framework (see Chapter Two), and consisted of the three phases of SRL: forethought, performance and self-reflection (Zimmerman, 1998b; 2002). Items in each phase were adapted from both the Online Self-regulated Learning Questionnaire (OSLQ) (Barnard, Lan, To, Paton, & Lai, 2009) and the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich & De Groot, 1990). The reason for using the OSLQ as a guideline was that it was created to measure students' SRL in online learning environments and has evidence of adequate content validity and test-retest reliability (Barnard et al., 2009). The OSLQ was developed to examine SRL skills specifically within an online learning context (content validity), and when it was administered twice, it showed the stability of the scores (test-retest reliability). The MSLQ, on the other hand, was created to measure students' motivational beliefs and SRL. However, the MSLQ was designed specifically for school-aged children. As the current study involved online learning and postgraduate students, items in this section were rewritten to suit university students and the current programme.

Within the questionnaire, open-ended items that were related to each SRL components (task analysis, self-motivation beliefs, self-control, self-observation, self-judgment, and

self-reaction) were included to gather more information about students' learning behaviour and their opinions about the use of online portfolios.

In relation to the forethought phase, students were asked about their goal setting and their beliefs in their ability to complete the course. Examples of the questions included: *How do you set your study goals?* (open-ended item); and *I find it is difficult to set learning goals for the domain areas in the specialist teaching course* (scale item). These questions were asked to gain information about goal setting, which is an important component in the forethought phase and SRL processes (Zimmerman, 2000a). Having specific, proximal, and challenging goals enhances learning, increases motivation, and raises self-efficacy (Locke, 1996; Locke & Latham, 1990; 2002; Schunk, 2012). These questions helped to elaborate on how students set their learning goals.

In the performance phase, questions were asked about students' learning strategies. Examples of the questions included: *Please describe the learning strategies and time management skills that you use in relation to this course* (open-ended item); and *I ask myself questions to make sure I understand the course content* (scale item). These questions were asked to examine what learning strategies the students used while they were studying in the course and how they used metacognitive strategies. In self-regulation theory, students select the learning strategies that they think are appropriate to their learning situations and are available to help them improve their learning (Svinicki, 2010; Zimmerman, 1990; 2001).

In the self-reflection phase, the items focused on how students monitor their own learning. Examples of questions included: *What do you monitor how effectively you are learning in this course* (open-ended item); and *I compare my progress against the required learning outcomes* (scale item). These questions were asked to gain insight

into how students self-evaluated their learning. After setting learning goals and applying learning strategies, self-regulated learners evaluate their learning efforts and attribute learning outcomes to their abilities, and also show adaptive behaviours if necessary (Zimmerman, 1998b).

Section three: Perceptions of the usefulness of online portfolios

Section three was developed to gather information about students' perceptions of the usefulness of online portfolios. Based on the literature on the use and purpose of portfolios in learning situations, items were developed specifically for the students in the programme. Similarly to section two, open-ended items were included in the questionnaire to elicit students' perceptions of using an online portfolio and factors that they thought had helped or hindered their learning in the course, as well as their suggestions for developing better use of online portfolios in the future. The questions elicited the students' opinions about the advantages and disadvantages of using an online portfolio in relation to the course. The following are examples of items in relation to the use of online portfolios: *I think that using a portfolio encourages me to spend more time focusing on my studies* (scale item); and *What are advantages and disadvantages of using portfolios in relation to your learning?* (open-ended items).

These questions were asked to get an understanding of students' perceptions of using an online portfolio in terms of its benefits for their learning. Some studies have shown that using an online portfolio enhances students' critical thinking (Abrami et al., 2008; Alexiou & Paraskeva, 2010) and helps them to evaluate their learning progress (Bolliger & Shepherd, 2010). However, using online portfolios is time-consuming (Wetzel & Strudler, 2006). Thus, questions in this section helped to identify how students

perceived the usefulness of an online portfolio for their learning in relation to the time required.

The last question of the questionnaire invited students to participate in a follow-up interview. If they wanted to participate, they were asked to provide their contact details including their name, phone, and email address.

Altogether, these three sections were combined in Questionnaire One for distributing to students at the beginning of the course. All scale items in the questionnaire included both positively- and negatively-worded items. It has been suggested that using both positively and negatively worded items in one questionnaire can reduce issues of response bias that can occur if participants respond in a particular way to items, independent of intended content (Cronbach, 1950; DiStefano & Motl, 2006).

In addition, all scale items were presented in an 11-point Likert-type response format (0-10). The reason for using an 11-point scale was to increase scale sensitivity. It has been suggested that the sensitivity of human perception should not be limited, so expanding scales beyond seven points can increase sensitivity (Cummins & Gullone, 2000). Further, Leung (2011) compared 4-, 5-, 6-, and 11-point scales in terms of internal structure, normality, and predictive validity, and found that 11-point scales provided results that were closer to interval levels of scaling and normality than the other scale choices.

3.3.3 Data gathering procedures

The questionnaire was piloted with three postgraduate students (one male and two females) who studied a different course, but one that had similar online and portfolio components. A pilot study is a specific pre-testing of a particular data gathering instrument to ensure that the instrument is appropriate for collecting data for a particular

research project (Van Teijlingen & Hundley, 2002). The reason for this pilot was to ensure that the questions were easy to understand and had content validity. Students' suggestions about improving the questionnaire's comprehension were sought and used to develop the final version.

The pilot was carried out in April, 2011. The researcher contacted the course coordinator to ask for permission to pilot the questionnaire with the students in the course, and to make the time for the pilot. On the day of the pilot at the end of their class, the researcher introduced herself to potential pilot students and informed them about the research topic, objectives of the research, and the purposes of doing a pilot. It was made clear that feedback was needed to develop the questionnaire and data from the pilot would not be analysed. The researcher then invited the students to participate in the pilot. The pilot students were asked to make notes of any specific words and questions that they did not understand. While students were doing the pilot the researcher recorded the time taken to complete the questionnaire.

The pilot study results showed that students seemed to confuse whether question four in section one of the questionnaire (years of experience in special and inclusive education) meant tertiary level, teaching, or work experience. The aim of the question was to ask about students' work experience, so it was changed to '*years of experience working in special and inclusive education*'. One of the pilot students thought that the questionnaire was too long. However, the time recordings showed that the questionnaire took about 25-30 minutes, which was not considered too long for postgraduate students. Therefore, no questions were removed.

The questionnaire was accompanied by an information sheet, which introduced the researcher; explained the purposes of the research, the confidentiality commitment, and

the approximate time required for participating, and provided the researcher's address (see Appendix C for Questionnaire One Information Sheet).

Permission to access students in the programme was obtained from the Pro-Vice Chancellor of the Institute where the students were enrolled (see Appendix B). The course coordinator posted online an invitation to all students to participate in the research and, if willing, to indicate this on the course site. Names and addresses of those students were then prepared by the course administrator and given to the researcher.

In May 2011, hard copies of the questionnaire were sent to the 162 students enrolled in the course. Potential participants were provided with a stamped, pre-addressed envelope to send the completed questionnaire back to the researcher. Sixty-three students completed a hard copy version; to encourage further responses, the questionnaire was offered online and another 30 students responded. In total, 93 out of 162 students responded to the questionnaire.

The measure of internal reliability using Cronbach alpha was .95.

3.4 Research Methods Phase Two

Phase two of data collection involved follow-up interviews with students who had completed Questionnaire One in phase one. Individual semi-structured interviews were used with students whose SRL skills were rated either high or low, in order to gather their ideas and opinions on SRL and the usefulness of online portfolios. Whereas structured interviews strictly follow topics and ask the same questions of all participants in a particular order (Fontana & Frey, 2008), semi-structured interviews use an opening statement format but allow for many and varied follow-up questions depending on participants' responses.

Semi-structured interviews were chosen for this study because all participants had their own unique knowledge that needed to be discovered while still covering the same area of data collection. Thus, semi-structured interviews allowed sufficient flexibility to uncover the different perspectives of participants as considered under the pragmatic view. This knowledge would not have been uncovered with the use of structured interviews.

3.4.1 Research population and sample

This study employed a mixed methods explanatory sequential design, where the interviews in this phase were based on the results of the questionnaire in the first phase of data collection. The interview sample was selected from the phase one sample – 49 (23 high SRL and 26 low SRL) students. Of these 49 students, 30 students (16 high SRL and 14 low SRL) volunteered. Therefore, the overall set of interview participants for this phase was 30 ($N = 30$). A nested sampling design (Onwuegbuzie & Leech, 2007) was used to select the sample in this phase (see Figure 3.3). In this design, the key informants were selected from the overall set of research participants.

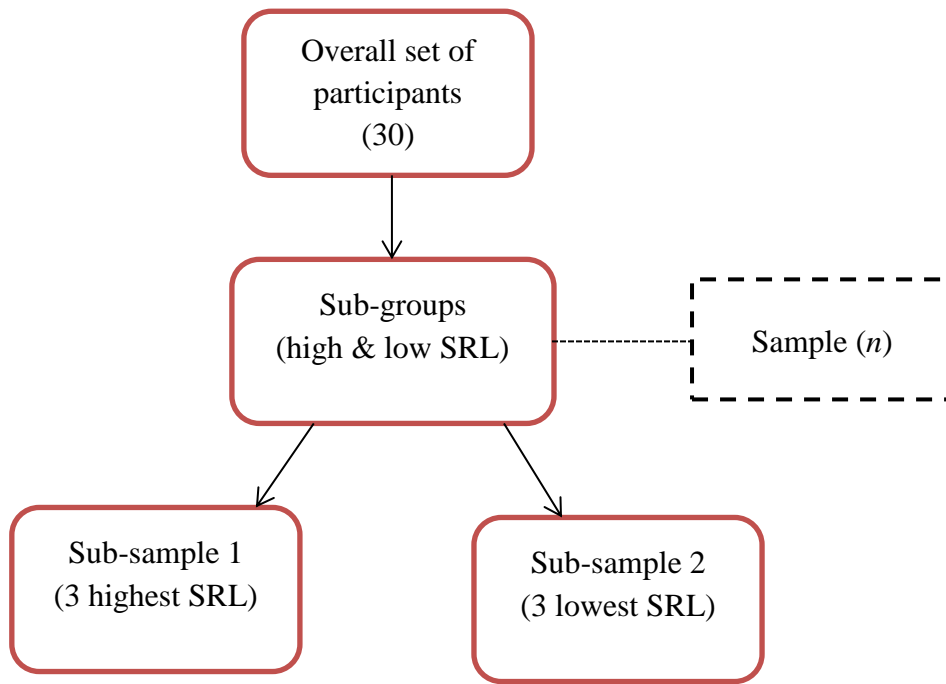


Figure 3.3. The flow of the nested sampling design used in this study. Adapted from Onwuegbuzie and Leech (2007, p. 247)

Onwuegbuzie and Collins (2007) suggested that the minimum sample size for the nested sample design is three or more participants per sub-sample. This suggestion was taken in this study – that is, the three students with the highest SRL scores who agreed to be interviewed (sub-sample1), as indicated at the end of the questionnaire in phase one, and the three students with the lowest SRL scores who agreed to be interviewed (sub-sample2), were selected. Table 3.3 shows the demographic data for the six interview participants.

The goal of the interviews with the high SRL students was to find out how they approached new learning and integrated online portfolios into this. They provided a model of successful independent learners. The goal of the interviews with the low SRL students was to determine which phase(s) of SRL were problematic by discussing their use and their perceptions of the usefulness of online portfolios.

Table 3.3

Demographic Characteristics of Interview Participants

SRL group	Participants	Gender	Age	Highest qualification	Years of working experience	Online learning course experience
High	A	Female	21-30	PD	Up to 5	Yes
	B	Male	>60	MD	31-35	Yes
	C	Female	31-40	D	Up to 5	No
Low	D	Female	41-50	BD	21-25	No
	E	Female	51-60	DwH	11-15	Yes
	F	Female	41-50	BD	Up to 5	No

*PD: Postgraduate-Diploma**MD: Master's Degree**D: Diploma**BD: Bachelor's Degree**DwH: Degree with Honours***3.4.2 Data gathering tools**

Semi-structured interviews were used to gain more details about students' SRL skills, their learning experiences in relation to the course and their opinions about the use of online portfolios, as well as the factors that they thought had helped or hindered them in constructing and using their online portfolios. The questions were developed around the area of SRL and the use of online portfolios in relation to the programme. Therefore, they focused specifically on students' experiences of using an online portfolio and their learning strategies, such as time management skills. An opening statement format was used. Additional questions were formulated to probe for information that was not forthcoming from the opening statement questions (see Appendix H for the interview protocol).

Initially, students were allowed to choose which portfolio versions (online or paper-based) they preferred to use in the programme. This was because many students were not familiar with online portfolios. Later, they were all using online portfolios. The following are examples of the interview questions:

Question: *Are there any aspects of using an online portfolio that you like or dislike in relation to this course?*

(Prompts: *What are the advantages and limitations? Why did you like it? Or why didn't you like it?*)

Question: *Has using an online portfolio been helpful for your study?*

(Prompts: If student says yes, ask- *How has it been helpful? What role has it played in your learning?* If student says no, ask- *Why not?*)

Interview questions were developed based on the theoretical conception of SRL as self-regulated learners who regulate their own behaviour to pursue their goals (Pintrich, 1995), as well as on other literature on the use of online portfolios. The interview questions also provided opportunities for high and low SRL students to offer insight into the quantitative findings in order to better answer the research questions.

3.4.3 Data gathering procedures

The semi-structured interview process consisted of several stages. The first stage was selecting interview students, as described in section 3.4.1. The second stage was formulating an interview protocol, as described in section 3.4.2. The interview protocol was developed to gain as much information as possible to answer the research questions. Eighteen open-ended statements were created and potential probe questions formulated.

The third stage consisted of pilot testing the interview protocol. In August 2011, a request was made to five postgraduate students in the College of Education (now the Institute of Education) to pilot the interview questions. These students were not in the special and inclusive education programme. Three of these students agreed to participate, and the time and place was arranged. At the pilot, each student was informed about the research topic and the purposes of the research, and was given assurances that the data gained from the pilot would be used only for the development of the interview questions and procedure. Each student was also asked for permission to record the interview to test the recording procedure and to ensure that the interview was of appropriate length. Adams (2010) maintains that semi-structured interviews should not be longer than one hour. Each student was asked for advice on the questions and for possible solutions to any issues raised. This feedback was used to make changes to the questions in the interview protocol.

This procedure helped to make sure that the questions were understandable and had content validity for the areas of SRL skills and online portfolios. In addition, issues that might occur during the interviews were raised, which helped the researcher eliminate them and hone her preparation in terms of confidence and competence in interviewing before conducting the interviews with students in the study.

The fourth stage was arranging the interviews. A few weeks before the interviews took place, the researcher contacted the librarian at one university in Auckland to arrange a small study room in the library for the interviews. The room was quiet, free of distractions, and easily accessible for the participants. The interview times were arranged during the students' break from their study so that it would not affect their study time. The students' agreement to be involved and whether the proposed venue and time were suitable for them were reconfirmed nearer the time of the interviews.

An information sheet and consent forms were used. The information sheet contained a brief introduction about the researcher, an explanation of the purposes of the study, a confidentiality commitment, the approximate time for the interview, and the researcher's address (see Appendix E for Interview Information Sheet). The consent forms included the agreement to be interviewed, the time of the interview, and the student's contact number (see Appendix F for Consent Form). In an email, the researcher enclosed the available interview times for the students to choose from, which included morning, lunch, and evening from Monday 29 August to Friday 2 September, 2011 (see Appendix I for Interview schedules).

All interview students were sent the information sheet and consent form via email two weeks before the interviews took place. They were asked to sign the consent form and choose the time that they were available for the interview, give their contact number, and send the form back to the researcher. Some students emailed the researcher, agreeing to be interviewed and saying they would give the original consent form to the researcher at the interview.

As the researcher's first language is not English, all interview students were asked to give their permission for the researcher to have a native English speaker present at the interviews to assist with any language problems. The English speaker was not a Massey University member of staff nor a Massey University student, and was not involved in the study. All interview students gave their permission for this to happen. A week before the interviews, the students were sent the main questions that they would be asked at the interviews. This was to allow them time to reflect on their course and study experience to get the maximum benefit from the interviews.

The fifth stage was the actual interviews. For this stage, it was very important for the researcher to “establish a positive first impression” (Adams, 2010, p. 373) in order to develop a close rapport with each student to be interviewed. Early on the interview day, the students were sent a reminder message, confirming the time and the room for the interview. Two audio recorders were used to ensure back-up if one did not work.

The interviews were conducted individually. Once the students arrived, the researcher, who conducted the interview, introduced herself and the language assistant to them. Some students gave the original consent form to the researcher at the interview session, while others had previously emailed it. To build good rapport, the researcher asked the students about their experience in the block course and gave them a brief explanation of the purposes of the study, what the researcher intended to do with the interview data, the student’s rights during the interview and after, and the confidentiality commitment. Before the interview started, the students were asked for their permission to record the interview.

When the interview finished, the researcher thanked the students for taking the time to participate in the interview and informed them that the interview transcript would be sent to them during the following weeks to be checked and edited if necessary. Each interview lasted no more than an hour.

The sixth stage was transcribing and returning the semi-structured interview transcripts to the students to check. The interviews were transcribed by the researcher within three weeks after the interviews finished, and then the transcripts were returned to the students to confirm what they had said and give them the opportunity to change or withdraw any statements that they did not feel comfortable with.

Returning transcripts can enhance the content validity of the findings because statements are verified by the participants themselves (Dearnley, 2005). However, this could also have raised some problems because some participants might have been alarmed when they read the exact transcription of their interview, in particular their use of oral language (Kvale, 2007). Kvale (2007) suggested that alternatives to the verbatim transcription of an interview could be translating the spoken word into an acceptable written format but maintaining the participants' views, or summarising only the main points of the interview.

To reduce the amount of verbatim transcription for the study, the interviews were transcribed using an acceptable written format if colloquial language was used; however, students' general modes of expression were kept. No problems arose when the transcripts were returned. All students seemed to be happy with the interview transcriptions because they did not make any changes.

3.5 Research Methods Phase Three

Phase three of data collection involved measuring students' SRL skills and their perceptions of the usefulness of online portfolios at the end of the programme. Questionnaire Two was used to gather data in this phase. To examine students' SRL skills and their perceptions of the usefulness of online portfolios over the year, the same questionnaire was used; however, some extra questions were added (see section 3.5.2).

3.5.1 Research population and sample

The same students ($N = 162$) in the programme were all invited to participate in the research in phase three. Of 162 students, 92 participated in the questionnaire (56.8%). Of these 92 students, 14 out of the 23 high SRL students and 19 out of the 26 low SRL students remained. All 92 students comprised the research sample for phase three of

data collection ($n = 92$). See Table 3.2 in Section 3.3.1 for the characteristics of the sample.

3.5.2 Data gathering tools

To examine students' SRL skills and their perceptions of the usefulness of online portfolios over the year, the same questionnaire was used. However, a few changes were made in the second questionnaire. Firstly, the last question in Questionnaire One, which invited students to participate in a follow-up interview, was deleted. This was because the interviews were conducted before Questionnaire Two. Secondly, additional questions based on students' experience of the course were included. This was because to answer research questions four and five, data needed to be gathered from students after they had had experience of using online portfolios throughout the course. Additional questions relating to students' experiences during the year-long programme included questions 1-3 below:

1. Do you think your SRL strategies improved in relation to this course? If yes, what things do you think helped to improve them? If not, why?

To answer this question, the definition of self-regulated learning, which was adapted from Zimmerman's (1986) definition, was provided in the questionnaire: Self-regulated learning, or SRL, has been described as taking responsibility for setting your own learning goals, selecting and using your own learning strategies, and monitoring your own effectiveness for achieving your learning goals.

The reason for asking this question was to examine, from the students' perspectives, what they thought about their SRL strategies in relation to the definition outlined above; whether they thought their SRL skills had improved; and if so, what they thought would

be the main contributing factors. The results could be used to make a comparison with their responses to scale questions and to give their perspectives on any changes.

2. What factors, if any, have helped you to construct and use your online portfolio?

3. What factors, if any, have hindered you to construct and use your online portfolio?

The reasons for asking these questions were to identify which personal, behavioural, and environmental factors had facilitated or delayed students in constructing and using their online portfolios, and how these factors were related. The results would be used to answer research questions and to help students become motivated and to use an online portfolio effectively in the future, as well as to reduce the problems that students said they encountered while they were creating and using their online portfolios.

3.5.3 Data gathering procedures

The third phase of data collection was carried out in October, 2011. Questionnaire Two was distributed to students in the same course. The questionnaire was accompanied by an information sheet (see Appendix D for the Questionnaire Two Information Sheet). This time it was offered only online because of the low response rate in the first round of postal data collection. Of the 95 students who responded, three students submitted an incomplete survey so they were excluded from the data analysis. Therefore, the information from 92 students (65.8% of the students in the course) was used.

3.6 Summary of Data Gathering Methods Across All Phases and Rationale for Their Use

All data gathering methods across the three phases outlined above are summarised in Table 3.4. The rationales for using these methods are also provided in the table.

Table 3.4

Summary of Data Gathering Methods and Rationales

Method	Details of procedures	Rationales
Questionnaire	<u>Phase One</u> Questionnaire One responded to by 93 students, and all SRL sections completed by 64 students.	To examine the relationship between SRL and perceptions of the usefulness of online portfolios To classify students into SRL groups and to use as the basis for designing and interview approach
	<u>Phase Three</u> Questionnaire Two responded to by 92 students	To examine changes in participants' SRL and their perceptions of the usefulness of online portfolios over the year To identify factors that had helped students in constructing and using online portfolios, as well as the barriers they had faced.
Interviews	<u>Phase Two</u> Semi-structured interviews with 6 students selected from high and low SRL groups	To follow up and gain understanding of the relationship between students' SRL and their perceptions of the usefulness of online portfolios. To identify factors that had both helped and delayed students in constructing and using online portfolios.

3.7 Data Analysis

The two questionnaires (phase one and phase three) were analysed using the computer software Statistical Package for the Social Sciences (SPSS). Descriptive statistics, such as means and standard deviations, were used to describe the data that had been collected from the sample. Inferential statistics were used to determine whether the conclusion obtained from the sample could be generalised to the population of the study (Weinberg

& Abramowitz, 2002). Pearson product moment correlation coefficients were used to examine the relationship between students' SRL skills and their perceptions of the usefulness of online portfolios. Two separate 2 x 2 (Group x Time) ANOVAs with repeated measures were used to determine the students' changes in their SRL skills and their perceptions of the usefulness of online portfolios at two time points (the beginning and the end of the course).

Qualitative data from open-ended questions and semi-structured interviews were entered into the software program NVivo (10). Creswell (2008) and Johnson and Christensen (2012) described the coding processes in data analysis as involving reading through all text, labelling segments into codes, eliminating overlaps and redundancies, and collapsing overlaps into themes. Similarly to these processes, 15 nodes were initially developed in NVivo based on the three SRL phases of Zimmerman's framework, and they are related to research questions one, two, and three. Other nodes were developed based on the structure of research questions four and five (see Table 3.5).

Table 3.5

Nodes for Qualitative Data Analysis

SRL Phases	Components	Sub-components (nodes)	Research Questions
Forethought	Task analysis	1) Goal setting, 2) Strategic planning	1-3
	Self-motivation beliefs	3) Self-efficacy, 4) Outcome expectations, 5) Task value/interest	
Performance	Self-control	6) Task strategies, 7) Self-instruction, 8) Time management, 9) Environmental structuring, 10) Help-seeking	
	Self-observation	11) Metacognitive monitoring, 12) Self-recording	
Self-reflection	Self-judgment	13) Self-evaluation, 14) Causal attribution	
	Self-reaction	15) Self-satisfaction /affect/adaptive/defensive	
	Factors influencing the construction and use of online portfolios	<u>Help</u> : Course support, motivation, peer support, lecturer support <u>Hinder</u> : Lack of understanding, time, and confidence, not being organised, other problems	4
	Changes in SRL skills	<u>Increase</u> : Setting goals, managing learning, reflecting on learning, being made to do it, having experience <u>No changes</u>	5

3.8 Ethical Considerations

The current study adhered to the Massey University Code of Ethical Conduct for Research Teaching and Evaluations Involving Human Participants (MUHEC) (Massey University, 2010). The study involved a low-risk notification to the Massey University Human Ethics Committee (see Appendix A).

Even though the study was judged to be low risk, the researcher paid attention to all the principles of ethical conduct as outlined in MUHEC (Massey University, 2010). In

particular, the principles of informed and voluntary consent, and anonymity and confidentiality, were important considerations.

3.8.1 Informed and voluntary consent

Written information sheets were sent to students. These followed the guidelines as set out by the MUHEC (Massey University, 2010). Information about the research project, the rights of participants as part of the research, and clear contact details for the researcher were provided to students in case they wished to clarify anything about the research project (see Appendix C for the Questionnaire One Information Sheet, and Appendix D for the Questionnaire Two Information Sheet)

In the case of the questionnaires, students' consents were automatically assumed when they responded. This was explained to the students in the information sheet. In relation to the interviews, students initially volunteered, then were asked for their permission to be interviewed. Students were given the information sheets, which provided research details, students' rights during the interview process, and the researcher's contact details.

Along with the information sheets, the consent forms were sent to students to sign and provide their contact numbers and preferred time to be interviewed. Initially, students gave their consent via email and all consent forms were returned by the interview date.

3.8.2 Confidentiality

Confidentiality can be important in research ethics. To maintain confidentiality in this study, the identity of the participants was not disclosed. All data were stored in a locked office and identification codes were used. Only the researcher and her supervisors could see and handle the data.

3.9 Chapter Summary

This chapter detailed the research methodology used in the study. The philosophical assumptions that lay behind the study were presented, followed by a description of the mixed methods research used. In mixed methods research, the explanatory sequential design, which involves in both quantitative and qualitative data collection, was explained. Three research method phases that included the research samples, data gathering tools, and data procedures were described. Data analysis and ethical issues were also detailed. The findings of the study are presented in the next chapter.

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter presents the quantitative and qualitative results for the study. The quantitative data were collected through two questionnaires, consisting of questions about students' demographic background, self-regulated learning (SRL), and perceptions of the usefulness of online portfolios. The qualitative data were gathered using open-ended questions in the questionnaires, as well as follow-up interviews. As outlined in Chapter Three, the responses in Questionnaire One informed the selection of students for the semi-structured interviews that followed.

Throughout this chapter, specific identifiers are used to preserve confidentiality of individual participants. When referring to a participant's response to a question within a particular questionnaire, the codes used are 1-93 to represent particular respondents. When referring to SRL groups, the codes used are H (high SRL) and L (low SRL). When referring to a particular questionnaire, the codes used are Q1 (Questionnaire One) and Q2 (Questionnaire Two). When referring to a specific question within a particular questionnaire, the abbreviated name of the questionnaire and the question number are used (e.g., Q1/15).

These types of identifiers are combined (e.g., 1H/Q1/15 or 9L/Q2/94 for those who were in high and low SRL groups, respectively, and 8/Q1/15 or 11/Q2/94 for those who were not in either high or low SRL groups). When referring to a respondent's response to a question in the interview, the codes A-F are used, followed by their SRL group and the word 'In' (e.g., A/H/In, or D/L/In).

The results are presented in three parts. In the first part, demographic data obtained from students are presented to provide information about the sample. In the second part, the formulation and characteristics of SRL groups are presented to distinguish between the character of the SRL groups. Finally, the quantitative and qualitative results are presented to respond to each of the research questions.

4.2 Demographic Data

This section outlines the demographic information about the sample, including gender, age, years of experience working in special and inclusive education, the highest level of academic qualification attained, and previous experience in online learning courses. This sample information represents an overview of the background of students in the postgraduate programme.

A total of 162 students who studied in the programme were invited to participate in the questionnaires. Of the 93 students who responded to Questionnaire One, 64 completed all the SRL scale sections in the questionnaire. These 64 students were used to form the SRL groups from which the interview students were drawn. The demographic information about these students is summarised in Table 4.1.

Table 4.1

Demographic Characteristics of Questionnaire One Respondents

Demographic Characteristics	(n = 64)	
	Frequency	Percent
<i>Gender</i>		
Male	6	9.4
Female	57	89.1
Total	63 ^a	98.4
<i>Age</i>		
21-30	5	7.8
31-40	12	18.8
41-50	20	31.3
51-60	24	37.5
More than 60	3	4.7
Total	64	100.0
<i>Years of working experience</i>		
Up to 5	26	40.6
6-10	11	17.2
11-15	11	17.2
21-25	10	15.6
26-30	3	4.7
31-35	3	3.7
Total	64	100.0
<i>Highest qualification</i>		
No formal qualification	1	1.6
Diploma	12	18.8
Bachelor's degree	25	39.1
Degree with Honours	2	3.1
Postgraduate diploma	11	17.2
Master's degree	13	20.3
Total	64	100.0
<i>Previous participation in online learning course</i>	26	40.6

^a One respondent omitted to identify his/her gender

*** Due to the data being rounding up or down, they do not add to exactly 100%

Table 4.1 shows that the majority of students were female (89.1%) and were aged between 41 and 60 years (68.8%). The highest proportion of students had five or fewer years of experience working in special and inclusive education (40.6%) and held a bachelor's degree as their highest qualification (39.1%). Twenty-six students (40.6%) had participated in online learning courses before taking the current course.

This information shows that students in this study were most typically females aged in their 40s or 50s who had worked in special and inclusive education for up to five years. In terms of learning background, they had generally graduated with a bachelor's degree and had moderate experience in an online learning environment. These 64 students were used to form the SRL groups, which is addressed in the next section.

4.3 Formulation and Characteristics of Self-Regulated Learning Groups

This section provides information about the sample in terms of the SRL groups. As outlined earlier, the 64 students who completed all the SRL scale sections in the initial questionnaire formed the SRL groups. This helps to contextualise and better understand the results presented in the next sections of this chapter, as students who had high SRL, in contrast to those who had low SRL, would have been more likely to constantly regulate their own learning to achieve their learning goals.

Of 64 students, 49 were classified into high SRL ($n = 23$) and low SRL ($n = 26$) groups. However, only 33 of these 49 students completed Questionnaire Two. This issue is further discussed in section 4.4.

Table 4.2 shows students' demographic information in terms of high and low SRL groups.

Table 4.2

Demographic Characteristics of Questionnaire One Respondents in Relation to Self-Regulated Learning Groups

Demographic Characteristics	SRL Groups			
	High (<i>n</i> = 23)		Low (<i>n</i> = 26)	
	Frequency	Percent	Frequency	Percent
<i>Gender</i>				
Male	2	8.7	4	15.4
Female	20	87.0	22	84.6
Total	22 ^a	95.7	26	100.0
<i>Age</i>				
21-30	3	13.0	2	7.7
31-40	5	21.7	4	15.4
41-50	6	26.1	7	26.9
51-60	8	34.8	11	42.3
More than 60	1	4.3	2	7.7
Total	23	100.0	26	100.0
<i>Years of working experience</i>				
Up to 5	13	56.5	8	30.8
6-10	4	17.4	5	19.2
11-15	2	8.7	6	23.1
16-20	-	-	-	-
21-25	3	13.0	4	15.4
26-30	-	-	1	3.8
31-35	1	4.3	2	7.7
Total	23	100.0	26	100.0

^a One respondent omitted to identify his/her gender

*** Due to the data being rounding up or down, they do not add to exactly 100%

Table 4.2

Demographic Characteristics of Questionnaire One Respondents in Relation to Self-Regulated Learning Groups (continued)

Demographic Characteristics	SRL Groups			
	High (<i>n</i> = 23)		Low (<i>n</i> = 26)	
	Frequency	Percent	Frequency	Percent
<i>Years of working experience</i>				
Up to 5	13	56.5	8	30.8
6-10	4	17.4	5	19.2
11-15	2	8.7	6	23.1
16-20	-	-	-	-
21-25	3	13.0	4	15.4
26-30	-	-	1	3.8
31-35	1	4.3	2	7.7
Total	23	100.0	26	100.0
<i>Highest qualification</i>				
No formal qualification	-	-	1	3.8
Diploma	3	13.0	3	15.8
Bachelor's degree	8	34.8	11	42.3
Degree with Honours	1	4.3	1	3.8
Postgraduate diploma	3	13.0	6	23.1
Master's degree	8	34.8	3	11.5
Total	23	100.0	26	100.0
<i>Previous participation in online learning course</i>	11	47.8	10	38.5

*** Due to the data being rounding up or down, they do not add to exactly 100%

Table 4.2 shows that students in both SRL groups were predominantly women and mostly between 51 and 60 years of age. Most of them had experience working in special and inclusive education for up to five years. Although students in the high SRL group had either a bachelor's or master's degree as their highest qualification (34.8% each), more students in the low SRL group had a bachelor's degree (42.1%) as their highest

qualifications. More students in the high SRL group had engaged in online learning courses before taking the current course (47.8%), compared to students in the low SRL group (38.5%).

Based solely on percentages, it appeared that students in the high SRL group had better qualifications and greater online experience than students in the low SRL group. However, a chi-square test revealed that there was no statistically significant difference for these data (highest qualification and previous participation in online learning course).

As shown in Table 4.2, even though there were a similar number of students who participated in previous online learning courses (11 for high SRL and 10 for low SRL), students' experience in learning online and their skills as online learners were further investigated and compared. To compare the high SRL and low SRL groups' self-rating of their online experience and skills before engaging in the course, an independent sample *t*-test was used. The results showed that the difference in students' self-rated online experience between high and low SRL groups was not statistically significant ($t = .36$; $df = 33$; $p > .05$; Cohen's $d = .18$). However, the difference in reported online skills between the two groups was statistically significant ($t = 1.99$; $df = 33$; $p < .05$; Cohen's $d = .73$) (see Table 4.3), with the high SRL group reporting more online skills.

Table 4.3

Means and Standard Deviations of Scores for Respondents' Background Knowledge in Online Learning, as a Function of Self-Regulated Learning Groups

Background knowledge in online learning	SRL Groups				
	High (<i>n</i> = 23)		Low (<i>n</i> = 26)		<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Online experience	3.48	3.44	2.92	2.74	.18
Online skills	5.91	2.56	4.23	2.01	.73

As shown in Table 4.3, the two groups rated themselves as having a similar level of experience in online learning. However, the high SRL group reported having online skills that were significantly higher than the low SRL group.

4.4 The Use of Questionnaire Data in Responding to Research Questions

Two questionnaires were used to collect data at the beginning and the end of the programme (see Chapter Three section 3.3 and 3.5). Ninety-three of 162 students participated in Questionnaire One, and 64 of them completed all SRL sections and were used to form SRL groups. Of the 64 students, 23 were in the high SRL group and 26 were in the low SRL group. To examine students' SRL and their perceptions of the usefulness of online portfolios over the year, it was hoped that all 49 of these students would complete Questionnaire Two.

With respect to Questionnaire Two, 92 of 162 students participated. However, only 14 of the 23 students in the high SRL group and 19 of the 26 students in the low SRL group participated in this questionnaire. Consequently, 14 high SRL students and 19 low SRL students remained. Figure 4.1 shows the summary of the respondents.

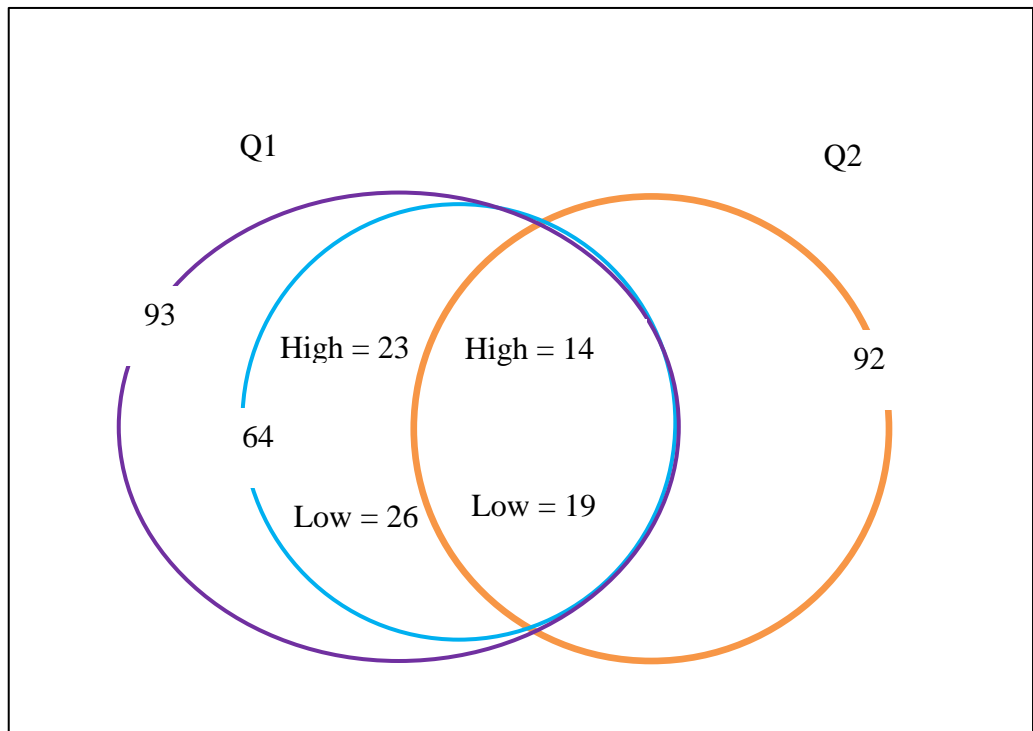


Figure 4.1. Summary of questionnaire respondents

As shown in Figure 4.1, 93 students participated in Questionnaire One and 64 of them completed all the SRL scale sections. These 64 students were used to form SRL groups as outlined earlier, and the sample for the interviews (see Chapter Three section 3.4.1) was drawn from this sample. In relation to Questionnaire Two, 92 students participated, including 14 high SRL and 19 low SRL students who had completed Questionnaire One. Therefore, to use as much data as possible, different numbers from the sample were used differently depending on the focus of each research question.

Research question one focused on the relationship between students' SRL skills and their perceptions of the usefulness of online portfolios. This question required the difference between respondents in high and low SRL groups who completed all SRL sections, so 49 respondents, which included 23 high SRL and 26 low SRL students, were used. Research question two examined cross-lagged panel correlations between SRL skills and perceptions of the usefulness of online portfolios, and research question

three focused on the changes in students' SRL skills and their perceptions of the usefulness of online portfolios over the year. These questions required data from the respondents who had participated in both questionnaires, which comprised 33 students (14 high SRL and 19 low SRL students). Research questions four and five looked at students' perceptions of the regulation of their learning behaviour, and the construction and use of online portfolios after they experienced the programme. Therefore, the 92 students who participated in Questionnaire Two and responded to the questions were used as the sample for these two research questions. Table 4.4 provides a summary of the samples used for the different research questions.

Table 4.4

Overview Summary of the Samples Used for Each Research Question

Research Questions	Sample	Questionnaire
1. Is there a relationship between students' SRL and their perceptions of the usefulness of online portfolios?	49 (23 high, 26 low)	One
2. Do students' initial SRL skills relate to their subsequent perceptions of the usefulness of online portfolios?	33 (14 high, 19 low)	One and Two
3. Do scores for both students' SRL skills and their perceptions of the usefulness of online portfolios increase during the course, and if so, do the scores for the high SRL group increase more than the scores for the low SRL group?		
4. From students' perspectives, does the use of online portfolios increase their SRL skills?	92	Two
5. What factors help or hinder students in the construction and use of their online portfolios?	92	Two

The next section addresses the findings, which in turn reflect the research questions and hypotheses.

4.5 Responding to the Research Questions

This section involves the use of statistical procedures to analyse data related to the five research questions. To answer these research questions, both quantitative and qualitative analyses were adopted. For the quantitative analyses, SPSS was used to perform several statistical procedures. First, Pearson product moment correlations were calculated to examine the relationship between students' SRL and their perceptions of the usefulness of online portfolios. Second, two-way analyses of variance with repeated measures were performed to examine group differences in students' SRL and their perceptions of the usefulness of online portfolios over time. Finally, a cross-lagged panel analysis was used to examine the causal relationship between online portfolio usefulness and SRL skills. For the qualitative analysis, NVivo was used to identify themes according to Zimmerman's (2002) SRL framework (see Chapter Three section 3.7).

4.5.1 Research question one

Is there a relationship between students' SRL and their perceptions of the usefulness of online portfolios?

This research question examined the relationship between students' SRL and their perceptions of the usefulness of online portfolios at the beginning of the course. Pearson product moment correlations were calculated to examine the relationship between scores on students' SRL and their perceptions of the usefulness of online portfolios. A summary of these data is presented in Table 4.5.

Table 4.5

Correlations Between Students' Self-Regulated Learning and Their Perceptions of the Usefulness of Online Portfolios

	(1)	(2)	(3)	(4)	(5)
<u>SRL (1)</u>	1.00				
Forethought (2)	.92**	1.00			
Performance (3)	.96**	.82**	1.00		
Self-reflection (4)	.83**	.68**	.70**	1.00	
<u>Perceptions of the</u>	.60**	.57**	.59**	.48**	1.00
<u>Usefulness of Online</u>					
<u>Portfolios (5)</u>					

The results showed that there was a strong positive correlation between students' SRL and their perceptions of the usefulness of online portfolios (.60), and this relationship was statistically significant ($p < .01$). Students who had high SRL were likely to perceive online portfolios as being useful.

Table 4.5 also shows the relationships between these two constructs across the three SRL phases. According to the SRL phases, the correlation between the performance phase and perceptions of the usefulness of online portfolios was the strongest correlation (.59). The correlation between forethought and perceptions of the usefulness of online portfolios was also moderately high (.57), while the weakest correlation (.48) was between the self-reflection phase and perceptions of the usefulness of online portfolios. These results are further explored by analysing the qualitative responses of students from both the high and low SRL groups, which showed consistent findings.

Self-Regulated Learning and Perceptions of the Usefulness of Online Portfolios

The quantitative data analysis showed a strong positive correlation between SRL and perceptions of the usefulness of online portfolios (.60). In data from the questionnaire,

four students from the high SRL group and three students from the low SRL group reported that they could not comment on how online portfolios worked in relation to their studies because it was new for them: *“Portfolio use is completely new to me. I have yet to master it fully”* (13H/Q1/92), and *“Not sure as do not understand and time is limited to the course”* (33L/Q1/92).

However, about the same number of students from both groups (four each) commented that they liked the fact that portfolios were attractive, adaptable, accessible, transportable, and flexible: *“Easy access to your learning journey for reflection and planning”* (85H/Q1/92), and *“Everything in one space – will have access to later”* (55L/Q1/92).

Similarly in the interview data, all students (A, B, C, D, E, F) from the high and low SRL groups reported that using online portfolios was portable, adaptable, accessible, and flexible – for example:

“It is very adaptable like a framework that you can do anything with... it is useful because all the stuff that I have uploaded is there... it is transportable and accessible” (A/H/In), and *“I think it is very attractive in the sense that it allows you to post, or do a lot of things on it and with it. It is quite multi-functional”* (D/L/In).

The findings indicated that students from both high and low SRL groups were more likely to perceive that online portfolios were useful, as they could be used anytime, anywhere, and that online portfolios were appropriate for learning online. However, concerns relating to the use of online portfolios were also raised. In the questionnaire, many students from both SRL groups (13 students from the high SRL group and 16 students from the low SRL group) reported that using online portfolios was time

consuming, in particular for those who had no experience with how to use them: *“Time to learn how to use the technology especially in an online environment”* (87H/Q1/93), and *“With limited knowledge initially a lot of time wasted trying to negotiate my way around”* (6L/Q1/93).

Moreover, some students from both groups (2 from the high SRL and 3 from the low SRL) reported that using online portfolios added more work and put more pressures on them: *“At the moment, it seems like one more thing to do”* (11H/Q1/93), and *“Not inclusive, a hassle and adds more work to my already huge load”* (75L/Q1/93).

The findings showed that students from both high and low SRL groups seemed to like the fact that using online portfolios was convenient in terms of accessibility and flexibility. However, they were likely to be concerned about technology difficulties, because online portfolios required considerable time to learn how to use. Consequently, this time consuming caused stress for some students.

In terms of the usefulness of online portfolios, more high SRL students valued online portfolios as being useful for their learning and professional practice than low SRL students, despite both groups reporting that using online portfolios was time consuming and that it sometimes made them feel stressed. These qualitative results were consistent with the quantitative findings.

With respect to the three phases of SRL, the relationship between the three phases of SRL and perceptions of the usefulness of online portfolios was also strongly positively correlated (forethought and perceptions of the usefulness of online portfolios = .57, performance and perceptions of the usefulness of online portfolios = .59, and self-reflection and perceptions of the usefulness of online portfolios = .48) (see Table 4.5).

Forethought Phase and Perceptions of the Usefulness of Online Portfolios

The quantitative data analysis showed that there was a strong positive correlation between students' SRL skills in the forethought phase and their perceptions of the usefulness of online portfolios (.57). The interview data showed that all high SRL students (A, B, C) and one low SRL student (F) reported that using online portfolios had helped them to set their learning goals. This was because the structure of online portfolios required them to set their goals: *"The structure of MyPortfolio fits very well with the requirements of that assignment"* (A/H/In), and *"The whole use of portfolios had been a learning goal for me"* (F/L/In).

Once they had set goals, they could easily modify them if the goals were not realistic: *"Under each domain we are supposed to develop our own learning goals and the lecturers are monitoring that and how we change those or modify what we write in terms of our learning goals"* (B/H/In).

However, two low SRL students did not think the same as those outlined above. Student D was not sure that using online portfolios would help her in terms of goal setting. This was because she had a limited idea about how to use them, and she said it would have helped if the online portfolios had already been set up as a template for her. Student E reported that using an online portfolio did not help her to set learning goals: *"Setting a learning goal is the same process whether I use a portfolio or whether I paint the picture of it or whether I write it with a pen and paper"* (E/L/In).

Further, when students were asked if they felt confident in creating and using online portfolios, all high SRL students (A, B, C) and one low SRL student (E) reported that they felt confident in using online portfolios: *"Once I got the technology I then felt confident"* (A/H/In), and *"I can drive everything around it"* (E/L/In). The other two

low SRL students reported that they were not confident and were still working on how to use online portfolios: *“I am not confident”* (D/L/In), and *“No, I am still working on it”* (F/L/In).

In terms of interest, high SRL students reported that they enjoyed using online portfolios and that they intended to continue using them in their professional careers after they finished the course: *“I definitely enjoy it because it is instant practice for me”* (B/H/In).

This finding indicated that in the forethought phases, students from the high SRL group were more likely to have confidence in using online portfolios than those from the low SRL group. Furthermore, high SRL students seemed to enjoy using online portfolios and intended to continue using them in their professional practice compared to low SRL students.

Performance Phase and Perceptions of the Usefulness of Online Portfolios

The quantitative data analysis showed that there was a strong positive correlation between students' skills in the performance phase and their perceptions of the usefulness of online portfolios (.59). The questionnaire data showed that 15 students from the high SRL group (65.2%) responded that using online portfolios helped them to reflect on their learning, see their learning journey, and make it easy to organise and update their work: *“Portfolios can be added to and updated throughout the year. It's easy to look back on initial learning goals”* (20H/Q1/92), and *“... map out where my learning, has been, is now, is going, and if there are any gaps anywhere”* (85H/Q1/92).

The results indicated that these high SRL students seemed to understand that online portfolios were useful to reflect on what they had learnt and what they needed to learn. However, only three students from the low SRL group (11.5%) reported the same.

Further, a few students from both SRL groups reported that using an online portfolio was an ongoing learning process that gave them an opportunity to share work and enhance their Information Technology (IT) skills. Additionally, it could be used after finishing the course and, as the skills were transferrable, use them in other areas: *“Ongoing, reflective, opportunity to share”* (54H/Q1/92), and *“Will be able to take these new skills and use them in other areas”* (49L/Q1/92).

Interestingly, while none of the students from the high SRL group reported the value of online portfolios in terms of storing and recording work, four students from the low SRL group reported that using online portfolios was convenient for them to keep and display their work: *“Storing and displaying in a digital format is the only way to go”* (64L/Q1/92).

Similarly, the interview data showed that all high SRL students (A, B, C) and two low SRL students (E, F) reported the use of learning strategies while they were studying in the course. Learning strategies included note taking, reading widely, seeking help, planning ahead, and environment structuring – for example, *“I had taken a lot of notes in the first block course”* (A/H/In), and *“What I try to do is pick my prime time for concentrating, which tends to be the middle of the day”* (F/L/In).

However, this was not true for student D in the low SRL group, who did not demonstrate the use of learning strategies. She said it was too difficult for her to deal with the technology and a new learning path like online portfolios. She said she could learn better if she had somebody to work with her closely and tell her what to do: *“If I have someone sitting next to me and saying ‘Yes, do that, go into that’, I learn quickly and I learn better”* (D/L/In).

In terms of time management, the data showed that all the high SRL students (A, B, C) reported the use of time management strategies – for example, *“Saturday is definitely my study day that I am working on assignments and something tangible. Every morning when I go to the office, I spend at least 30-45 minutes on the forum”* (B/H/In). However, none of the low SRL students demonstrated time management strategies.

This finding indicated that high SRL students were more likely to use learning strategies and manage their study time better than those low SRL students. In relation to the use of online portfolios, all high SRL students (A, B, C) and one low SRL student (F) reported that using online portfolios helped them to reflect on what they were learning and helped them to regulate their learning:

“It helps to regulate what I do need to do and what I do not need to do” (A/H/In), *“When I read and respond to the discussion that will guide me to other readings or reflecting on my own experience”* (B/H/In), *“You can look back on and see your growth through the whole process”* (C/H/In), and *“Being able to reflect back on your learning goals has been good to help me review them and reassess the goals and develop strategies to meet them”* (F/L/In).

The other two low SRL students (D, E) said that using online portfolios caused high workloads and was more stressful: *“It has just added more time and stress for me...until I get up and going and am comfortable with it”* (D/L/In). Further, using online portfolios was not helpful for regulating learning, but it was a way to keep work in one place: *“It de-regulates my learning and never had an end point. It helps me to store and display my reflection – that is all”* (E/L/In).

This finding indicated that compared to low SRL students, high SRL students used more learning strategies and had better time management skills. Further, the high SRL students tended to perceive online portfolios as being useful to help them regulate their learning, whereas the low SRL students saw online portfolios as a storage place that gave them extra work to do.

Self-Reflection Phase and Perceptions of the Usefulness of Online Portfolios

The quantitative data analysis showed that there was a moderate positive correlation between students' skills in the self-reflection phase and their perceptions of the usefulness of online portfolios (.48). The interview data showed that even though online portfolios were difficult to use in terms of technology, four students (A, B, C, E) reported that they tried to learn how to use them by employing learning strategies as outlined above in the performance phase.

However, only high SRL students (A, B, C) reported that they would continue using them after they completed the course – for example, *“I will continue using a portfolio in my workplace”* (C/H/In). This was in contrast to low SRL students, who were less certain: *“I think I will probably continue to use it”* (F/L/In).

This finding indicated that high SRL students were more likely to have adaptive behaviours as they tended to continue using online portfolios even though it was challenging. This was because they could see the advantages of using them in regulating their learning behaviour. In contrast, low SRL students seemed not as sure if they would continue to use online portfolios, as they said using online portfolios was difficult and time consuming.

In summary, most students in the high SRL group saw more advantages in the use of online portfolios compared to those in the low SRL group. Students in the high SRL

group valued the online portfolios to help them regulate their learning, and they identified the benefits relating to self-reflection. Some of them also reported that they would continue using the online portfolios after they completed the course. Their responses suggested that they were more likely to be intrinsically motivated to continue to use them. However, this might not be the case for some high SRL students.

In contrast, even though some low SRL students perceived online portfolios as being useful to regulate their learning, many students in this group valued the online portfolios as a tool to keep their work together and share it with others, but they did not identify the metacognitive aspects of self-reflection. They saw the online portfolios as a product (storage space) rather than as a process (self-reflective tool), and their responses suggested that they were more extrinsically motivated to use them. This is further explored in research question three.

There were many students from both the high and low SRL groups who reported that using online portfolios was time consuming, especially when they did not know how to use them and they did not have good computer skills. Further, some students from the two groups commented that using online portfolios increased their workload and caused stress. The next section addresses the results in relation to research question two.

4.5.2 Research question two

Do students' initial SRL skills relate to their subsequent perceptions of the usefulness of online portfolios?

To answer this research question, correlations between students' SRL and their perceptions of the usefulness of online portfolio scores in Questionnaire One were examined in relation to Questionnaire Two. The purpose of this approach was to determine whether initial SRL scores were more strongly related to subsequent

perceptions of the usefulness of online portfolio scores, compared to initial perceptions of the usefulness of online portfolio scores and subsequent SRL scores.

To examine the changes between these two variables over time, Pearson product moment correlation coefficients were calculated and entered into a cross-lagged panel correlation (CLPC) diagram. This approach allowed for the comparison of the Questionnaire One and Questionnaire Two correlations. Such a comparison can potentially inform whether one variable is causally predominant over the other variable. For example, if the correlation between SRL (Questionnaire One) and perceptions of the usefulness of online portfolios (Questionnaire Two) was significantly stronger than the correlation between perceptions of the usefulness of online portfolios (Questionnaire One) and SRL (Questionnaire Two), it could be interpreted that SRL was causally predominant over perceptions of the usefulness of online portfolios. In other words, SRL would be considered a stronger “driver” than perceptions of the usefulness of online portfolios, rather than vice versa (e.g., Kenny, 1975).

For this study, CLPC involved two constructs (self-regulated learning – SRL; perceptions of the usefulness of online portfolios) measured simultaneously at two points in time (Questionnaire One; Questionnaire Two). Therefore, four variables were involved: SRL, Questionnaire One – SRL1; SRL, Questionnaire Two – SRL2; perceptions of the usefulness of online portfolios, Questionnaire One – perceptions of the usefulness of online portfolios1; and perceptions of the usefulness of online portfolios, Questionnaire Two – perceptions of the usefulness of online portfolios2. The CLPC involved the comparison of the cross-lagged correlations (i.e., SRL1->perceptions of the usefulness of online portfolios2 and perceptions of the usefulness of online portfolios1->SRL2). This comparison, called the cross-lagged differential, was

expressed as $SRL1 - \text{perceptions of the usefulness of online portfolios2} - \text{perceptions of the usefulness of online portfolios1} - SRL2$.

As illustrated in Figure 4.2, the correlation between SRL1 and SRL2 was .82, which was the strongest correlation. These results indicated that students who scored highly in SRL skills at the beginning of the course generally scored highly on this variable at the end of the course. Conversely, those who scored at low levels in SRL skills at the beginning generally scored low on this variable at the end of the course.

However, the correlation between perceptions of the usefulness of online portfolios1 and perceptions of the usefulness of online portfolios2 (.43) was not as strong as the correlation between SRL1 and SRL2 (.82). This weaker correlation could have been because the perceptions of the usefulness of online portfolios were relatively a less stable construct.

The correlation between SRL1 and perceptions of the usefulness of online portfolios1 was .66, which suggested that at the beginning of the course students who scored higher on SRL skills tended also to score higher in their perceptions of the usefulness of online portfolios. This strong positive correlation was earlier stated in research question one.

The correlation between SRL2 and perceptions of the usefulness of online portfolios2 was .42, which was the weakest of the correlations. There was an average improvement of nearly 17 points on the perceptions of the usefulness of online portfolios scale for the low SRL group (see Table 4.6), compared to an average improvement of 7 points for the high SRL group. The 17-point improvement for the low SRL group was equivalent to approximately one standard deviation. This level of improvement, although not statistically significant when tested, would likely account for the lower correlation

between SRL and perceptions of the usefulness of online portfolios in Questionnaire Two.

Table 4.6

Respondents' Mean Scores and Repeated Measure Analyses of Variance Test for Self-Regulated Learning and Perceptions of the Usefulness of Online Portfolios

Variables	SRL groups							
	High (n = 14)				Low (n = 19)			
	Q1		Q2		Q1		Q2	
	M	SD	M	SD	M	SD	M	SD
<u>SRL</u>	423.79	26.35	431.14	23.00	318.58	34.77	349.63	48.84
Forethought	123.50	10.34	126.21	10.82	90.05	13.11	102.42	14.10
Performance	194.64	16.85	195.00	10.44	141.58	19.93	153.32	28.92
Self-reflection	105.64	9.10	109.93	10.15	86.95	11.63	93.89	12.49
<u>Perceptions of the usefulness of online portfolios</u>	94.50	26.61	102.29	20.43	66.16	26.71	83.58	26.21

The cross-lagged correlations were moderate. The correlation between SRL1 and perceptions of the usefulness of online portfolios2 was .44, and the correlation between perceptions of the usefulness of online portfolios1 and SRL2 was .50. Therefore, the cross-lagged differential was -.06: .44 (SRL1-> perceptions of the usefulness of online portfolios 2) - .50 (perceptions of the usefulness of online portfolios1->SRL2).

The results suggested that the correlation between early SRL and later perceptions of the usefulness of online portfolios was lower than the correlation between early perceptions of the usefulness of online portfolios and later SRL. To test whether this difference was significant, a z transformation attributed to Person and Filon (Kenny, 1975, 1979; Kenny & Harackiewicz, 1979) was employed.

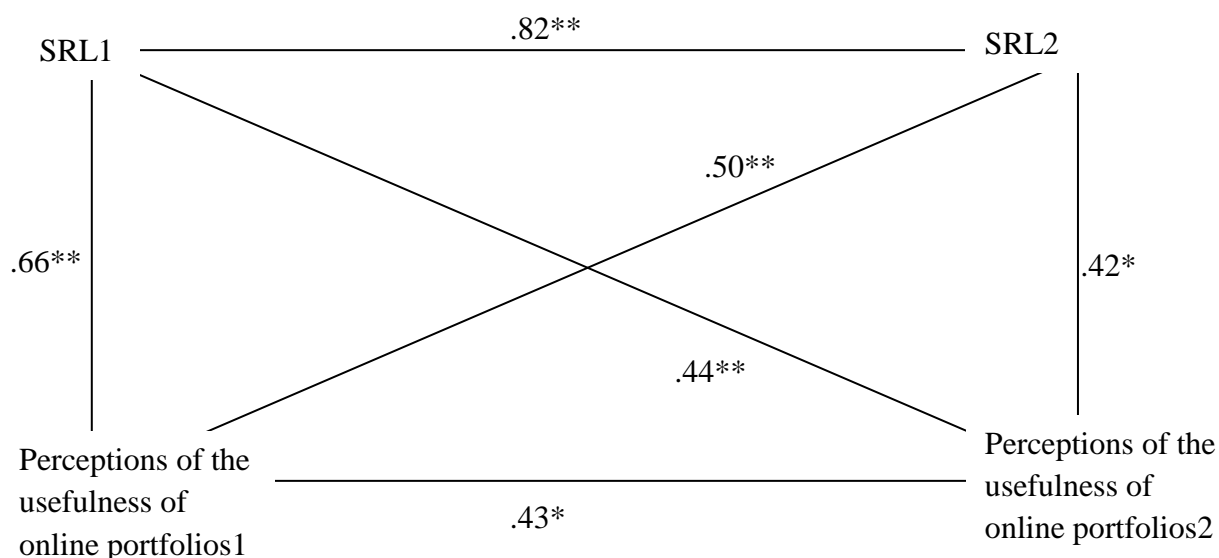


Figure 4.2. Cross-lagged panel correlation between self-regulated learning and perceptions of the usefulness of online portfolios

The results showed that the cross-lagged differential was not statistically significant ($z = .69$; $p > .05$). These results indicated that initial SRL had no stronger influence on subsequent perceptions of the usefulness of online portfolios than initial perceptions of the usefulness of online portfolios had on subsequent SRL. Instead, the relationship between the two variables over time was reciprocal. The next section addresses the results in relation to research question three.

4.5.3 Research question three

Do scores for both students' SRL skills and their perceptions of the usefulness of online portfolios increase during the course, and, if so, do the scores for the high SRL group increase more than the scores for the low SRL group?

This research question was asked to examine students' SRL skills and their perceptions of the usefulness of online portfolios over the year. In terms of the development of students' SRL skills and their perceptions of the usefulness of online portfolios, the

third research question was addressed by means of a two-way analysis of variance with repeated measures. The between-groups factor was SRL Group (high, low) and the within-groups factor was Time (Questionnaire One, Questionnaire Two).

As the research question asked for scores on both SRL skills and perceptions of the usefulness of online portfolios, the results are presented separately between the two constructs. The SRL scores, including the three SRL phases, are presented first, and the scores on perceptions of the usefulness of online portfolios follow.

Self-Regulated Learning

In terms of scores on SRL skills, the results showed statistically significant main effects for Group and for Time, (Group, $F(1, 31) = 69.14, p < .01$, Time, $F(1, 31) = 10.46, p < .01$). However, there was no statistically significant Group x Time interaction effect. The results indicated that the high SRL group scored higher on SRL than the low SRL group. As expected, there was a significant difference between the two SRL groups, because they were formed on the basis of high and low SRL scores. Therefore, the emphasis of this data analysis was placed on the main effect for Time and, more particularly, the Group x Time interaction effects.

With respect to the main effect for Time, and for Group x Time interaction effects, the SRL scores for both high and low SRL groups increased over the time period, but tended to increase at a different rate. There was a tendency for the scores for the low SRL group to increase more than the scores for the high SRL group, but it was not statistically significant (for Group x Time) (see Table 4.6). An examination of the data showed that the high SRL group improved by 7.35 points on their overall SRL, whereas the low SRL group improved at a markedly greater rate of 31.05 points. The reason why

these results were not statistically significant could be related to the relatively small sample sizes.

Further, the results were different when the three phases of SRL (forethought, performance, and self-reflection) were analysed separately. Regarding Time, the results showed a statistically significant main effect in the forethought phase (Time, $F(1, 31) = 12.33, p < .01$) and the self-reflection phase (Time, $F(1, 31) = 6.69, p < .05$). However, there was no statistically significant main effect for Time in the performance phase.

With regard to the increase in scores, they were statistically significant for Group x Time interaction effects for the forethought phase (Group x Time, $F(1, 31) = 5.05, p < .05$). However, they were not statistically significant for the performance and self-reflection phases. Similarly to the overall SRL, the lack of statistically significant results was possibly due to the small sample sizes. An examination of the data showed that the high SRL group improved by .36 points in the performance phase and 4.29 points in the self-reflection phase, whereas the low SRL group improved at a greater rate – by 11.74 and 6.94 points, respectively.

These results indicated that the scores for the forethought and self-reflection phases for both groups increased significantly over the year (for Time), but not the scores for the performance phase. With regard to the increase in scores for the two SRL groups, the scores on the forethought phase for the low SRL group increased more than the scores for the high SRL group. However, the scores on the performance and self-reflection phases for the low SRL group tended to increase more than for the high SRL group (for Group x Time), but they were not statistically significant (see Table 4.6).

Perceptions of the Usefulness of Online Portfolios

In terms of scores on perceptions of the usefulness of online portfolios, the results showed statistically significant main effects for Group and for Time (Group, $F(1, 31) = 10.58, p < .01$, Time, $F(1, 31) = 5.80, p < .05$). However, there were no statistically significant Group x Time interaction effects for perceptions of the usefulness of online portfolios. The results indicated that the high SRL group scored higher on perceptions of the usefulness of online portfolios than the low SRL group. Further, the perceptions of the usefulness of online portfolios scores for both high and low SRL groups increased over the time period. However, the low SRL group appeared to increase at a greater rate than the high SRL groups (for Group x Time), but it was not statistically significant (see Table 4.6).

The results indicated that the high SRL group scored more highly on SRL and perceptions of the usefulness of online portfolios than the low SRL group. At the end of the course, students in both groups reported improvement in their SRL skills and their perceptions of the usefulness of online portfolios compared to the beginning of the course. An examination of the Group x Time effect interactions showed that these improvements occurred at a different rate for the two SRL groups. The low SRL group tended to improve at a greater rate than the high SRL group, although the improvement was not statistically significant. The reason for this result could be the relatively small sample sizes.

The results were further explored by analysing the qualitative responses of students from both the high and low SRL groups. The data were gathered from both questionnaires and interviews. The data showed that students with high SRL demonstrated greater SRL strategies in all three SRL phases compared to those with low

SRL, which was consistent with the quantitative results. However, both groups, and in particular the low SRL group, reported improvement in their SRL skills across the three phases and perceived online portfolios as being useful over the year. These results are addressed in the following sections, in which the questionnaire and interview data are presented in combination. Students' responses were coded using Zimmerman's (2002) SRL framework, as this covered the SRL components across the three phases: forethought, performance, and self-reflection.

Phase One: Forethought

The forethought phase involves task analysis and self-motivation beliefs. Task analysis consists of goal setting, which refers to a person's expected outcome in a particular timeframe; and strategic planning, which is the strategy of selecting appropriate learning methods. Self-motivation beliefs involve self-efficacy, which is a person's beliefs in their capability to learn; outcome expectations, which relates to anticipated consequences of learning; and task value/interest, which refers to the extent to which a person values a particular task (Zimmerman, 2002; Zimmerman & Moylan, 2009). The results are presented below in relation to the components of the forethought phase.

Task analysis

The task analysis component involves goal setting and strategic planning. To assess this component, students were asked how they set their learning goals in relation to the course. All 14 high SRL students responded to this question in Questionnaire One, and six of them provided two responses (20 responses). In Questionnaire Two, seven of the high SRL students responded to the question, and two provided two responses (9 responses). Of the 19 low SRL students, 18 responded to the question in Questionnaire One; two of them provided three responses and five of them provided two responses (22

responses). Regarding Questionnaire Two, 14 of the 19 low SRL students responded and five of them provided two responses (19 responses). The findings in relation to goal setting and strategic planning are presented below.

Goal setting

In terms of goal setting, the questionnaire data showed that both high and low SRL students responded to the question similarly. Most responses from both high SRL group (11 for Q1 and 6 for Q2) and low SRL group (17 for Q1 and 14 for Q2) showed that students set their learning goals by looking at course requirements; reading guidelines, course materials and examples; taking quizzes; and then figuring out their areas of interest, establishing their knowledge base, and identifying their gaps.

“I used the quizzes in each domain, read some of the readings and tried to work out what I did not know much about” (35H/Q1/9), “overview the course outlines and set them according to what I need to learn” (9H/Q2/9), “In this course-gaps identified in taking quizzes and ensuring course activities. Also area of interest where I feel I have only superficial knowledge” (25L/Q1/9), and “Looking at requirements for course, reading through some material and deciding where my interests are, what areas relate to my practice and where I need to extend my learning” (42L/Q2/9).

It could be reasonably assumed that these students realised that goals must be specific and realistic as they identified their own knowledge bases and linked them to the course competencies. Moreover, some responses from the two SRL groups (high = 2 for Q1 and 1 for Q2, low = 4 for Q1 and 1 for Q2) indicated that the goals they set had to be related to their own professional practice, functional, and enriching to their thinking and

learning. These students seemed to understand that goals would be achievable when they were practical and relevant: *“Goals must be related to my work and development”* (4H/Q1/9), and *“Using relevant course readings that are appropriate to my working environment”* (53L/Q1/9).

Strategic planning

In relation to strategic planning, responses were based on the same question, which asked students how they set their learning goals. There were eight responses from the high SRL group (7 for Q1 and 1 for Q2) and seven from the low SRL group (5 for Q1 and 2 for Q2). These responses indicated that students reviewed course requirements and criteria and then carefully planned how much work they needed to do and how much time to allocate to it. They then took notes and drew up a timetable and followed the schedule strictly: *“By looking ahead to see what is due...allocate time to study – evenings, weekend.”* (22H/Q1/9), and *“Draw up a diary plan for what is due, and then work through the earliest thing due to the last thing due”* (25L/Q2/9).

However, two responses from the low SRL group showed that some students did not follow up or regularly revisit their own learning goals; they then found themselves stressed, as goals could not be achieved. Further, one low SRL student commented that it was too difficult and that it took a long time for her to set learning goals. It could be assumed that these students might have less sophisticated strategic planning skills: *“I am not organised! ...I end up having a stressed rush at the end to fit in achieving the goals”* (55L/Q2/9), and *“I do not possess a systematic approach to my study goals”* (75L/Q2/9).

Summary

In summary, the results indicated that most students from the two SRL groups seemed to understand how to set their own goals as they identified their own learning needs based on their knowledge base. They also seemed to know that goals had to be realistic and relevant to their professional practice. Further, many of them were likely to have well developed strategic planning skills as they said they scheduled for their study plans. However, this was not true for some low SRL students. The following are the findings in relation to self-motivation beliefs of the forethought phase.

Self- motivation beliefs

The self-motivation beliefs component consists of self-efficacy, outcome expectations, and task value/interest. To assess this component, two questions related to self-efficacy and outcome expectations were addressed. Task value/interest was derived from the responses to these two questions. The subcomponents of self-motivation beliefs are presented below.

Self-efficacy

In terms of self-efficacy, self-efficacy in this study refers to students' beliefs in their capability and confidence in using online portfolios. Students were asked how confident they were that the amount of work they did in the course would be reflected in their grades. All 14 high SRL students responded to the question in Questionnaire One, and 11 out of the 14 responded in Questionnaire Two. Of the 19 low SRL students, 18 responded in Questionnaire One and 17 responded in Questionnaire Two.

The 17 responses from the high SRL group (10 for Q1, 7 for Q2) and 13 responses from the low SRL group (4 for Q1, 9 for Q2) showed that students felt confident that the

amount of work they put in would be reflected in their results: *“Quite confident. I really worked hard on the learning component. I was more confident with some of the content having done special education study in the past”* (90H/Q2/16), and *“Grades reflect the amount of work”* (37L/Q2/16).

However, eight responses from the high SRL group (4 each for Q1 and Q2) and 22 responses from the low SRL group (14 for Q1, 8 for Q2) showed that students did not feel confident that their work would affect their learning outcomes: *“The marking criteria is set and clear but I am not convinced my mark will indicate the effort I have put in”* (22H/Q1/16), and *“not that confident - seems to be a lot of time, reading course readings and postings”* (25L/Q1/16).

The results indicated that high SRL students seemed to have more confidence in their abilities to be successful in the course from the start, and their confidence was sustained throughout the year. Low SRL students, however, were likely to be less confident when they started the course, but many of them tended to have higher confidence by the end of the year. This could be reasonably explained by the statistically significant Group x Time interaction effects for the forethought phase (as outlined earlier in the quantitative data in this section 4.5.3 section), where the scores on the forethought phase for the low SRL group increased more than for the high SRL group.

In line with the questionnaire results, the interview data showed that all students from the high SRL group (A, B, C) and one from the low SRL group (E) reported that they had a reasonable understanding of how to use online portfolios and had confidence in using them: *“I pretty much understand most of the basic processes”*(A/H/In), *“...I have more confidence in using an e-portfolio”* (B/H/In), *“I do not have any problems with it”* (C/H/In), and *“I have quite high confidence now...in the beginning I was very stressed about it”* (E/L/In).

However, the other two low SRL students (D and F) said that they had less confidence in using online portfolios: *“I am not confident...I have got a very vague idea about it”* (D/L/In), and *“no...I am still working on it”* (F/L/In).

These results indicated that more high SRL students felt confident in their ability to be successful in using online portfolios compared to low SRL students. This response was surprising, as the interviews were held towards the end of the course. It may be that the two low SRL students who said that they were not confident in using online portfolios were still at a novice stage of understanding how to use them or had fewer learning strategy skills at their disposal. This finding is further addressed in the performance phase.

Outcome expectations

In terms of outcome expectations, students were asked what they considered the minimum grade for them to have achieved a successful outcome. All 14 high SRL students responded to the question in Questionnaire One, and 13 responded to Questionnaire Two. For the 19 low SRL students, 16 responded to Questionnaire One and 18 responded to Questionnaire Two.

The results showed that most students in the high SRL group (10 for Q1) reported that they expected to have high grades (grades B to A), and these high expectations remained throughout the year (11 for Q2). The other high SRL students (3 for Q1, 2 for Q2) reported that they just wanted to pass the course:

“I see a B as a minimum grade” (85H/Q1/64), *“I am a high achiever and prefer to think I am capable of achieving B+ - A-status”* (63H/Q2/64), and *“I just wanted to pass, considering that due to work/life commitments I could not give the course the focus*

and time commitment I would have liked” (low expectation)

(24H/Q2/64).

With respect to the low SRL students, eight from Questionnaire One and 12 from Questionnaire Two reported that they expected high grades, while eight from Questionnaire One and six from Questionnaire Two reported that they were happy as long as they passed the course: *“Would love anything above a B, but will take a C”* (18L/Q1/64), *“A ‘B’ or higher”* (86L/Q2/64), and *“As long as I gain a pass grade I will be satisfied”* (low expectation) (62L/Q2/64).

Interestingly, some low SRL students reported that their outcome expectations were high or reasonable, but they were not sure if they could reach those expectations. This could be related to their self-efficacy, in that they doubted their ability to do the course even though they wanted to have higher grades: *“B+ but with the assignment formats being so different from previous postgraduate study, sometimes doubt can achieve this”* (37L/Q1/64).

In summary, the results indicated that students with high SRL seemed to have higher expectations regarding their performance than those with low SRL, in particular at the beginning of the course. However, many students from the low SRL group had higher outcome expectations by the end of the year, although some of them commented that they were not sure that they would be able to reach those expectations.

Task value/interest

In relation to the task value/interest component, three responses from the high SRL group (2 for Q1, 1 for Q2), and one from the low SRL group (Q1) showed that students found the course content interesting and useful, and they enjoyed doing the course: *“Huge amount of learning and enjoying”* (4H/Q2/27), and *“I am not sure I have the*

academic sophistication required but I have greatly valued the content and found it extremely useful in my work” (77L/Q2/27).

Similarly, the responses from the interview data showed that students from both SRL groups reported that using portfolios was flexible and useful for their study:

“It is useful...the structure of online portfolio fits very well with the requirements of the assignment” (A/H/In), and “I like all of it, because I think it is very attractive in the sense that it allows you to post, or do a lot of things on it and with it. It is quite multi-functional” (D/L/In).

These results indicated that the interview students from both the high SRL (A, B, C) and low SRL (D, E, F) groups valued the use of online portfolios in terms of how they worked. However, in relation to interest, the high SRL students seemed to be intrinsically interested in using online portfolios, while the low SRL students seemed to use online portfolios because it was compulsory in the course:

“I feel very happy when I see the links in front of me...I definitely enjoy it because it is instant practice for me” (B/H/In), and “The course we are doing is an online course, so it is purposeful to use an online method of displaying your work” (E/L/In).

This result demonstrated the difference in student motivational beliefs between the two groups: the high SRL group was more internally motivated and the low SRL group was more externally motivated. One low SRL student (E) said that if it was not compulsory, she would not have used it because of her time commitments.

Summary

Altogether, the results indicated that at the beginning of the course, many high SRL students seemed to be more organised and competent in setting their own learning goals, had higher expectations, and were more confident that they would achieve their goals and meet their expectations compared to low SRL students. However, some high SRL students reported a lack of confidence and low expectations.

At the end of the course, while the number of high SRL students who felt confident and expected higher outcomes had steadily increased, the number of low SRL students who gained confidence and expected higher outcomes significantly increased. This finding indicated that the SRL skills in the forethought phase for the two SRL groups were sustained over the year, in particular for those with low SRL. This finding could be explained by the earlier quantitative results in that the scores on the forethought phase increased more for low SRL students. The next section addresses the results in the performance phase of SRL.

Phase Two: Performance

The performance phase involves self-control and self-observation. Self-control consists of task strategies, which refers to the specific learning methods that a person uses to address a particular task; self-instruction, which is used to guide a person's thoughts and actions; time management, which refers to strategies for using time effectively to achieve learning tasks; environmental structuring, which is a method to choose an appropriate environment to study; and help-seeking, which involves the process of seeking assistance. Self-observation includes meta-cognitive monitoring, which refers to the informal mental tracking of a person's performance; and self-recording, which involves creating a formal record of learning (Zimmerman, 2002; Zimmerman &

Moylan, 2009). The findings in relation to self-control and self-observation are presented below.

Self-control

The self-control component consists of task strategies, time management, self-instruction, environmental structuring, and help-seeking. To assess this component, students were asked what strategies and time management skills they used while they were taking the course. In Questionnaire One, 13 of the 14 high SRL students and 17 of the 19 low SRL students responded. In Questionnaire Two, 12 of the 14 high SRL students and 13 of the 19 low SRL students responded. The responses from these students were categorised into the sub-components of self-control: task strategies, time management, self-instruction, environmental structuring, and help-seeking. Results in relation to these strategic are presented below.

Task strategies

In terms of task strategies, the questionnaire data from both high SRL (11 each for Q1 and Q2) and low SRL (16 for Q1, 13 for Q2) groups indicated that those students applied a variety of learning strategies while they were taking the course. Examples of these strategies were group study, reading widely, note taking, mind mapping, short-term goal setting, full online engagement, practising, and highlighting:

“Fully engaged with online work every day, analytical and prioritising knowledge” (4H/Q1/28), “Writing notes or underlining readings also helped me to retain the important information” (85H/Q2/28), “I use highlighters and annotations to reinforce key words” (6L/Q1/28), and “I use short term goals and stick to them

the best I can. Constantly review these goals and realign as needed”

(17L/Q2/28).

These responses showed that the students seemed to realise that to be effective learners, they needed to apply specific learning methods that were appropriate for the task they were dealing with. However, a few responses from both SRL groups showed that students struggled with the use of task strategic skills when they reported that, because of the huge amount of information in the course, they found it difficult to use learning strategies:

“Tasks take longer than I anticipate. My learning strategies are challenged when I have to keep an idea of all domains in my head”

(9H/Q1/28), and *“I can’t use learning strategies because I don’t really know what the full picture is”* (64L/Q1/28).

In the interview data, all high SRL students (A, B, C) reported the use of task strategies. Student A commented that she took notes in the first block course in February 2011, and read online discussions to see other students’ situations and applied these situations to hers: *“I had taken a lot of notes in the first block course and I just kind of did trial and error and there was a lot of discussion going online about people having difficulties”* (A/H/In). She also got updated information online, and regularly checked comments from tutors and other students: *“The strategies I suppose I have used are just to try to keep up with all information online, making sure that I am up to date with all the tutors’ comments and everything”* (A/H/In).

Student B reported that he read widely to get his work done and learned as much as he could. He said on one occasion that he read 35 articles to get information for his assignments, even though only six articles needed to be used: *“In my case, one*

assignment we were encouraged to use six articles but I used 35 articles, just to read around and get enough substance” (B/H/In). Other strategies that he applied were having a study group to share ideas and resources, and reading and responding to reflections on the general discussion forums: “We are sharing ideas, exchanging our learning goals, and saying ‘Can you read mine and see what you think about it? Can I improve on it?’” (B/H/In).

Student C reported that she used study plans to make sure that she stayed on the right track. She said she tried to plan ahead for her study time and to choose an effective time that fitted with her family commitments: *“I kind of plan for the evenings, doing more readings that I can do later in the evening but not when I am too tired” (C/H/In).* She said she could change her plans depending on her circumstances, but she did try to work it out.

The results indicated that the high SRL students from the interviews seemed to be highly self-regulated in terms of the performance phase. They selected the learning strategies that they thought would work for them and constantly used those strategies. However, while all high SRL students from the interviews demonstrated the use of task strategies while they were studying in the course, the low SRL students (D, E, F) gave different responses.

Student D did not demonstrate the use of learning strategies. She said it was too difficult for her to deal with the technology and a new learning path like online portfolios. She said she could learn better if she had somebody to work with her closely and tell her what to do. Thus, it could be surmised that student D had few if any ideas about learning strategies. She seemed not to practise, ask for help, or try other ways to understand how to use online portfolios, even though there was information available on the course website.

Student E reported that she asked for help to set up her online portfolio. She said it took her a few weeks trying to get help:

I asked a number of people aged from 18-26, all of whom have studied or are studying at universities, some of whom have computer science degrees, and not a single one of them knew what an e-portfolio was and could not help me at all. Then I dropped down to people in the final year of high school, secondary schooling, and they did not know what an e-portfolio was either. About that time I asked someone at my worksite, one of the senior management team, and she said, 'Oh yes, it is about time we got on to something like that'. After that conversation I put some pithy comments on online forums, suggesting that if they wanted us to use e-portfolios they had better tell us what an e-portfolio is and they had better provide some professional guidance as to how to do it. I included in the email the fact that I had asked all the people in my specialty and that not a single one of them had even as much knowledge as I had, and they probably asked a few other specialties by that time too" (E/L/In).

This finding indicated that student E applied a help-seeking strategy to help her learn how to use an online portfolio. However, it was not adaptive help-seeking, which is normally used among self-regulated learners. She asked people who were unfamiliar with the course and therefore not always able to provide her with an informed answer.

Student F reported that she found herself getting behind the others when she was not regularly using her online portfolio: *"I have not looked at my portfolio for some time*

and I have seen other people's portfolios too, that they have been sharing online, and I just go, 'Oh, they look so good'” (F/L/In).

The results showed that high SRL students seemed to consistently use learning strategies that they thought would be the best method for them and would help them learn effectively. However, this was not true for low SRL students.

Time management skills

In terms of time management skills, the questionnaire responses from both high SRL (12 for Q1, 11 for Q2) and low SRL (14 for Q1, 9 for Q2) groups showed that students used several time management skills while they were taking the course. The most frequently used time management skills were allocating time, prioritising, and keeping balance between their work and family. These students said that they prioritised and used timetables for each task and also attempted to balance work, study, and family and allocated time each day for these. They said they set aside times that they thought appropriate for them to study:

“Set aside study time, use of a study plan with weekly activities to complete, read articles in any free time” (20H/Q1/28), “Balancing work, family and study became very important and crucial to making it work effectively” (85H/Q1/28), “Being aware of what needs to be done, trying not to leave things till the last minute” (18L/Q1/28), and “I identify a set amount of time to spend on each book/module within a domain and stick to this time allocation” (86L/Q2/28).

These responses showed that these students were likely to have skills in time management and use them for a particular task. However, some responses from both groups reported that it was difficult for them to complete their work in a certain time.

This was particularly true for the low SRL group, who reported that they prioritised and used timetables for each task, but it was difficult to follow their schedules and to keep balance between family and study when other commitments occurred: *“I found I ran out of time for the online course work toward the end of the year”* (24H/Q2/48), and *“...to time manage is hard when there is so much information to sort through”* (25L/Q2/48).

The interview data showed that one student (A) in the high SRL group reported difficulty in managing her study time because of her commitments: *“I tried to set specific time to have study days but sometimes that has been eaten into, when I have had to do other things”* (A/H/In). However, the other two high SRL students (B, C), demonstrated the use of time management skills.

Student B reported that he allocated time for each day and kept a balance between study and family. He set his study time and followed it strictly. He studied every Saturday, spending five to six hours on his assignments. He said that even though Monday to Friday were working days for him, he spent 30-45 minutes in the morning on the portfolio section, to see what was going on there, and at the end of the day he responded to it: *“Saturday is definitely my study day that I am working on assignments and something tangible. Every morning, I spend at least 30-45 minutes on the forum so I am updating every day, at least five days a week”* (B/H/In). Sunday was his family time.

Student C said she prioritised her work and kept balancing around her children and other commitments: *“It is a bit of a juggle still around the kids and everything else but luckily I do have four days off a fortnight to get into it”* (C/H/In).

However, it seemed that low SRL students (D, E, F) tended to use fewer time management skills. Student D said that at the start she had tried to manage her time to

engage in the discussion forums and do the reading, but as time went on and the workload increased, she found it was hard to manage her time effectively: *“I was managing to take part in the discussion forums and I did most of the books, but as workload started to weigh on me I found I was not getting back to it as much”* (D/L/In).

Student E said she spent a large amount of time learning how to use online portfolios, so this made her feel stressed: *“I put in a lot of time. That is why I am so mad at e-portfolio”* (E/L/In).

Student F said that she was lucky to have a flexible work environment where she got time for her study: *“I am really lucky that I have got a flexible work environment. I work from home and I set my own hours. I have also got a study award for the year”* (F/L/In). She seemed to have time management skills, as she said she chose a time that suited her best to concentrate: *“What I try to do is pick my prime time for concentrating, which tends to be the middle of the day”* (F/L/In).

However, as mentioned earlier in relation to task strategies, student F found herself getting behind the others in terms of the use of online portfolios. This might be that she did not regularly check her progress. It could be implied that she had some degree of time management skills, but that she might have had trouble with the use of learning strategies.

Self-instruction

In terms of self-instruction, the questionnaire response from the high SRL (1 for Q2) and a few from the low SRL (2 for Q1, 1 for Q2) groups showed that students told themselves to do their daily tasks and strictly followed these instructions. They cut out some leisure time that might distract their study:

“I set two days aside weekly and use these days for study only – no coffees in town...I set daily tasks and stick to them...I am self-motivated and disciplined” (32H/Q2/28), and “I have to be in the right frame of mind to work successfully” (62L/Q1/28).

These responses indicated that along with using learning strategies and time management skills, some students from both groups were engaging in self-instructing that helped them to direct their thoughts and actions; in turn, this helped them to achieve their goals.

Environmental structuring

In terms of environmental structuring, the questionnaire data from the high SRL (1 for Q2) and low SRL (2 for Q2) groups demonstrated that students set up their own study space in a quiet, distraction-free area: *“I need to work at a table with enough space to set out my support paperwork and books” (13H/S2/28), and “I have learnt more about how I learn best – quiet, no distractions” (6L/S2/28).*

Help-seeking

In terms of help-seeking, the questionnaire responses from both the high SRL (1 each for Q1 and Q2) and the low SRL (3 for Q2) groups showed that students sought help while they were studying in the course. They said that they liked to talk through their studies with others, discuss ideas with friends on the course, and ask questions when they were unsure:

“I usually make every attempt to solve problems independently. Often I find the answer not as profound as I imagined. If I really can’t make

progress, I then ask for help” (13H/Q1/48), and “I have learnt to ask for help and support over the year” (17L/Q2/48).

Summary

In terms of the self-control component, the results indicated that many of the students from both high and low SRL groups demonstrated the use of varied learning strategies, depending on how the strategies were suited to the tasks. However, a few from both high and low SRL groups seemed to struggle with these skills, as they said that the large amount of information in the course made it difficult for them to manage their learning skills. The next section addresses the findings in relation to self-observation of the performance phase.

Self-observation

The self-observation component consists of meta-cognitive monitoring and self-recording. To assess this component, students were asked about the ways in which they monitored how effectively they were learning in the course. In Questionnaire One, 13 of the 14 high SRL students responded and one provided two responses (14 responses). Also in Questionnaire One, 15 of the 19 low SRL students responded and one provided two responses (16 responses). In Questionnaire Two, 11 of the 14 high SRL students responded; four provided two responses and two provided three responses (22 responses). Also in Questionnaire Two, 16 of the 19 low SRL students responded, and four provided two responses (20 responses). The responses will be presented in relation to the subcomponents of self-observation, which are metacognitive monitoring and self-recording.

Metacognitive monitoring

In terms of meta-cognitive monitoring, four themes emerged – feedback, discussion, understanding, and satisfaction – as the methods that students reported that they used to monitor their learning.

In relation to **feedback**, 14 responses (5 for Q1, 9 for Q2) from the high SRL group and 16 responses (9 for Q1, 7 for Q2) from the low SRL group showed that students used feedback and comments from peers and lecturers, as well as their assignment marks, to check their learning progress: *“By response from colleagues and I use them as a gauge”* (13H/Q1/49), *“Through my results and comments in the forum that support my ideas”* (32H/Q2/49), *“Feedback on assignments”* (62L/Q1/49), and *“Assignment grades, quiz marks, peer feedback”* (39L/Q2/49).

From these results, it seemed that these students checked their learning progress against judgments from others.

In relation to **discussion**, 10 responses (5 each for Q1 and Q2) from the high SRL group and seven (3 for Q1, 4 for Q2) from the low SRL group showed that the strategy students used was examining and comparing different ideas by discussing them with others on the course, either online or in person, and then asking themselves if they agreed with those ideas: *“Through discussions/forum comment comparisons with other students”* (35H/Q1/49), *“Sharing with colleagues”* (13H/Q2/49), and *“Compare what I have done with others on the site”* (18L/Q1/49).

These results indicate that students tended to gain and evaluate their knowledge by talking issues through with others.

In relation to **understanding**, seven responses (3 for Q1, 4 for Q2) from the high SRL group and six responses (1 for Q1, 5 for Q2) from the low SRL group showed that students monitored their learning by asking themselves how much they understood the contents and if the knowledge gained could be applied to their workplace: *“By how well I can use information gained through the course in my job and with clients”* (20H/Q1/49), and *“By what I can apply to my work context and how my professional contribution increases and improves”* (21L/Q2/49).

The results indicated that some students from both groups were likely to be highly self-regulated in terms of self-observation because they monitored themselves by examining their understanding of the contents and used this understanding in their professional practice.

In relation to **satisfaction**, only two students from the high SRL group provided responses. These students said that the feelings of satisfaction, enjoyment, or low stress levels indicated to them the effectiveness of their learning. In other words, enjoyment equated with effective learning: *“My stress levels being low and enjoying what I am doing....the feeling of satisfaction and the growth in my own personal/professional knowledge and understanding”* (85H/Q1/49).

None of the students in the low SRL group mentioned the use of feelings of satisfaction, enjoyment, or low stress levels to monitor the effectiveness of their learning. Instead, some of them said that they had no idea how to monitor their learning: *“Up to this time I do not believe that I have been monitoring how effectively I am learning in this course”* (64L/Q1/49), and *“Pray I get through”* (52L/Q2/49).

Self-recording

In terms of self-recording, only one student in the low SRL group mentioned the use of a tick chart to record learning performance: *“I made myself a tick chart to record when I have achieved a learning outcome”* (86L/Q2/49). No students in the high SRL group reported on this sub-component.

Summary

Altogether, the results indicated that most of the students from the two SRL groups monitored their learning by discussing with others (either online or face to face), considering feedback from others, and examining their understanding of the course contents. Both high and low SRL groups relied on feedback from others to help them monitor their learning progress.

Although discussing and checking on understanding and applying it to their professional practice are considered characteristic of highly self-regulated learners, these responses were found in both high and low SRL groups and were sustained throughout the year. This could be explained by the quantitative results – that scores on the performance phase from both groups increased at a similar rate. The next section addresses results in the self-reflection phase.

Phase Three: Self-Reflection

The self-reflection phase, which occurs after learning, includes self-judgment and self-reaction. Self-judgment involves self-evaluation, which refers to comparisons of a person’s learning performance to a standard; and causal attribution, which refers to beliefs about the causes of one’s failures or successes. The self-reaction component consists of self-satisfaction and adaptive/defensive reactions (Zimmerman, 2002;

Zimmerman & Moylan, 2009). Below I will outline results in relation to the subcomponents of self-reflection.

Self-judgment

The self-judgment component consists of self-evaluation and causal attribution. To examine this component, students were asked to comment if reflection on learning was important to them and whether they engaged in reflecting on their learning. Self-evaluation and causal attribution findings are presented below.

Self-evaluation

In terms of self-evaluation, the questionnaire data showed that most students from the high SRL (10 for Q1, 9 for Q2) and low SRL (13 each for Q1 and Q2) groups indicated that reflecting on learning was very important. Both groups said that it enabled them to see their learning journey and therefore identify gaps and areas in need of extra attention:

“It guides me about where I need to do more work, understand the concept/issue better” (4H/Q1/63), “I think that it is vital to being able to see the path that you have travelled in learning and also areas where there are gaps and that need extra attention” (85H/Q2/63), “It helps me plan or evaluate what the next learning step will be” (58L/Q1/63), and “Lets me know what I have and what I am yet to achieve” (18L/Q2/63).

Further, the seven responses from the high SRL (4 for Q1, 3 for Q2) and six responses from the low SRL (3 each for Q1 and Q2) groups showed that students found that reflecting on learning helped them to assimilate their learning into their professional

practice: *“Reflecting guides me to improve/understand the content of this course and how to use the knowledge in my work”* (93H/Q1/63), and *“In being knowledgeable we can find the best interaction, practice to assist our students”* (17L/Q1/63).

Causal attributions

In terms of causal attributions, a few students from both groups reported that they found it was difficult to reflect on their learning because they had too much work to do: *“I wish I had more chance to reflect but there is always so much more to do”* (9H/Q1/63), and *“No time to reflect - with demands of family, work, and study”* (37L/Q2/63). The results showed that some students attributed time constraints and work demands to the limitations of their learning strategies. In particular, a low SRL student said that she did not do the reflection because she had limited time.

Summary

Altogether, the results indicated that most students from both high and low SRL groups seemed to understand why reflection was important and how to reflect on their learning. They tended to realise that reflecting on learning could help them to achieve their learning goals and expand their knowledge, as some of these students reported that they linked their reflection to their professional practice. Some students attributed a lack of reflection to time constraints and work demands.

Self-reaction

The self-reaction component is made up self-satisfaction and adaptive/defensive reactions. These subcomponents of self-reaction were derived from interview data and are presented below.

Self-satisfaction

In terms of self-satisfaction, the data showed that high SRL students (A, B, C) said they valued the use of online portfolios as the portfolios helped them to regulate their learning (see Phase One: Forethought). They also reported that they enjoyed and were enthusiastic about the use of online portfolios because they could see the benefits and that they would continue using them after they had finished the course:

“An online portfolio suits the purposes of the course...it fits very well in the education area and it can be used for children as well as adult learners” (A/H/In), “I definitely enjoy it because it is instant practice for me... I am happy that I did it and I have more confidence using an e-portfolio” (B/H/In), and “I will continue using a portfolio in my workplace” (C/H/In).

This result was not the case, however, for the low SRL students (D, E, F). Student D said that she had just started looking at online portfolios even though it was nearly the end of the course: *“From the start of the course up until now I just haven’t got around to getting to grips with the online portfolio...it has just added more time and stress for me” (D/L/In).* However, student F reported that she engaged in her online portfolio at the start of the course but was not confident in using her online portfolio: *“No...I think I am in orange (reasonable confidence) moving toward red (no confidence)” (F/L/In).*

From these results, it could be surmised that these two low SRL students showed a lack of confidence in using the online portfolios. Consequently, they ended up getting behind the others with their work. Student E said she found the online portfolio was just a tool to store and to display her work. She preferred to write an essay rather than working

with the technology: *“I am the type of person that if you ask for an essay and give me a word count, all will be well”* (E/L/In).

These results indicated that the high SRL students seemed to gain a degree of satisfaction, reporting that they enjoyed using online portfolios and working with them consistently. However, the low SRL students were likely to doubt that online portfolios provided a way of learning that they wanted. Further, two of them did not feel satisfied with their online portfolio, as they were delayed in starting and did not constantly work with it.

Adaptive/defensive reactions

In terms of adaptive/defensive reactions, students interviewed from both SRL groups reported that using online portfolios was difficult. The high SRL students reported that it was initially difficult and that it took them a while to get to know how to use an online portfolio: *“The difficulty was with the technicality of how to do it...It took about three months, just practising...”* (A/H/In).

One high SRL student said he used another online portfolio for his personal profession along with the one in the course:

“I started using e-portfolio as well because in the long term even when I complete the course, I will still be able to continue to work with the e-portfolio, so it becomes long term and permanent for us, whereas my portfolio will finish when the course finishes” (B/H/In).

Further, these high SRL students reported that they would continue doing online portfolios after finishing the course. The results showed that high SRL students seemed to react actively as they tried hard to learn about online portfolios even though they found it

was difficult. These students also wanted to continue to use their online portfolios even after the course was finished.

With respect to the low SRL students, student D did not want to engage with the technology, which she found was difficult for her: *“I tried to set up like a skype account and found it very difficult doing that, trying to follow the instructions. I just get absolutely frustrated and I turned it off. I don’t want to deal with it”* (D/H/In). The other low SRL students (E, F) reported that they found it difficult to set up their online portfolios, but that they could solve the difficulties by asking for help and trying hard to learn. Nonetheless, they did not seem to be interested in using online portfolios (see Phase one: Forethought). These low SRL students said that they were not sure if they would continue using online portfolios after they finished the course.

The results indicated that these low SRL students seemed unwilling to engage, as they found that using online portfolios was difficult; they did not try hard to get to know how to use them, and they would not continue using them when the course was finished. This is particularly true for student D, who showed a lack of effort to learn when she found it was too hard for her.

Summary

Altogether, these results showed that high SRL students showed adaptive behaviour, whereas low SRL students demonstrated avoidant reactions. This is further discussed in Chapter Five.

In summary, the data from both questionnaires and interviews showed that high SRL students perceived online portfolios as being more useful than low SRL students. However, by the end of the year-long programme, the two SRL groups had improved

their SRL skills and developed positive perceptions of online portfolio use. The next section addresses the results in relation to research question four.

4.5.4 Research question four

From students' perspectives, does the use of online portfolios increase their SRL skills?

This question focused on students' perceptions of an increase in their SRL skills. In contrast to the previous question that addressed students' reflection of their learning strategies.

To answer this research question, students were asked to identify whether their SRL had improved during the course, and if so, what they thought had led to the improvement. This is based on the definition of SRL as taking responsibility for setting your own learning goals, selecting and using your own learning strategies, and monitoring your own effectiveness for achieving your learning goals, which was provided to students in the questionnaire.

The question was added to Questionnaire Two because it was appropriate that students provided their responses at the end of the course. Responses from all students who participated were included. The data showed that of the 90 out of 92 students (97.8%) who responded to this question, 79 (87.8%) believed that their SRL had improved while they were studying in the course. Seventy of these 79 students (88.6%), including 13 high SRL and 16 low SRL students, provided the reasons that they thought had led them to becoming self-regulated learners. Eight of these 70 students provided two reasons. Therefore, 78 responses (including 14 and 19 responses from high and low SRL groups, respectively) were counted.

Five themes emerged. These included being able to set and modify their own learning goals, being able to manage and control their own learning, being able to reflect on their learning, being made to do it, and having supports and past experience (see Table 4.7).

Table 4.7

Reasons Students Gave for Enhancing Their Self-Regulated Learning

Themes	SRL Groups		
	All responses (78)	High (14)	Low (19)
1. Being able to set and modify own learning goals	26	6	7
2. Being able to manage and control own learning	16	3	6
3. Being able to reflect on learning	17	4	2
4. Being made to do it	6	-	3
5. Having supports and past experience	13	1	1
Total	78	14	19

With respect to the first theme, 26 of 78 responses (including 6 from the high SRL and 7 from the low SRL group) indicated that students believed that their SRL improved because of having an opportunity to set and modify their own learning goals. These students commented that being able to set their own learning goals assisted them to plan their learning paths:

“Goal setting linked to the domain competencies helped me to select learning activities appropriate to my needs/level of experience, and to work through the material at any pace” (87H/Q2/94), and “Setting own goals assisted me to develop my own learning and what was important for me on this paper” (58L/Q2/94).

These results indicated that many students valued goal setting as an important process to direct their learning plans. They said that having learning goals could lead them to focus on their learning activities and increase their motivation when their goals were achieved:

“The goals that were set were relevant to your personal learning journey and I found this very satisfying which in turn motivated me to keep up the work ethic and effort. I guess this put me in control which is very satisfying” (63H/Q2/94).

These results indicated that setting their own goals was essential for students to help them identify learning strategies that they thought would be appropriate and effective for them to achieve their goals. This could relate to the next theme, being able to manage and control their learning. Sixteen responses (including 3 from high SRL and 6 from low SRL groups) showed that students thought being able to manage and control their own learning led them to being self-regulated learners:

“It empowered me and gave me ownership of what I knew I needed to learn and the application of this to my practice” (22H/Q2/94),
and “Realizing that one needed to be methodical and have a plan”
(39L/Q2/94).

These results indicated that being able to manage and control their own learning could help students to concentrate on their learning and find ways to achieve their learning goals. The next theme was about reflection. Seventeen responses (including 4 from high SRL and 2 from low SRL groups) showed that students found that having an opportunity to reflect on their learning facilitated their ability to identify their strengths and weaknesses in terms of learning, and to know what they needed to learn:

“It helped me to stay focused and on track and be able to see where I needed extra time put in” (85H/Q2/94), and “Reflecting through MyPortfolio also gave me the opportunity to see where I had improved and to identify further areas for improvement” (86L/Q2/94).

The results indicated that most students who responded believed that setting their own goals, controlling their own learning, and reflecting on their learning led them to become self-regulated learners. These first three themes (see Table 4.7) were cyclically connected and actually in line with the three SRL phases.

Only six responses, including none from the high SRL and three from the low SRL groups, showed that students believed that their SRL improved because the course requirements forced them to do it. ‘Being made to do it’ tended not to be relevant to SRL strategies. This could explain why no high SRL students provided this reason; it seemed only to be related to low SRL learners.

The last theme, having supports and past experience, was provided by 13 students. However, this theme seemed more relevant to factors that helped students to learn and construct their portfolios, which is addressed in the next research question. Therefore, it is excluded from further discussion in relation to this research question.

While a majority of students who responded believed that their SRL had improved while they were studying in the course, 12 students (13.0%) did not think so. This included one high SRL and two low SRL students. Of these 12 students, only four provided reasons, which are discussed below.

One student had some degree of SRL as she reported that she always reflected on her practice and discussed learning issues with others: *“No, feel I have always been*

reflective in my practice and I value the discussions I have with my fellow colleagues who provide me with the support and guidance I need” (56/Q2/94).

However, she might not have realised that her SRL had improved through these activities. Further, she might not have understood that seeking help from others was one of the SRL strategies.

A second student seemed to be less self-regulated, as she indicated a non-participatory reaction. She experienced the factors that she thought had hindered her learning, and then had withdrawn from study. She attributed this failure to external and uncontrollable factors (e.g., earthquake), which is a reason commonly given by low self-regulated learners:

“No, earthquakes¹ and an unsupportive working environment led me to withdraw from this course which I find disappointing as I really wanted to learn but factors outside my control influenced my study. I find face to face study to be more motivating” (40/Q2/94)

A third student seemed not to understand the idea of learning context, which was that of online learning for postgraduate students: *“No, there wasn't trust in the forums...it happened to some people but not all, no one to bounce ideas from, and I want to achieve and not fail...Why set goals that you can't achieve? Or are measurable?” (19/Q2/94).*

The final response came from a low SRL student: *“No, the goals have to meet the competencies so they are not actually your goals. Lots of the competencies I had already met in other professional work” (64L/Q2/94).* This student seemed not to

¹ On Tuesday 22 February 2011, there was a major earthquake that caused significant damage in Christchurch, New Zealand, with 185 people killed and several thousand injured.

understand the idea of setting goals. The competencies could have been a long-term goal that everyone wanted to achieve. The short-term goals were necessary to be set.

These results showed that these four students seemed to have fewer SRL skills and did not understand the SRL processes. They were likely to have only a vague idea of goal setting and self-reflecting.

In relation to the interview data, students A, B, C, and F said that they believed that their SRL had improved while they were studying in the course and that the improvement was related to the use of online portfolios. Student A (high SRL) said that the construction and use of online portfolios helped her to achieve learning goals because it helped her to structure what her learning goals were; she could organise and add evidence, and she could put in her reflections before presenting to the others. She said by doing this she became self-regulated in her learning: *“It definitely helped me to set my own learning strategies because I have been setting the goals and organising my work through putting information into that particular website”* (A/H/In).

Student B (high SRL) said that using online portfolios helped him to become self-disciplined. He said that when he set his own learning goals he paid greater attention to them and regularly revisited them to determine if those goals were still appropriate or if they needed to be modified: *“Without the portfolio I think I would be lost to some degree. You will require more self-discipline and understanding what assignments are about and the readings and all that”* (B/H/In).

Further, he said that using online portfolios helped him to reflect on learning by reading, discussing, and sharing ideas with others. It also helped him monitor his learning by working with friends who would guide each other: *“...if I am not monitoring, somebody*

else is monitoring in the course and is gently guiding you through, whether you have done it or not” (B/H/In).

Student C (high SRL) responded that using online portfolios helped her to set her learning strategies because when she set her learning goals, she worked through them to make a plan: *“It is always guiding me to where I need to be going and working through...I tried to work through each domain as I went, so in that sense it gives a format how to work through the year” (C/H/In).*

She also said that using online portfolios helped her to monitor and reflect on learning because she could see her learning path from the start and this made her realise what she needed to do to make progress: *“Portfolios give you the opportunity to self-reflect, self-monitor to guide your own learning...if you have got nothing to look back at, you have got nowhere to go forward from” (C/H/In).*

Student F (low SRL) said that using online portfolios helped her to set and work towards goals, then reflect on learning in order to achieve these goals: *“Being able to reflect on your learning goals and file the information under the blogs with the goals on them has been good to help me review them and reassess the goals and develop strategies to meet these goals” (F/L/In).*

However, two other interview students (D and E) in the low SRL group reported that they did not believe that using online portfolios was related to their SRL. Student D said that using online portfolios added more time and stress for her: *“It is just another extra stress” (D/L/In).*

Student E said that she could not see that using online portfolios would help her to set and achieve learning goals, or reflect on her learning. She said that it was just a tool to store and to display her reflections. Instead, she said that it de-regulated her learning:

“An online portfolio is just being used as a storage place instead of as a collaborative tool. It de-regulates my learning and never has an end point” (E/L/In).

The results indicated that these two low SRL students seemed not to understand the idea of using an online portfolio, even though student E tried hard to work out how to use it. Using online portfolios involved the activities that related to setting goals, using learning strategies, and reflecting on learning. It is a cyclical process that, like lifelong learning, never has an end point. This is similar to the skills that are required among self-regulated learners.

In summary, the responses from the questionnaire and interview data showed that a small minority of students seemed not to believe that their SRL had improved during the course. However, most students believed that their SRL had improved during the course and they attributed this improvement to several reasons, categorised into different themes. However, three themes – being able to set and modify their own learning goals, being able to manage and control their own learning, and being able to reflect on their learning – were the most frequent responses and were related to the role of online portfolios.

The interview data also showed that four of the six students said they believed that their SRL had improved during the course, and they attributed this improvement to the use of online portfolios. This was because using online portfolios helped them to regulate their learning. According to course requirements on the use of online portfolios, students were supposed to set their learning goals, select artefacts, and reflect on what they had learnt. It could be implied that setting their own goals, controlling their own learning, and reflecting on their learning were roles that online portfolios played in the course. This is further discussed in Chapter Five. The next section addresses the results in relation to research question five.

4.5.5 Research question five

What factors help or hinder students in the construction and use of their online portfolios?

To answer this research question, students were asked what factors, if any, had helped and hindered them in constructing and using their online portfolios. In terms of helpful factors, 65 out of 92 students (70.7%) responded to this question, including 17 high SRL and 18 low SRL students. Of these 65 students, 16 (including 4 high SRL and 5 low SRL students) provided two factors. Therefore, 81 responses were counted. The questionnaire data also showed that 27 students, including one high SRL and six low SRL students, did not respond.

The responses showed that there were many factors (e.g., examples, face-to-face discussion, workshops) that students thought had helped them to build their online portfolios. These factors were categorised into four themes:

- Course support, including examples/models, the geographic area network (GAN) meetings, the block courses, online discussion, guidelines, technical support, portfolio workshops, and online help/quizzes
- Students' motivation, including tenacity, being organised, and previous experience
- Peer support, including colleagues/peers, face-to-face discussion, and study groups
- Lecturer support, including advice, and feedback

Table 4.8 details the responses in each theme.

Table 4.8

Factors Facilitating Students' Construction and Use of their Online Portfolios

Themes	SRL Groups		
	All responses (81)	High (17)	Low (18)
1. Course support	33	5	10
2. Motivation	20	3	3
3. Peer support	15	3	5
4. Lecturer support	13	6	-
Total	81	17	18

Table 4.8 shows that 33 student responses (including 5 from the high SRL and 10 from the low SRL group) identified course support as the main factor that had helped them to construct and use their online portfolios while they were studying in the course: *“The study material provided online and the quizzes”* (59/Q2/95), *“Guidance from the university staff, particularly the portfolio workshops and GANs”* (9H/Q2/95), and *“The face-to-face workshop was very helpful”* (55L/Q2/95).

These results indicated that many students found course support as being helpful in constructing and using their online portfolios. In relation to SRL groups, twice as many responses from the low SRL group (10) than the high SRL group (5) showed that more low SRL students believed that the support provided from the course had helped them to set up their online portfolio.

Twenty students' responses acknowledged motivation to learn how to use online portfolios and being organised as the factors that had helped them to construct and use their online portfolios: *“Being prepared in terms of applications and supporting resources/links”* (2/Q2/95), *“A thirst for knowledge and being involved in study which*

is a passion rather than an expectation” (63H/Q2/95), and *“Desire to master it”* (21L/Q2/95).

These results indicated that many students in the course believed that their motivation was important in making an effort to develop their online portfolios. This was also true for a few students in the high and low SRL groups.

Fifteen student responses showed that discussing and sharing ideas with other students was very useful in constructing and using their online portfolios: *“Finding someone the evening before the Auckland course ended who could tell me how to set up the portfolio”* (88/Q2/95), *“Discussing with colleagues”* (4H/Q2/95), and *“Support from a fellow student in the mechanics of using portfolio”* (6L/Q2/95).

These results indicated that many students found discussing issues with other students had helped them to get ideas to construct and use their online portfolios. With respect to SRL groups, more low SRL students (5) preferred to get support from peers than high SRL students (3). Furthermore, 14 responses showed that students recognised the support from lecturers as being helpful in putting up their online portfolios: *“Professor’s model and feedback from the professors”* (33/Q2/95), and *“Suggestions from lecturers about activities that could be used as artefacts in each domain”* (35H/Q2/95).

These results indicated that many students found lecturer support helpful for setting up and learning how to use online portfolios. In comparing the two SRL groups, it seemed that high SRL students tended to make contact with the lecturers to get help, while low SRL students were more likely to seek help from their peers.

Similarly, the interview data showed that all students (6 out of 6) from both high and low SRL groups reported that examples/models, colleagues/peers, tutors/lecturers,

technical support, GAN meetings, portfolio workshops, and study groups had helped them to construct and use their online portfolios:

“The lecturers are working hard, posting the latest documents and articles, so we don’t need to waste time looking for articles in a particular assignment area... by doing so we are encouraged to access it regularly and quickly” (B/H/In), and “We formed into geographical networks and we got workshops. That was essential” (E/L/In).

Altogether, these four themes – course support, motivation, peer support, and lecturer support – were important factors that students identified as being helpful in constructing and using online portfolios. These factors are further discussed in Chapter Five.

In relation to hindering factors, 63 out of 92 students (65.5%) responded to this question, including 10 high SRL and 13 low SRL students. Of these 63 students, two of them, including one low SRL student, provided two factors. Therefore, 65 responses were counted. The questionnaire data also showed that 29 students (including 4 high and 7 low SRL students) did not respond.

Five themes emerged. These were lack of understanding and IT skills, lack of time, lack of confidence, not being organised, and external problems (see Table 4.9).

Table 4.9

Factors Hindering Students' Construction and Use of Their Online Portfolios

Themes	SRL Groups		
	All responses (65)	High (10)	Low (13)
1. Lack of understanding and IT skills	27	7	5
2. Lack of time	27	1	6
3. Lack of confidence	5	1	1
4. Not being organised	4	1	1
5. External problems	2	-	-
Total	65	10	13

Table 4.9 demonstrates that many students identified the first two themes – not having knowledge about online portfolios and having insufficient information technology (IT) skills, and lack of time – as major barriers to constructing and using online portfolios (27 responses to each theme):

“Not having a clear picture of the course so that I could start constructing the portfolio earlier in the year” (79/Q2/96), “Prior ignorance and lack of sufficient IT knowledge” (13H/Q2/96), and “Not knowing how to use e-portfolio was a problem” (64L/Q2/96).

These results indicated that many students seemed not to have a clear picture of the course content and the use of online portfolios, and they lacked competence in IT skills. This was the case for both high SRL (7) and low SRL (5) groups. Students also identified not having much time to learn how to use online portfolios as a major issue in constructing and using online portfolios. This was particularly true for those who had no experience and lacked IT skills: *“Time to practice and become familiar with my*

portfolios” (29/Q2/96), “Time” (35H/Q2/96), and “Time to learn the concept and software package” (37L/Q2/96).

These results indicated that many students had to spend considerable time learning how to set up and use online portfolios. These responses confirmed that lack of time and lack of understanding and IT skills were intimately related. When students did not understand how to use online portfolios, they had to spend more time getting to know about them. In particular, when they also lacked IT skills, they had to spend a large amount of time to improve their skills and become familiar with the use of online portfolios.

Responses from high SRL (7) and low SRL (5) groups showed that students from both groups seemed to have problems in knowing how to use online portfolios and lacked IT skills. However, only one response from the high SRL group showed that the student had no time to learn how to use online portfolios, while six responses from the low SRL group showed these students had a problem with lack of time. These responses indicated that even though students from the two groups had the same problem in terms of the use of online portfolios, high SRL students seemed to manage their time better than low SRL students: *“I try to sort it out between my work, my family, and the study” (B/H/In).*

The third theme was lack of confidence. Five responses (including one from each SRL group) showed that there were students who felt less confident in their ability to use online portfolios, particularly at the beginning of the course. They said that not having confidence was the problem in constructing and using online portfolios:

“To start with confidence in my own ability to get my head around the new technology but this improved and it felt great” (57/S2/96),

“My own frustrations and lack of self-belief that I could do it!!”

(22H/S2/96), and *“Lack of confidence in using it”* (42L/S2/96).

These results indicated that some students tended to doubt their ability to use online portfolios, particularly at the start of the course. This could be related to the first theme – that when students had no experience in using online portfolios or no IT skills, they might have felt uncomfortable with the new learning technology. However, some students tended to feel confident after they had learnt how to use them. Belief in one’s ability plays an important role in being self-regulated (Bandura, 1991).

The fourth theme was not being organised. Four responses from students (including one from each SRL group) acknowledged that because they were not organised, it made it difficult for them to construct and use their online portfolios: *“Getting carried away and not sticking to my learning plan”* (50/Q2/96), *“Not keeping notes to remind me of what I did!”* (32H/Q2/96), and *“Me”* (75L/Q2/96).

These results indicated that some students seemed to realise that they themselves were the barrier delaying them from constructing and using online portfolios. They reported that they did not regularly follow their study plans and were not organised for their learning, which made it difficult for them to succeed in constructing and using online portfolios.

Finally, other problems, such as a slow internet connection or the Christchurch earthquake were critical for some students in constructing and using their online portfolios. Two responses (none from the two SRL groups) identified a slow internet connection at home as making it hard to set up and use online portfolios, and the earthquake as causing difficulty concentrating on studying and using online portfolios: *“Slow internet at home”* (45/Q2/96), and *“earthquakes”* (38/Q2/96).

These results indicated that these two students identified external factors as the barrier for them in constructing and using their online portfolios.

In relation to the interview data, the results similarly showed that both high SRL (3) and low SRL (3) students believed that their lack of understanding about how to use online portfolios made it difficult for them to construct and use their online portfolios: *“Initially we were a little threatened by the computer technology – how to use it”* (B/H/In), and *“I did not have the technical understanding needed to use the software”* (E/L/In).

However, this problem seemed not to last long for the three high SRL students (A, B, C) and one low SRL student (E). This was because they said they put in the effort to learn how to use it even though it took them for a while to get to know online portfolios. The others (D, F) in the low SRL group seemed to have the problem permanently, as they said they felt less confident and had only a vague idea about constructing and using online portfolios at the time of interview, which was nearly at the end of the course.

In summary, many students in the course, including those from both high and low SRL groups, identified course support, motivation, peer support, and lecturer support as helpful factors for them in constructing and using their online portfolios. However, lack of understanding about how to use online portfolios and lack of time, which were related, were commonly identified as hindering factors in constructing and using online portfolios. Lack of confidence, not being organised, and external problems were also identified as hindering factors. These are further discussed in Chapter Five.

4.6 Summary

This chapter reported on the results of the study in response to the five research questions posed. First, there was a positive relationship between SRL skills and the perceptions of the usefulness of online portfolios. Second, the results suggested that initial SRL skills had no stronger influence on the subsequent perceptions of the usefulness of online portfolios than the initial perceptions of the usefulness of online portfolios had on subsequent SRL. Third, the initial and final questionnaires identified a significant improvement in SRL skills and the perceptions of the usefulness of online portfolios over time in both the high and low SRL groups of students. Fourth, many students in the course, including those in both high and low SRL groups, believed that their SRL had improved during the course. According to students' responses, they attributed being able to set and modify their own learning goals, being able to manage and control their own learning, and being able to reflect on their learning, as leading them to being self-regulated learners. These attributions were related to the use of online portfolios and are assumed to be part of its roles.

Finally, in terms of the use of online portfolios, students concluded that course support, motivation, peer support, and lecturer support were important factors to assist them in constructing and using their online portfolios. However, they identified lack of IT skills and lack of time as the biggest barriers to constructing and using their online portfolios. Other factors that hindered performance included lack of confidence, not being organised, and external problems, such as a slow internet connection and an earthquake. The next chapter discusses the results outlined in this chapter.

CHAPTER FIVE

DISCUSSION

5.1 Introduction

This discussion chapter considers the results of the present study in terms of the relationship between students' self-regulated learning (SRL) and their perceptions and use of online portfolios. Research (e.g., Zimmerman, 1994; Zimmerman, 2002) has shown a link between SRL and academic achievement and its importance to support students' lifelong learning skills. Other studies have found that using portfolios, particularly online portfolios, helps users to reflect on their learning and to enhance their critical thinking, which leads to positive academic performance and promotes lifelong learning skills (e.g., Alexiou & Paraskeva, 2010).

There is limited research, however, on the direct relationship between SRL skills and online portfolio use. As these SRL skills and the use of online portfolios are important for students in both academic and non-academic learning situations, the aim of this study was to examine the link between SRL, the use of online portfolios, and perceptions of online portfolio use by university postgraduate learners. The findings are discussed within the context of existing research. The following five research questions, which this study addressed, are used to guide the discussion.

- 1. Is there a relationship between students' SRL and their perceptions of the usefulness of online portfolios?*
- 2. Do students' initial SRL skills relate to their subsequent perceptions of the usefulness of online portfolios?*

- 3. Do scores for both students' SRL skills and their perceptions of the usefulness of online portfolios increase during the course, and, if so, do the scores for the high SRL group increase more than the scores for the low SRL group?*
- 4. From students' perspectives, does the use of online portfolios increase their SRL skills?*
- 5. What factors help or hinder students in the construction and use of their online portfolios?*

The SRL skills and students' perceptions of the usefulness of online portfolios were assessed by surveying postgraduate students in the special and inclusive education at two points in time. Compared to students in the low SRL group, those in the high SRL group had higher SRL skills across each of the three phases of SRL: forethought, performance, and self-reflection. Students in the high SRL group also perceived online portfolios as being more useful than students in the low SRL group.

However, throughout the year, students from both high and low SRL groups showed an increase in their SRL and perceptions of the usefulness of online portfolios. The use of online portfolios was associated with increases in students' SRL skills. Learning how to create and use online portfolios was affected by several factors (personal, behavioural, environmental) and each influenced the other. These interactions were described within Bandura's (1986) *causal interaction* framework. These findings are discussed in relation to each of the five research questions in the following sections.

5.2 Research Question One

Is there a relationship between students' SRL and their perceptions of the usefulness of online portfolios?

The correlational data revealed that SRL was positively related to perceptions of the usefulness of online portfolios. With respect to the phases of SRL, perceptions of the usefulness of online portfolios had the strongest correlation with the performance phase followed by the forethought phase, and a slightly weaker correlation with the self-reflection phase. Further, the inter-correlations among the three phases were reasonably high.

Students from both high and low SRL groups found that online portfolios were adaptable, accessible, portable, and flexible. High SRL students were more likely than low SRL students to perceive that using online portfolios was useful for regulating their learning and for their professional practice. Two major themes emerged from these findings: the convenience of online portfolios and the value of online portfolios in supporting learning.

5.2.1 The convenience of online portfolios

A major theme to emerge in relation to the first research question was the convenience of online portfolios in terms of accessibility and flexibility. This was recognised by students in both high and low SRL groups. Stefani, Mason and Pegler (2007) assert that with online portfolios, documents or students' work can be easily adapted, linked, and transported.

The findings of the current study were consistent with this and other studies. Knight, Hakel, and Gromko (2008) found that students liked using online portfolios as they

were easily transported, transformed, accessed, replicated, and shared with others. Similarly, the studies by Lin (2008) and Wetzel and Strudler (2006) showed that students perceived that online portfolios gave them access to information and enabled them to organise their documents.

These researchers, however, did not compare students' perceptions about the usefulness of online portfolios with their SRL skills. The current study found that these positive perceptions in relation to the convenience of online portfolios were similar between students with high or low SRL. Both SRL groups perceived that using online portfolios was convenient for them.

The evidence of this study, therefore, suggested that both high and low SRL students perceived that online portfolios allowed for convenience (accessibility) and were able to be manipulated (flexibility) for their personal needs. In addition, online portfolios afforded the ability to share work. Online portfolios tended to suit students in higher education, regardless of their SRL skill levels.

However, time was required to set up and use online portfolios. Students from both high and low SRL groups in this study reported that using online portfolios was new for them, so it took them a long time to understand how they worked. This was particularly true for those who had limited technology or computer skills. This finding indicated that even though students from the two SRL groups agreed that using online portfolios provided accessibility and flexibility, they were concerned about the difficulties with technology, which increased the time taken to learn how to use the online portfolios and therefore the time needed to achieve course-related goals. Consequently, it caused stress for some students. Wetzel and Strudler (2006) also found that students thought using online portfolios was time-consuming and increased their workload.

A number of other studies, (e.g., Lee et al., 2011; Muilenburg & Berge, 2005; Selim, 2007; Song, Singleton, Hill, & Koh, 2004; Stefani et al., 2007) found that technology skills were a critical factor in successful online learning. The findings of the current study were consistent with their finding that using online portfolios was dependent on having skills in using the technology.

The issue of technological competence could be related to students' motivation. Bandura (1997) suggested that when students had low self-efficacy, they tended to avoid engaging in tasks. Students lacking in technology skills would be likely to have low self-efficacy in relation to these computer skills, which could reduce their confidence and motivation to learn.

Thus, to be successful in using online portfolios for both high and low SRL students, developing technology skills before engaging in the course and having technology support during the course were needed. The issue of technology skills is discussed further in relation to research question five, which explores the factors that helped and hindered students in constructing and using their online portfolios.

5.2.2 The value of online portfolios in supporting learning

The second major theme to emerge from the findings in relation to the first research question was the perceived value of online portfolios in terms of supporting learning. The findings showed that high SRL students perceived online portfolios to be more valuable in supporting their learning than low SRL students.

Their perceptions could be different because, as researchers have found, the process of online portfolio use is consistent with the ability to self-regulate and with higher motivation to learn (Abrami et al., 2008; Alexiou & Paraskeva, 2010; Chau & Cheng, 2010). The finding in this study suggested that, despite both high and low SRL groups

reporting that using online portfolios was made more difficult because of the technology, high SRL students were more likely to value the use of online portfolios for their learning and professional practice.

While not directly aimed at investigating the relationship between SRL skills and their perceptions of the usefulness of online portfolios, Segers, Gijbels, and Thurlings (2008) examined the correlation between science students' perceptions of portfolio assessment and their learning approaches. They found that students' perceptions of such assessment practices were related to their learning approach. Students who used a deep learning approach saw portfolio assessment as supporting their learning. They could carefully critique the feedback on their portfolios and make improvements based on the suggestions made. The deep learning approach occurs when students are intrinsically motivated to seek meaning and understanding of subject matter (Biggs, 1987). These findings were supported by the current study, which showed that using online portfolios was associated with students' SRL and their self-motivational beliefs.

The findings from this study also showed that high SRL students said they enjoyed using online portfolios, which could indicate more intrinsic aspects of motivation to learn (Brophy, 2010). Zimmerman (1998b) suggested that *skilful* SRL students are intrinsically interested and continue making an effort to learn despite the presence of difficulties, whereas *naive* self-regulated learners are more likely to be uninterested and may avoid the difficult tasks.

Links can be made between Zimmerman's conclusion and the findings of this study. For example, although high SRL students were willingly using online portfolios despite the technology difficulties, low SRL students seemed less likely to use them because of the time required and the stress it caused them.

Further, high SRL students perceived that using online portfolios helped them to support and enhance their learning. The students tended to consistently work with online portfolios, as they said they found using online portfolios enabled them to reflect on their own learning and therefore regulate it more effectively. This finding was consistent with other studies (Alexiou & Paraskeva, 2010; Davis, Ponnampuruma, & Ker, 2009; Lopez-Fernandez & Rodriguez-Illera, 2009; Wetzel & Strudler, 2006), which found that students generally perceive online portfolios to be useful for their study because using online portfolios promoted their learning skills and helped them to reflect on their work.

Reflection is one of the arguments for the use of portfolios (Jones, 2010), because it helps students to become critical thinkers (Abrami et al., 2008; Chau & Cheng, 2010; Riedinger, 2006). High SRL students seemed to understand that reflection was essential in the process of online portfolio use, which they thought was very important for keeping them focused on what they had learned and thinking about what they needed to improve.

In contrast, low SRL students, who reported that the online portfolio was a useful tool for keeping work together and sharing work with others, did not find it a useful tool for supporting their reflection or individual SRL strategies. Stefani et al. (2007) stated that while high achievers see benefits of using online portfolios immediately, low self-efficacious students might use online portfolios just for collecting their work. These findings appeared to concur with the findings for low SRL students in the current study. For example, one low SRL student reported that using online portfolios added extra work and another reported that it only helped to store and display work.

This evidence suggested that high SRL students tended to value the online portfolios to help them regulate their learning and they identified benefits relating to self-reflection. However, low SRL students seemed to believe that an online portfolio was a tool for keeping their work together and sharing it with others, but they did not identify the metacognitive aspects of self-reflection. They saw the online portfolios as a product (storage space) rather than as a process (self-reflective tool). Barrett (2000; 2010) proposed that an online portfolio was not just an electronic tool for collecting evidence on one's learning (showcase/storage), but that it had real value in reflecting on the evidence, which was supposed to continue over time (workspace/process).

According to Barrett (2010), the use of online portfolios involved different levels of activity for learning. At the basic level, users regularly collected artefacts and stored them on the server, whereas at the next level, they focused on the documentation of learning and the processes involved in these products. This level involved the organisation and selection of learning outcomes, and the highest level involved retrospective reflection on why those outcomes were chosen, which ones should be highlighted, what they meant about the learning, and what more should be learnt. This level of reflection involved a high level of critical thinking.

The findings of this study suggested that the high SRL students were more likely to use online portfolios at the highest level, as they seemed to perceive that the real value of an online portfolio was that it documented, presented, and encouraged retrospective reflection on, of, and for their learning, whereas the low SRL students tended to use it at the basic level, as they saw it as a storage place for their work. Students with low SRL may need extra explanation on how to use an online portfolio as a tool to facilitate learning and reflection (workspace), rather than just as a showcase tool.

The findings of this study also showed that high SRL students tended to understand that using online portfolios was an ongoing process that was similar to the concept of lifelong learning – that learning never ends. Using online portfolios is believed to enhance lifelong learning skills (Heinrich, Bhattacharya, & Rayudu, 2007; Stefani et al., 2007).

Low SRL students, however, tended to think in different ways. For example, one low SRL student reported that using an online portfolio ‘de-regulated’ (this term was used by the student) her learning because it had no end point. This example showed that the low SRL students need to be taught to understand the affordances of online portfolio use, in that it is ongoing and can be used to support their lifelong learning skills, and that can be shown through their showcase and workspace achievements at any point in time. Mayer et al. (2010) pointed out that the process of portfolios was an ongoing one, consisting of the cycle of planning (goal setting), doing (producing), and reflecting (self-monitoring).

Further, high SRL students tended to be satisfied with the use of online portfolios, as they commented that they would continue using online portfolios for their professional practice, suggesting that they were adaptive learners (Zimmerman, 1998b; 2002). This finding was consistent with Zimmerman and Kitsantas (1997), who found that students who were satisfied with their writing performance believed in their ability to improve their writing in the future. However, low SRL students in this study seemed not to enjoy using online portfolios and tended not to see their relevance and usefulness. Consequently, the low SRL students may not choose an online portfolio as a tool to use during the course of their careers.

In summary, the findings of this study suggested that, in general, both high and low SRL students perceived that using online portfolios gave them opportunities to access and manipulate their personal profiles and artefacts to self-reflect as they developed more skills. However, while the low SRL students tended to use an online portfolio at a basic level just for collecting their work, the high SRL students seemed to use online portfolios to reflect on their achievements.

The positive attitude of this high SRL group indicated that they could see the usefulness of maintaining an online portfolio as both a showcase and workspace for their work in the future. They were more willing to engage in online portfolios in a professional context, and could do better at using them than those with low SRL. The findings from this study suggested that students who perceive online portfolios as being useful for their learning were more likely to be highly self-regulated. These two variables – SRL and the perceptions of the usefulness of online portfolios – are further examined as research question two is explored.

5.3 Research Question Two

Do students' initial SRL skills relate to their subsequent perceptions of the usefulness of online portfolios?

This question aimed to explore the correlation between SRL and perceptions of the usefulness of online portfolio scores in Questionnaire One in relation to SRL and perceptions of the usefulness of online portfolio scores in Questionnaire Two. The purpose of this approach was to determine whether initial SRL scores were more strongly related to subsequent perceptions of the usefulness of online portfolio scores, compared to initial perceptions of the usefulness of online portfolio scores and subsequent SRL scores. To examine the interrelationship between these two constructs,

correlations were subjected to a cross-lagged panel analysis (CLPA) (see Chapter Four section 4.4.2). CLPA was developed as a method to test the causal predominance of two variables over at least two different points in time (Kenny, 1975, p. 887).

The CLPA has been used to explore the causal relationship between self-concept variables and academic achievement (Calsyn & Kenny, 1977). According to Suppes (cited in Calsyn & Kenny, 1977), three conditions are needed to make causal inferences: establishment of statistical relationship, time precedence, and non-spuriousness. Typically, correlational analysis cannot establish time precedence or eliminate spuriousness. With the refinement in the CLPA (Kenny, 1975), the three conditions made by Suppes are met – that is, the CLPA can make causal inference of longitudinal data that both establishes time precedence and eliminates spuriousness.

The results showed two key findings. First, the influence of initial SRL on subsequent perceptions of the usefulness of online portfolios, and initial perceptions of the usefulness of online portfolios on subsequent SRL, were both of medium strength and neither one was significantly stronger than the other. Initial perceptions of the usefulness of online portfolios was a slightly stronger predictor of subsequent SRL than initial SRL was a predictor of subsequent perceptions of the usefulness of online portfolios, but this was not statistically significant. These findings indicated that the influence of initial SRL on subsequent perceptions of the usefulness of online portfolios was not causally predominant over the influence of initial perceptions of the usefulness of online portfolios on subsequent SRL.

The failure to observe causal predominance suggested that the two constructs have a moderate, reciprocal relationship. This finding was similar to what many researchers (e.g., Marsh, 1990; 2006; Phan, 2014; Wigfield & Eccles, 2000) have observed in regard to the reciprocal relationship between self-concept and achievement.

Therefore, initial time and effort should be spent on both SRL and perceptions of the usefulness of online portfolios at the beginning of the course to strengthen both by the end of the course. Students should be initially shown how to set effective learning goals (e.g., specific, proximal, challenging goals), use appropriate learning strategies that suit the learning situations, and monitor their own learning. Zimmerman (2000a) suggested that goal setting was an essential component in SRL as it enhanced learning, increased motivation, and raised self-efficacy, especially when goals are specific, proximal, and challenging (Locke, 1996; Locke & Latham, 1990; 2002; Schunk, 2009).

Equally, students should be initially encouraged to value the use of online portfolios. As Phan (2014) pointed out, increasing perceptions of the usefulness of what students are studying can motivate them to use learning strategies. According to researchers who argue that achievement influences self-concept, educators should focus on enhancing students' SRL. Likewise, for those who believe that self-concept influences achievement, educators should place some emphasis on enhancing perceptions of the usefulness of online portfolios. However, the results of the current study indicated that maximum value was achieved by focusing on both.

Second, the results of the CLPA showed a strong relationship between SRL and perceptions of the usefulness of online portfolios at time 1 (start of the course). However, this relationship was weaker at time 2 (end of the course) compared to time 1 (start of the course). This could be due to the changes of correlation between SRL at time 1 and time 2, and between perceptions of the usefulness of online portfolios at time 1 and time 2. The relationship between SRL at time 1 and time 2 was high, suggesting that this construct was stable over the duration of the course with a slight increase overall. On the other hand, the correlation between perceptions of the usefulness of online portfolios at time 1 and time 2 was only moderate, suggesting that the variable

was less stable, with a greater overall increase in scores between the first and second testing occasions.

These findings suggested that with experience of the use of online portfolios, it was possible for perceptions of the usefulness of online portfolios to change considerably. In social cognitive theory, people's perceptions and beliefs are malleable and influenced by social interactions (Kaplan et al., 2012). Students in the current study could have used their support environments, such as lecturers and online forum discussions, to help them understand the process and benefits of making online portfolios. It seemed that even students who were doubtful of the usefulness of online portfolios at the beginning of the programme increased their perceptions of their usefulness when they had learnt the relevance and benefits of using online portfolios in their professional practice. This resulted in increased motivation to use the online portfolios in more ways than just showcasing. This then led to students being more confident, and their valuing of online portfolios rose as did their motivation, as they engaged more deeply in both showcase and workspace levels (Barrett, 2010) and SRL strategies.

Interestingly, the low SRL students seemed to increase their perceptions of the usefulness of online portfolios more than the high SRL students. Although there was no significant interaction effect between the high and low SRL students, there was an average improvement of 17 points on the perceptions of the usefulness of online portfolios scales for the low SRL group, compared to an average improvement of 7 points for the high SRL group (see Chapter Four section 4.5.3). The 17-point improvement for the low SRL group was equivalent to approximately one standard deviation.

This level of improvement, although not statistically significant, could possibly have contributed to the lower time 2 correlation between SRL and perceptions of the

usefulness of online portfolios. Taken together, the findings suggested that to enhance and sustain students' motivation and the self-regulation of their behaviour, it was important to achieve high perceptions of the usefulness of online portfolios, as social cognitive theorists have postulated that students behave based on their perceptions and values (Schunk et al., 2014).

In summary, this finding suggested that students' SRL and their perceptions of the usefulness of online portfolios influenced each other. Initially, students need to be taught to regulate their learning behaviour (e.g., setting goals, using deep strategies, and monitoring their outcomes). Equally, they need to be encouraged to value the usefulness of online portfolios. This initial training could enhance their motivation and the use of learning strategies.

Experience in the use of online portfolios could lead to considerable change in students' perceptions of the usefulness of online portfolios. The course instructors could encourage students to see the value and benefits of online portfolios for their learning and help them with any difficulties in relation to their use, such as technology. This was particularly true for low SRL students, who initially seemed not to value the online portfolios as highly, but who also lacked confidence and technological skills. The next research question explored the increase in SRL and perceptions of the usefulness of online portfolios.

5.4 Research Question Three

Do scores for both students' SRL skills and their perceptions of the usefulness of online portfolios increase during the course, and, if so, do the scores for the high SRL group increase more than the scores for the low SRL group?

In line with the presentation of the findings in the previous chapter, findings on the scores for SRL skills and the scores for perceptions of the usefulness of online portfolios are discussed separately.

5.4.1 Scores on self-regulated learning skills

The overall scores for SRL skills for both high and low SRL groups increased over the year; the scores for the low SRL group tended to increase more than for the high SRL group, but this increase was not statistically significant. In relation to the three SRL phases, the increased scores for both SRL groups differed across all three phases of SRL: forethought, performance, and self-reflection. The following discussion focuses more on the results of each SRL phase than the overall SRL because the overall SRL is the sum of the three SRL phases.

Forethought Phase

The findings showed that high and low SRL groups both improved their SRL skills in the forethought phase over the year. However, the low SRL group showed a greater improvement in their skills than the high SRL group. The forethought component consists of task analysis (goal setting and strategic planning) and self-motivational beliefs (self-efficacy, outcome expectations, and task value/interest) (Zimmerman & Moylan, 2009).

Initially, the low SRL group demonstrated similar abilities in setting goals as the high SRL group. After reviewing course requirements, both groups reported that they read guidelines, course materials and examples; took quizzes; and then figured out their areas of interest, established their knowledge base, and identified their gaps (see Chapter Four section 4.5.3). The findings of this study indicated that in terms of task analysis (goal setting and strategic planning), both high and low SRL students seemed to be well prepared, knew the process of learning before setting their own goals, and used information provided by course instructors to help them to set goals. The equality of skills between the two SRL groups might be explained in that both groups consisted of postgraduate learners who had experience at the university level (Artino & Stephens, 2009), and that both groups knew what they wanted to achieve in relation to their professional careers. Therefore, they would have reasonable motivation and skills in acquiring knowledge within a university context.

However, in terms of self-motivational beliefs, high and low SRL groups showed differences in their self-efficacy, outcome expectations, and task value/interest (see Chapter Four section 4.5.3). The high SRL group was more likely to have confidence in their ability to be successful in the course and to use online portfolios than the low SRL group. Such a finding was consistent with Zimmerman's (1998b) argument that students who were highly self-regulated perceived themselves to be more self-efficacious than those with low SRL. Bandura (1986; 1997) suggested that students who perceived themselves as capable were more likely to choose to participate in a task and to expend greater effort and persistence on that task, particularly a difficult task.

Bandura's suggestion did not apply to students who held doubts about their ability, and who might therefore have tried to avoid engaging in a task. This suggestion appeared to hold for low SRL students in this study.

Consistent with Schunk (2012), who suggested that high self-efficacy related to higher outcome expectations, more high SRL students in the current study expected higher grades than did the low SRL students. Although some low SRL students anticipated higher grades, many reported a lack of confidence in reaching those grades. This role of motivational beliefs was evident in the findings of this study. High SRL students expected high grades and had a strong belief that they would pass the course and achieve the grades that they expected. In contrast, low SRL students showed that they doubted their ability and did not feel confident in doing the course and using online portfolios.

However, low SRL students' confidence seemed to increase over time, and they expected higher grades later in the course than at the start. This confidence could make a considerable improvement in the forethought skills of the low SRL group. Their increased confidence might have influenced their higher outcome expectations at the end of the course, because as Lock and Latham (1990) noted, high self-efficacious students set higher goals for themselves.

The students attributed their increased confidence to their increased abilities in using technology. One of the ways that students could have increased their technology skills was through interactions with their peers in the programme. Social cognitive theorists believe that people learn and acquire skills from social interactions (Kaplan et al., 2012; Schunk et al., 2014).

At the start of the course, students in this study, particularly low SRL students, reported that they were not confident in using online portfolios because of their limited technology skills and knowledge of how to use online portfolios. Once they got that

knowledge and overcame the technology difficulties and began using online portfolios, their confidence and self-efficacy increased.

These findings were consistent with Schunk (2012), who posited that when students faced difficulties, such as at the beginning of the course, their self-efficacy was lower. However, when those difficulties were resolved, their self-efficacy increased. Increasing confidence and motivation in the forethought phase, especially for the low SRL group, might have influenced learning skills in the performance and self-reflection phases.

Performance Phase

Both high and low SRL groups improved their SRL skills in the performance phase over the year. There was evidence that the low SRL group tended to improve their skills more than the high SRL group, but this difference was not statistically significant. High and low SRL groups reported the use of learning strategies while they were doing the course, such as taking notes, engaging in online discussion, and setting up a study group. They also talked to others when they had study problems, and used the comments and feedback of others to monitor their own learning. This finding indicated that both high and low SRL students seemed to use various learning strategies.

Zimmerman (1998b) suggested that goal setting and self-motivational beliefs in the forethought phase influenced students' use of learning strategies in the performance phase. Students who are intrinsically interested in the task and are self-efficacious will use deeper cognitive and metacognitive strategies and will engage more in self-regulation than those with low self-efficacy (Artino & Stephens, 2006; Neuville et al., 2007; Pintrich & De Groot, 1990; Zimmerman, 2000a, 2011; Zimmerman et al., 1992). The findings of the current study were consistent with these studies.

Despite both high and low groups reporting the use of learning strategies, the data suggested that the control of various cognitive learning (Pintrich, 1995; Zimmerman, 1998a), such as the use of deep processing strategies, was different between the two groups. High SRL students showed the use of learning strategies at the beginning of the course. They took notes, kept up to date through discussion, read widely, set up study groups, and used their time effectively. The high SRL students tended to use SRL skills to get a better understanding of the subject matter, thus demonstrating the various types of learning that they thought would be appropriate for them (Svinicki, 2010). They were also more likely to use process self-monitoring (Zimmerman, 1998b).

In contrast, students with low SRL seemed not to make the effort to understand how to use online portfolios, lacked perseverance and time management skills, and did not use strategies available to them. However, over the year the low SRL group showed a greater improvement in the forethought phase than the high SRL group.

Suggestions have been made that confidence or belief in one's ability can help a person concentrate, focus on tasks (Zimmerman, 1998b), work hard and persevere (Pajares, 2008), and have greater motivation to regulate their own learning (Schunk, 1985). It was anticipated that the high SRL group would develop their learning strategies better than the low SRL group, because high SRL learners were believed to be more proactive learners (Zimmerman, 2008b). However, the findings of the current study revealed that scores on the performance phases for the low SRL group appeared to increase more than scores for the high SRL group, but it was not statistically significant. This result could be related to relatively small sample sizes. If the study had had larger sample sizes, the results may have been statistically significant.

The tendency for greater improvement for the low SRL group might be explained by the fact that the low SRL students had more potential and the high SRL students had less potential for improvement. This occurred even though the high SRL students were very motivated and organised, but they had less scope for improvement because they were already near the ceiling in scores on the SRL measure. In contrast, the low SRL group had potential to demonstrate greater improvement as they started with lower levels of SRL.

Other possible explanations are that as the self-efficacy of the low SRL increased, they began to use more cognitive strategies and persist longer in the tasks. (Pajares, 2008; Pintrich & De Groot, 1990). Additionally, both SRL groups were postgraduate professional learners who had some degree of university experience; thus, they would be able to learn independently and were motivated to learn, even those who started with low SRL.

Self-Reflection Phase

The self-reflection phase involves self-judgment and self-reaction (Zimmerman, 2000a; 2002). Self-regulated learners tend to self-evaluate their performance against their personal goals (Zimmerman, 2002) or formal standards (Zimmerman, 1998b), and to be adaptive reaction people (Zimmerman, 2002). This was demonstrated in the findings of the current study in that students from both high and low SRL groups reported that they evaluated their learning by reflecting on learning in relation to their goals. They said it helped them to see their learning journeys and see what areas of learning they needed to improve. Both groups seemed to understand why reflection was important.

However, results from this study showed that high SRL students tended to use a process of self-monitoring rather than an outcome of self-monitoring (Zimmerman, 1998b).

High SRL students saw reflection as a process of learning, so they tended to use metacognitive strategies (self-monitoring) to monitor their learning progress in relation to the use of online portfolios, whereas low SRL students were more likely to see reflection as an end product activity.

Additionally, high SRL students seemed to show adaptive behaviours. For example, if they found that using an online portfolio was difficult, they did not stop using it; rather, they made an effort to learn how to use it. In contrast, low SRL students tended to be unwilling to engage. Zimmerman (1998b; 2002) pointed out that adaptive reactions occurred when learners increased the effectiveness of their learning methods, whereas defensive behaviours involved the protection of one's self-image, such as avoiding opportunities to learn and perform. The finding of the current study was consistent with these statements.

Interestingly, the low SRL group appeared to make a greater improvement in skills in the self-reflection phase than the high SRL group, but it was not statistically significant. Relatively small sample sizes might have caused the lack of statistically significant results.

The increase in skills in the self-reflection phase could be related to increased skills in the forethought and performance phases. Skills in the three phases of SRL are directly linked to each other (Zimmerman, 1998b). Students with high SRL have high levels of learning strategies in the forethought, performance, and self-reflection phases. Research (DiBenedetto & Zimmerman, 2010; Puzziferro, 2008) has shown that students who used strategic planning in the forethought phase applied evaluation and monitoring strategies in the performance phase and were also effective in the self-reflection phase.

Similarly to the performance phase, the greater improvement in skills for the low SRL group in the self-reflection phase might be related to their being professional and postgraduate learners. Additionally, it may be that the increased skills in the forethought and performance phases for the low SRL group allowed them to increase their skills in the self-reflection phase.

Overall, the scores on SRL skills increased over the year for both high and low SRL groups. Although the low SRL group tended to make a greater improvement than the high SRL group, this improvement was not statistically significant. Researchers (e.g., Pajares, 2008; Schunk, 2001; Zimmerman, 1998b; 2001; Zimmerman & Martinez-Pons, 1986) have suggested that high SRL learners were more likely to develop better regulation of their learning behaviour than non-SRL learners across the three phases of SRL. However, in this study there was a tendency for the low SRL group to develop their SRL skills. This different finding in the low SRL group could be explained by the fact that the students in the other studies were young children who still needed to develop independent learning skills.

Further, to improve students' SRL, an explicit instruction for enhancing SRL was needed. As Cooney (2008) found, students' SRL skills were improved when they had clear instruction on the key processes of SRL. The current study comprised adult students who were independent learners, and the use of online portfolios, which involved the process of ongoing learning, such as setting goals, collecting and selecting artefacts, and reflecting on those activities. These activities could lead them to become high SRL students, even though they started with low SRL at the beginning of the course.

Altogether, the findings of this study suggested that students' SRL skills could be developed regardless of their initial levels of SRL. This finding was consistent with the other researchers' postulations that all students can learn to become self-regulated learners "regardless of age, gender, ethnic background, actual ability level, prior knowledge, or motivation" (Pintrich, 1995, p. 8). Pintrich (1995) suggested that students and their learning contexts were important for development of their SRL skills. Students need to have awareness of their own behaviours, motivation, and cognition; a belief in their ability; and regular practice of self-regulatory strategies. Supportive learning contexts were also critical in promoting adaptive cognitions, such as greater self-efficacy and task value among university students, which in turn affected students' learning behaviours (Kaplan et al., 2012).

According to Schunk (2001), from a social cognitive theoretical perspective, "self-regulation is not a general trait or a particular level of development. Self-regulation is highly context dependent; people are not generally self-regulated or non-self-regulated". Thus, for Schunk, SRL strategies are not *in person* constructs; they can be learnt, and the context is very important for enhancing those strategies.

The current study involved postgraduate students studying in an online programme, who were expected to be able to make choices for themselves to control their learning. Students' choice and control were important because they have been shown to be key factors in improving students' SRL (Zimmerman, 1986; 1994). Research has demonstrated the potential of online learning environments to provide students with opportunities for choice and control, thereby enhancing their autonomy (Alexiou & Paraskeva, 2010; Ally, 2008) and motivation (Artino & Stephens, 2006; Delfino, Dettori, & Persico, 2010; Dell, 2006). Thus, Schunk's (2001) assertion that context is a

critical factor in understanding SRL has relevance to this study in relation to the potential of online environments to promote self-regulation.

However, Barnard-Brak, Paton, and Lan (2010) examined the SRL of students who were first-generation online learners over their first semester of an online course and found that their SRL skills did not increase over time. The authors concluded that one academic semester might not be long enough to observe differences in students' SRL skills. However, this might also have been because the students had less online experience, and therefore had less confidence to learn in an online learning environment. The current study involved a two-semester online course and students with a degree of previous online learning experience. This could have had a positive impact on students' motivational beliefs and led to the improvement in SRL strategies, though this course also involved postgraduate students and was longer than the course in the study by Barnard-Brak, Paton, et al. (2010).

The current study also involved the use of online portfolios and students' critical thinking. Empirical research has revealed that students' SRL increased when they used portfolios regularly (e.g., Abrami et al., 2008; Bhattacharya, 2009). A study by Cooney (2008) also found a significant improvement in adolescents' SRL skills after they had received explicit instruction on the key processes that led to self-regulation and on working with online portfolios. Further, Meyer et al. (2010) found that the online portfolio tool had a positive impact on students' literacy and on their SRL skills. Online learning and the use of online portfolios were all incorporated in the course undertaken by the students in this study, and so likely contributed to the improvement of their SRL skills.

5.4.2 Scores on perceptions of the usefulness of online portfolios

The second measure was the perceptions of the usefulness of online portfolios. Initially, high SRL students perceived the usefulness of online portfolios as greater than low SRL students. However, the scores on perceptions of the usefulness of online portfolios for both high and low SRL groups increased over the year, and the scores for the low SRL group tended to increase more than for the high SRL group; however, this was not statistically significant.

Such findings indicated that both the high and low SRL groups perceived online portfolios as being more useful over time. However, there was a tendency for the low SRL group to gain more positive perceptions of the usefulness of online portfolios more rapidly. This improvement could have been because at the start of the course, the low SRL group may have had less experience in the use of online portfolios than the high SRL group, resulting in a lack of confidence and may have led to more apprehension or anxiety to create and use them.

However, as the course went on and students used them, they started to see the benefits of online portfolios. They recognised that they were flexible and convenient and that online portfolios helped them to regulate their learning. In the social cognitive view, learners' perceptions can be influenced by their learning environment (Schunk et al., 2014). These students may have acquired knowledge about the use of online portfolios and valued their use by observing and interacting with others, such as friends or the technician in the programme.

In contrast, the high SRL group may have had some degree of experience in using online portfolios, and perceived their benefits. This finding was in agreement with other researchers, who said that when students saw the advantages of the use of online

portfolios, they perceived online portfolios as being useful (Barrett, 2000; Bhattacharya, 2009; Stefani et al., 2007).

Another explanation could be similar to the explanation for the SRL tendency for improvement for the low SRL group – that the low SRL students had more potential for improvement and the high SRL group, less potential, in their perceptions of the usefulness of online portfolios. As the high SRL students had already perceived the value of online portfolios, they had less scope for improvement because they were already near the ceiling in scores on the perceptions of the usefulness of online portfolio. In contrast, the low SRL group had the potential to demonstrate a greater improvement as they started with lower scores in their perceptions of the usefulness of online portfolios.

The findings of this study were consistent with those of other studies. Simpson (2011) investigated how postgraduate students viewed the usefulness of online portfolio support services. One of the findings revealed that students' perceptions of online portfolios increased over time, in that they thought online portfolios were useful in adult education and enhancing subject knowledge. They also thought they would continue using them and would encourage others to use them.

Further, the study of Davis et al. (2009), which investigated whether students at the University of Dundee Medical School, Scotland, changed their attitudes towards portfolios assessment over the years 1999, 2000, 2002, and 2003, found that student attitudes became more positive over the four years. Additionally, Yang's (2003) study found that most English students at a public university in Taiwan felt positive about their experience using portfolios in their class over two time periods. They thought using portfolios enhanced their learning strategies.

However, these studies did not examine the perceptions of the usefulness of online portfolios in relation to SRL skills as did the current study, which found that both high and low SRL students saw the usefulness of online portfolios over time. This evidence also showed a tendency for the low SRL students to be slightly more positive in their perceptions of online portfolios as being useful over the year.

These findings suggested that students need to be informed about the benefits of online portfolios. Moreover, they need explicit instruction and hands-on support to help them develop more positive perceptions of the usefulness of online portfolios from the start. Higher perceptions of the usefulness of online portfolios would probably have helped them to increase their SRL because perceptions of the usefulness of online portfolios were found to have a moderate influence on SRL (see research question two).

5.5 Research Question Four

From students' perspectives, does the use of online portfolios increase their SRL skills?

The findings of this study showed that the majority of students believed that their SRL skills had improved while they were engaged in the course. They recognised this improvement in relation to being able to set and modify their own learning goals, being able to manage and control their own learning, and being able to reflect on their learning. These three factors were related to their use of online portfolios, as well as the three cyclical phases of SRL.

In the interview data, students reported that using online portfolios had helped them to set their own goals, select and share their artefacts, and then reflect on those artefacts and activities. Such findings were in line with previous studies (Alexiou & Paraskeva, 2010; Blackburn & Hakel, 2006; Chau & Cheng, 2010; Meyer et al., 2010; Riedinger, 2006), which found that using online portfolios allowed learners to think critically and

become active and independent. The following sections discuss the use of online portfolios in terms of the three SRL aspects of being able to set learning goals, manage learning, and reflect on learning.

5.5.1 Being able to set own learning goals

Self-set goals enhance students' self-efficacy (Schunk, 1985; 1990; 2009). This was true for both high and low SRL students in this study, as they reported that having to set their own learning goals forced them to focus on their goals and find methods to complete those goals. Such findings indicated that most students were likely to commit to their goals and make an effort and apply learning strategies to achieve them.

Commitment to goals is critical and relevant because it is related to task performance (Locke, 1996; Locke & Latham, 2002; Schunk, 2009), and it tends to be enhanced when students are allowed to set their own goals (Schunk, 1991). According to Bandura (1997), "goals are unlikely to have much effect if there is little personal commitment" (p. 218), and may be less motivating if they are not self-chosen.

Bandura's argument is consistent with the findings of this study, where students reported that when they had an opportunity to set their own goals they also had a chance to identify their areas of interest, as well as their learning gaps, and develop their own learning plans. Consequently, students seemed to believe that self-set goals made them aware of what they wanted to know and they felt more confident in their knowledge. This finding was similar to Simon and Taylor's (2009) finding, where students in their study found learning goals helped them to focus and guided them to learn in the course.

Students in the current study were professional teachers who were studying at postgraduate level, so as experienced practitioners and students, they had some background skills in setting their own goals and some degree of commitment to those

goals. This applied to both high and low SRL groups. Therefore, for students in this study, self-set goals seemed to be an important factor that led to an improvement in SRL skills. This was supported in the literature because when learners set their own learning goals, they tended to pay greater attention to their studies and select task-appropriate strategies (Schunk, 2009).

The online portfolio was seen as a positive support to the setting of goals and achievements, and through this, the increase in their SRL. The process for setting goals was through the online portfolios. The online portfolio was the student's personal learning space that they had ownership of and managed. Students were required to set their own unique learning goals against the competencies of the programme as the first step in managing their learning, and these goals were presented in their online portfolios for comment and feedback from lecturers.

Students then provided learning artefacts in their online portfolios as evidence of meeting these goals and critically reflecting on them. The online portfolio was integral to the students' process of goal setting. Students' perceptions of the usefulness of online portfolios to set their goals showed that having structure provided by the online portfolio and receiving feedback around goals and their mastery was perceived as increasing their learning skills in the forethought phase of SRL.

5.5.2 Being able to manage and control own learning

Students believed that being able to manage and control their own learning promoted their SRL skills. They reported that when they set their own learning goals, they were motivated to pay greater attention to controlling their own learning to achieve these goals. This finding was consistent with Schunk (2012), who said that self-set goals promoted higher self-efficacy and greater skill acquisition. The findings of the current

study indicated that students tended to believe that their goals were important and achievable, so they seemed to manage and control their own learning by being aware of available choices and selecting appropriate learning strategies to attain their goals.

Zimmerman (1994; 1998a) suggested that SRL skills could be improved when the learners controlled choices, time, method, environment, and outcome for their learning contexts. Most of the students in this study had to personally determine what areas they wanted to learn about, when and where to study, and what strategies they should use in different learning situations in order to achieve their goals must effectively. This process was documented in their online portfolios. The findings of this study showed that students thought that their improvement in SRL skills was also the consequence of their ability to control their own learning and document this in their online portfolios.

Further, having the ability to control learning was very important because it allowed students to understand how much progress they had made. In general, it seemed that by the end of the course, most students felt that their SRL had improved. This improvement could be attributed to feelings of control. When students felt like they owned their learning, they would focus on their own learning, as well as manage and control all their learning strategies themselves. Paris and Ayes (1994) concluded that “the overarching purpose of portfolios is to create a sense of personal ownership over one’s accomplishments, because ownership engenders feelings of pride, responsibility, and dedication” (p. 10). This conclusion confirmed the finding of this study that using an online portfolio tended to help promote students’ feeling of control over their learning.

Students’ management of their learning was also achieved through their online portfolios. Students selected relevant artefacts that provided evidence of meeting their

learning goals and demonstrated competence against the learning objectives of the programme. Designing, editing, and updating their own unique online portfolios enabled students to manage and control their learning. Students' perceptions of the usefulness of online portfolios to manage their learning was indicated through the achievement of their own goals and their artefacts, as they increased their ability in SRL skills through the processes involved in the creation of artefacts.

5.5.3 Being able to reflect on learning

Reflection on learning was also identified as an important contributor to increased SRL skills. Students in this study reported that when they reflected on their learning in their online portfolios, they could see their learning path, so that they knew what they should or should not do to improve their learning. This finding was consistent with Kabilan and Khan's (2012) finding that students appreciated the use of online portfolios because their learning was traced and monitored over time.

In regard to the SRL process, reflection was explained in the self-reflection phase (Zimmerman, 2002). When learners compare their performance against general standards, were satisfied with their performance, and showed adaptive reaction they indicated their degree of SRL strategies. When students feel satisfied with their learning progress, they gain more confidence and set higher learning goals in the future (Schunk, 2012).

Barrett (2000; 2010) proposed that the key aspect of using online portfolios was reflecting on learning evidence. In the process of creating online portfolios, users think about why they have chosen a particular artefact for their online portfolios, what they want others to know about it, and what they have learnt from it. When the online portfolio users share their work with others to get feedback, they reflect on their work

by comparing it to the criteria and think about how it was improved. Based on this reflection, they are encouraged to set new goals for their future learning (Barrett, 2000). The findings of this study showed that students' perceptions of the usefulness of online portfolios to reflect on their learning showed that reflecting on a specific artefact and what had been learnt through that artefact was perceived as increasing the abilities of their learning skills in the self-reflection phase of SRL.

The above three factors were related to students' use of online portfolios and to SRL phases. The findings of this study were consistent with the literature (Blackburn & Hakel, 2006; Riedinger, 2006; Yueh, 1997), that the features of SRL strategies are similar to the process of online portfolio use, particularly in the reflection process. Students in this study reported that the use of online portfolios helped them to structure what their learning goals were, so that they could work toward them by organising work and time and then reflect upon them. They further reported that a lot of information and discussion about how to create online portfolios in the online forums was available for them to use to help them learn and to reflect on what they had learnt. They could also identify what areas needed to be improved by comparing their work to that of others. The checks and balances that the portfolios provided forced them to become self-disciplined and to regularly engage in activities in order to achieve the learning goals they set. These findings suggested that using online portfolios allowed students to reflect, refine their learning goals, and feel in control of their learning.

5.6 Research Question Five

What factors help or hinder students in the construction and use of their online portfolios?

The findings of this study showed that a number of factors appear to have helped and hindered students when constructing and using their online portfolios. The factors that helped and hindered are discussed separately, and are then summarised using Bandura's (1986) *reciprocal interaction* framework.

5.6.1 Factors that helped students in constructing and using their online portfolios

The findings of this study showed that students identified course support, particularly examples and models of online portfolios; motivation; peer support; and lecturer support as the important factors that helped them to construct their online portfolios.

Course Support

Course support was an important factor in helping students to construct and use their online portfolios. With respect to SRL groups, more low SRL than high SRL students identified course support as being a useful factor to help them construct and use their online portfolios, suggesting that course support was particularly important for low SRL students. Support for student learning is a major component in extending student learning experiences in any kind of learning environment because in an online learning context, anxiety and misunderstanding can easily occur due to the absence of social cues and face-to-face interaction (Lee et al., 2011). Support provided by the course can be an effective solution to minimise problems. In terms of the use of online portfolios, researchers (Bolliger & Shepherd, 2010) have suggested that a planned system of support is essential to help students learn better how to use online portfolios.

The course supports that were provided in the programme in the current study included examples, workshops, and technical support to help students construct and use their online portfolios. Examples of how to construct and use online portfolios were identified by students in the course as being the most helpful factor for constructing and using online portfolios. These examples were included in the learning material distributed to students at the start of the course. Examples were also posted on the course website, where explanations, as well as video links, showed how to create and use online portfolios in a step-by-step process.

These findings were consistent with Tosh, Light, Fleming, and Haywood (2005), who suggested that to successfully construct and use an online portfolio, students needed to see clear examples of how to construct and use it. By observing examples or others' models, students could enhance their learning skills and reduce mistakes (Bandura, 1986; Schunk, 2009), particularly for complex tasks. The use of online portfolios was potentially a complex process for those who had never used them before. Students could benefit the most by observing examples of the use of online portfolios. This was consistent with Bandura (1986), who suggested that without useful guidance, much of students' efforts could be wasted on costly mistakes and needless work.

These observations were supported by other researchers (Chi, Roy, & Hausmann, 2008; Mattar & Gribble, 2005; Paradise & Rogoff, 2009; Schunk, 2012), who found that observing other activities can enhance learners' motivation, self-efficacy, and other learning skills in a particular task. The findings of this study suggested that providing clear and easy-to-understand examples was important to motivate students to learn and persist in creating and using their online portfolios. When students knew how to construct and use online portfolios their motivation to use them increased.

The other course supports that were also rated highly by the students were portfolio workshops, block courses, and the geographic area network (GAN) meetings. These were identified by students as being very helpful for learning to create and use online portfolios. This was in agreement with the block course end-of-year surveys in the programme, which found that most students in the programme found the block course to be excellent or good, and a majority of them also rated the portfolio workshops as very valuable or valuable.

The findings of this study indicated that the portfolio workshops, block courses, and GAN meetings were important for most of the students in the programme for creating and using their online portfolios. At the workshops and the block courses, examples were provided and a technician and tutors worked closely with students to give them one-on-one instruction. Thus, students had an opportunity to have face-to-face discussion with the tutors if they had any queries in constructing and using their online portfolios.

Technical support was also identified by students as helping them with their online portfolios. This was offered either online or face-to-face. Students could access this support on the course website anytime, anywhere, and they could also discuss problems with the technician in person at the block courses. Research has revealed that to be successful in an online learning environment, learners are required to have sufficient computer skills (Selim, 2007), and that to help students acquire these skills, technology support is a critical factor to their success (Lee et al., 2011). Therefore, technical support should be provided to help students create and use their online portfolios.

In summary, the findings of this study suggested that course support, particularly examples, portfolio workshops, and technician support, played an important role in assisting students to create and use of their online portfolios. This was because the

course support would have helped to improve students' self-efficacy and encourage them to persist to successfully create and use their online portfolios.

Motivation

Motivation was also identified as a critical factor to help them construct and use their online portfolios, suggesting that motivation was crucial to success in creating and using online portfolios. This finding agreed with other researchers (Artino & Stephens, 2006; Eom, Wen, & Ashill, 2006), who suggested that being successful in online learning required learners to be motivated. The findings of this study further showed that high SRL students identified motivation as the critical factor in helping them construct and use their online portfolios successfully, whereas the low SRL students did not, suggesting that high SRL students were more likely to have been self-motivated in constructing and using online portfolios.

Alderman (2008) stated that motivation activates and directs behaviour, and regulates persistence of behaviour. Her statement is similar to that of other scholars, who have said that motivation is one of the key components in the SRL process (Pajares, 2008; Schunk, 2009; Schunk & Zimmerman, 2008; Zimmerman & Schunk, 2008) because it directs and maintains one's behaviour (McInerney & McInerney, 2006). When students are self-motivated, they persist at a task. Similarly, Zimmerman (2011) pointed out that "high motivation can increase students' *attention* to their learning, *choice* of task, *effort* to learn a difficult task, and *persistence* on a time-consuming task" (p. 50). The use of online portfolios was a challenging process, particularly for the first-time users, and it required considerable time. Without motivation, students would not have chosen to participate, make an effort, or persist in it.

Motivation is related to self-efficacy (Alderman, 2008; Bandura, 1986). As individuals work to achieve their goals, they evaluate their progress. If the evaluation is positive, their self-efficacy is also enhanced, resulting in motivation being sustained. Researchers (e. g., Lynch, 2006; Nilsen, 2009; Pajares, 2003; Pintrich & De Groot, 1990) have found that motivation influences learning outcomes and self-efficacy. This was consistent with the current study, which showed that when students were motivated, they engaged in the use of online portfolios, reported raised their self-efficacy, and subsequently valued their portfolios more highly.

Peer Support

Peer support was also identified as a factor that had helped students to create and use online portfolios. Students reported that they found discussing issues with other students helped them to get ideas to create and use online portfolios. The discussion could be either online or face-to-face. Students also reported that they had set up their own study groups or a study buddy that they could continue working, discussing, and sharing ideas with throughout the course. This could indicate that students felt comfortable discussing online portfolio issues with their peers, and this could lead them to enhance their learning strategies. As Newman (2002) suggested “among friends, help seeking is most likely to result in requested information and thereby is reinforced as an effective learning strategy” (p. 134).

Positive persuasion from peers, such as “You can do it”, could help enhance students’ self-efficacy (Schunk, 2012) and encourage them to persist in constructing and using online portfolios. This was a factor for some students in this study. For example, student B (high SRL) said he and his friends worked together and encouraged each other to learn over time. This finding suggested that despite the current course being an online

course, students had opportunities to create their own learning groups to support each other in constructing and using their online portfolios.

Similarly, peers' performance may have had an impact on students' learning (Schunk, 2012). When students observed their peers creating and using an online portfolio, they may have been motivated to do it and to believe that they could do it successfully, as their peers had done. For example, student B (high SRL) reported that he and his peers worked together and encouraged each other in relation to the use of online portfolios.

However, if their peers failed to succeed with the online portfolio, students may have doubted whether they could succeed and may have avoided doing it. This seemed to have happened with students who were less self-regulated. For example, student D (low SRL) reported that she had not created her online portfolio even though the course had nearly finished, and that all her friends had had the same problems. This demonstrated that for some students at least, peers were important in helping them learn how to create and use online portfolios.

Lecturer Support

Lecturer support was also identified as an important factor in helping students create and use online portfolios. This finding was in line with previous studies (Cochrane, 2010; Driessen, Van Tartwijk, Overeem, Vermunt, & Van Der Vleuten, 2005; Stacey & Gerbic, 2008), which showed that a supportive teacher was a key factor in the success of reflective portfolios and in learning in an online environment.

Lecturers have an important role in supporting students to learn, in particular for online learning to be effective (Collis, 1991). In an online learning environment, where students have less face-to-face discussion, the instructors can provide various forms of support by making themselves available to the students through different methods of

contact, such as face-to-face, phone, and email. The context of this study was situated in an online learning environment and students could email the lecturers and post their questions online if they had any queries in relation to the use of online portfolios. According to Schunk (2012), prompt support from the lecturers can help students to become self-confident in their ability to create their own online portfolios, whereas a delay in replying may result in negative student reactions, such as having no confidence and not engaging in the use of online portfolios.

Similarly, feedback from lecturers was shown to be important in guiding students to create their online portfolios. Quality feedback from lecturers is likely to influence students' success in constructing and using online portfolios (Abrami et al., 2008; Barrett, 2007). When students know how well they are doing, they will increase their learning strategies to learn how to create and use online portfolios. For example, one student in the high SRL group reported that his success in creating and using online portfolios was partly the consequence of a lecture's critique. This suggested that lecturer feedback helped this student to be a critical reader and therefore to regulate his learning, resulting in satisfaction. The findings were supported by the study of Russo and Benson (2005) and Eom, Wen, and Ashill (2006), who found that instructor feedback significantly influenced students' satisfaction and motivation.

Altogether, the findings of this study suggested that students perceived the lecturers as being one of the main factors that had helped them construct and use their online portfolios. Therefore, it seemed to be that lecturer support, including their critiques and feedback, positively influenced students to become self-efficacious in regulating themselves to create and use their online portfolios.

5.6.2 Factors that hindered students in constructing and using their online portfolios

Students identified lack of technology skills and lack of time as major factors that hindered them in constructing and using their online portfolios.

Lack of technology skills

Lack of technology skills was a key factor that delayed students from creating and using their online portfolios. This finding was in agreement with other studies (Lee et al., 2011; Muilenburg & Berge, 2005; Selim, 2007; Song et al., 2004) that technology skills were major factors in successful online learning, including online portfolios. This study found that technology skills were the primary ones that students initially needed to create and use an online portfolio. Students from both high and low SRL groups found that insufficient technology skills made it difficult for them to construct and use their online portfolios. They said that it was important to know how to create and manage links, and to do the other things that were required in order to use online portfolios appropriately.

Heath (2005) pointed out that technical problems could be frustrating and stressful. Her point of view was evident with students in the current study. For example, student D reported that it was difficult to deal with the technology and a new learning path like online portfolios. She said she tried to set up a Skype account, but could not do it and felt frustrated and stopped trying.

However, even though both high and low SRL groups found that their lack of technology skills was the major problem in creating and using online portfolios, the high SRL group was more likely to feel comfortable engaging with the online portfolios than the low SRL group. This difference could be related to earlier findings, which

showed that high SRL students seemed to be highly motivated and self-efficacious. This confidence could be the consequence of the differences in online skills between high and low SRL students, meaning the high SRL group was more likely to be proficient in online skills than the low SRL group (see Chapter Four section 4.3).

The findings of this study indicated that competence in using technology was important for online students and for using online portfolios, particularly for those who had fewer SRL skills. Therefore, students needed to learn specific online skills related to online portfolios in order to create and use them effectively.

Lack of time

Time constraint was another key issue for many students in creating and using online portfolios. This finding was in line with the study by Song et al. (2004), which found that students working in an online course perceived lack of time as a big challenge. Students in the current study reported that they had to spend considerable time learning how to create and use online portfolios. Once the technology difficulties were resolved, they felt confident using them.

The lack of technology skills and lack of time seemed to be related. When students had insufficient computer skills they needed a considerable amount of time to learn these skills and how to create and use online portfolios. While the high and low SRL groups equally identified lack of technology skills as the critical factor hindering their success in constructing and using online portfolios, more low SRL students than high SRL students claimed that lack of time was the biggest barrier for them to develop their online portfolios.

This finding suggested that even though both groups experienced the same problems, the high SRL group seemed to manage their time more effectively than the low SRL

group. This was consistent with the literature, which suggested that self-regulated learners had more ability to manage time effectively than poorly self-regulated learners (Zimmerman, 2002; Zimmerman & Moylan, 2009).

If students have adequate technology skills, they may be able to improve the development and use of their online portfolios, and their problems in relation to time constraints may also be reduced. Thus, educators should initially focus on teaching students computer skills and how to construct and use their online portfolios.

In social cognitive theory, Bandura (1986) discussed humans' response to learning (interactions) within three elements: personal, behavioural, and environmental factors, called *reciprocal interactions*. Each factor influences the others and is a two-way interaction. According to this model, course support, motivation, peer support, lecturer support, technology skills, and time had an impact on the way students constructed and used their online portfolios. Examples provided in the course (environmental) may have had an effect on students' motivation or their self-efficacy (personal), and their learning in relation to constructing and using online portfolios (behavioural). In the case of this study, behavioural factors could include lack of technology skills and time constraints; environmental factors could include course support, peer support, and lecturer support; and personal factors could include motivation. Figure 5.1 summarises the personal, behavioural, and environmental factors of Bandura's reciprocal interactions.

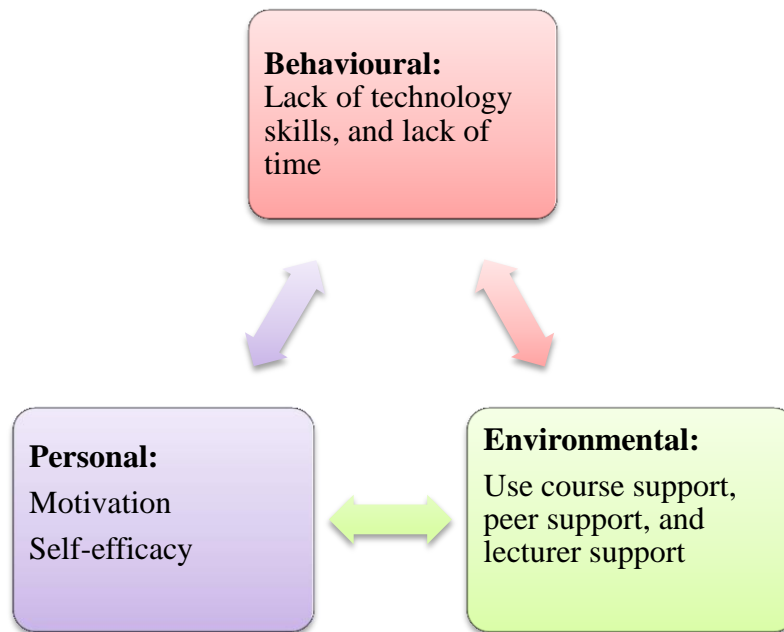


Figure 5.1. Personal, behavioural, and environmental factors affecting students' construction and use of their online portfolios

As shown in Figure 5.1, when students received and used course support – for example, being given clear examples of how to create an online portfolio, or getting positive persuasion or feedback from peers and lecturers – they could then use these examples and critical feedback to improve their use of online portfolios. Their improvement in using online portfolios could contribute to their increased motivation and self-efficacy (environmental → personal), and their lack of technology skills and time could also be reduced (environmental → behavioural).

Equally, if students were motivated, they tended to make better use of the support provided by the course (personal → environmental), which could have led to fewer problems with technology skills and fewer time constraints (personal → behavioural). Finally, if students had adequate computer skills in relation to online portfolios, they could have had more time to engage in a variety of course support and made an effort

by using appropriate strategies to achieve them, which would have led to increased self-motivation (behavioural → personal).

Thus, Bandura's (1986) model suggested the interconnection between these factors, and that improvements in one factor impacted on the others. This interconnection has implications both for students and lecturers in terms of overcoming barriers to using online portfolios.

5.7 Implications of the Study

The findings of this study showed that there were close relationships between the factors that contributed to students' three phases of SRL (forethought, performance, and self-reflection) as outlined in Zimmerman's model (1998b; 2002), as well as the three stages of students' use of online portfolios (collection, selection, and reflection) as shown in Barrett's (2010) model of showcase and workspace. This relationship could be further analysed within Bandura's (1986) reciprocal interactions of learning, namely personal, behavioural, and environmental factors. This interrelationship between Zimmerman's three phases of SRL, Barrett's three stages of online portfolio construction, and Bandura's three factors of learning are illustrated in Figure 5.2.

Using online portfolios as a workspace and showcase

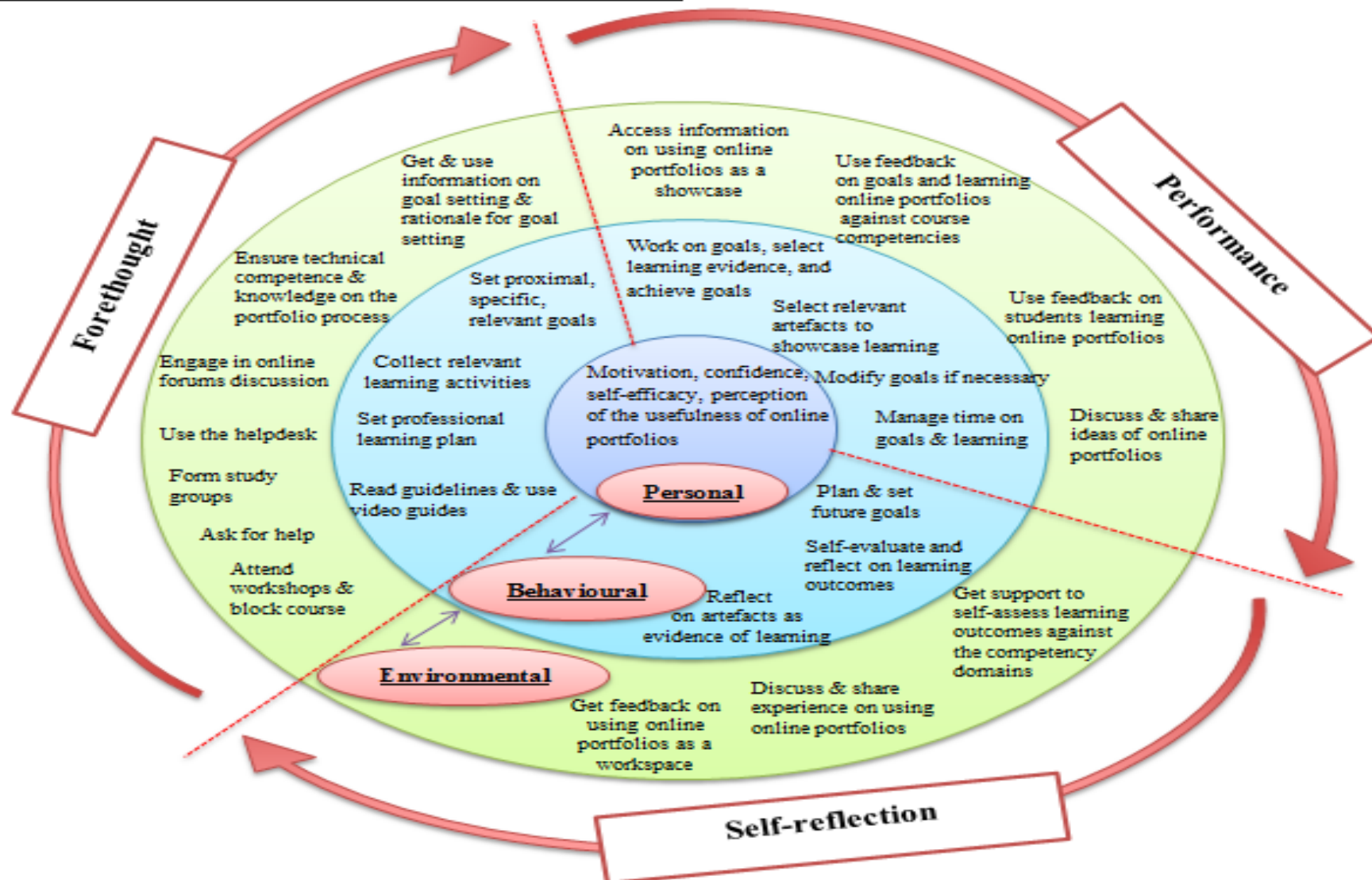


Figure 5.2. The integration of self-regulated learning and the use of online portfolios within a social cognitive approach

Figure 5.2 shows how SRL and the use of online portfolios are closely linked and how both are related to the reciprocal interactions of social cognitive theory (Bandura, 1986). Zimmerman (1998b) asserted that “learning is an open-ended process” (p. 2) that involves activities in the three cyclical phases of SRL (forethought, performance, and self-reflection).

In the forethought phase (task analysis and self-motivational beliefs), the learning process deals with learners’ beliefs, attitudes, or perceptions that influence learning effort in the performance phase (self-control and self-observation). The self-reflection phase (self-judgment and self-reaction) refers to learners’ reactions to activities in the first two phases, which are in turn influenced by the self-reflection phase. When students believe in their capabilities for the task at hand and value that task, they tend to engage in the task, plan and set goals, apply metacognitive learning strategies in completing that task, and then reflect on whether those activities worked to attain the goals. The outcomes of this process and experience are then used as the basis for setting future goals.

Zimmerman’s cyclical model of learning can be aligned with the use of online portfolios as explained by Barrett (2010). Based on Barrett’s (2010) model, online portfolios can be seen to involve three levels. The first level of collection refers to identifying what learning tasks to engage in and goal setting. The second level of selection of artefacts refers to documenting learning. Here the products of learning are showcased. The third level looks back on both collection and selection to self-evaluate them through retrospective reflection. The online portfolio is used as a workspace to facilitate the process of self-reflection. According to Barrett (2010), effective use of online portfolios includes both product or showcase, and process or workspace.

This conceptualisation and alignment of Zimmerman's model of SRL with Barrett's approach to effective use of online portfolios can be further linked with Bandura's (1986) social cognitive conception of learning. According to Bandura, learning is influenced by learners' beliefs, behaviours, and their surrounding environment, as three *reciprocal interactions*. When students believed in or perceived the usefulness of the task at hand, they tended to be motivated and engaged in that task, and tended to be even more motivated and self-efficacious if they were assisted by others or given informative or positive feedback from others.

Bandura's (1986) framework of social cognitive theory is represented as the three layers of the circle in Figure 5.2. In social cognitive theory, learners' behaviours are based on their beliefs, thought, and values (Schunk et al., 2014; Schunk et al., 2008). The processes of SRL and the use of online portfolios were conceptualised in this model as being influenced by students' motivation, self-efficacy, and their perceptions of the usefulness of online portfolios. These factors were personal elements in the learning processes and were placed in the centre of the circle in Figure 5.2. This was because personal factors such as self-efficacy were key factors in influencing a person's learning behaviour and situation (Bandura, 2001; Zimmerman, 1989).

The personal factors influenced both the behavioural and environmental factors in using online portfolios and related back to the three SRL phases as illustrated in Figure 5.2. When students perceived online portfolios as being useful for their learning, and they believed in their ability to create and use them (personal), students made an effort to use learning strategies, such as discussion, reading, and asking for help (environmental), to ensure effective use of their online portfolios (behavioural). The interconnection among these three elements of personal, behavioural, and environmental factors are also illustrated in Figure 5.2.

The interconnections among these theories can be illustrated in greater detail, by comparing online portfolio use between students with high and low SRL.

5.7.1 High self-regulated students

High SRL students are motivated and self-efficacious (Bandura, 1997; Schunk, 2012; Zimmerman, 1998b), use proactive strategies (Zimmerman, 2008b), and persist longer in a task (Pajares, 2008). These characteristics of learners were evident in this study. Most of the high SRL students, despite some having little experience in using online portfolios, tended to have higher self-efficacy and perceive the value of online portfolios.

According to the social cognitive model outlined in Figure 5.2 above, these students' behaviour was based on their personal beliefs and values (Schunk et al., 2014). The students believed in their capabilities in creating and using online portfolios, and this perception helped them to regulate their learning. These beliefs at the personal level motivated the students at the behavioural level to use the learning online portfolio process right from the start of the programme and to use the supports afforded them at the environmental level. Their learning across all three levels (personal, behavioural, and environmental) can also be seen to be enacted across the three phases of SRL (forethought, performance, and self-reflection), and the three stages of online portfolio use (collection, selection, and reflection) as depicted in Figure 5.2.

In the forethought phase, the students read guidelines, used strategic planning skills for their learning, and set their own goals. At this starting point of learning and using online portfolios, the students used the supports provided – for example, attending workshops and block courses, asking for help, and engaging in online forum discussions (see forethought phase at the environmental level in Figure 5.2) – to ensure their

technological competence. This was significant, as lack of technological skills was found to be a key barrier in constructing and using online portfolios.

In social cognitive theory, learners gain knowledge and skills through observing others (Schunk et al., 2014). High SRL students were more likely to have observed the examples of online portfolios put up by their lecturers and peers, and to have gained more understanding about the process of online portfolio use. This strategy may also have helped them solve any technological difficulties. Thus, high SRL students used successful strategies for what Barrett (2010) referred to as the *collection* phase of online portfolio use, which involves identifying learning goals and how to achieve these.

In the performance phase, the high SRL students worked towards achieving their goals. This links to the Barrett's (2010) *collection* and *selection* stages of online portfolio use, where students identify the artefacts that demonstrate their learning. The high SRL students managed their study time to keep a balance between work, study, and family commitments and so were able to document and present their learning artefacts, and discuss and share ideas on learning online portfolios. They acknowledged that feedback from lecturers and peers was important to them in making progress with both their content learning and their use of online portfolios. These activities contributed to the product or showcase stage of online portfolio use (Barrett, 2010).

The third phase of SRL is self-reflection. High SRL students evaluated and reflected on their artefacts and goals, and then shared their experience on their online portfolio with others. Through this self-reflection, students were involved in the process or workspace aspects (Barrett, 2010) of using online portfolios as a tool for reflecting on learning, and increasing depth of understanding and critical thinking.

5.7.2 Low self-regulated students

In this study low SRL students, on the other hand, tended to doubt their abilities and have less confidence in engaging in new activities – in this case, the ability to create and use online portfolios. Low self-efficacious learners are not confident in new learning situations (Zimmerman, 1998b). Most of the low SRL students expressed concern about using online portfolios due to their lack of online portfolio experience and technological skills. They did not think that online portfolios would help them to regulate their learning, despite their perceptions that the online portfolios were convenient and flexible tools.

According to a social cognitive orientation, people act based on their thoughts (Schunk et al., 2014). Mapping this into Figure 5.2, low SRL students' beliefs at the personal level resulted in these students' being less likely to make an effort at the start to understand how to create and use their online portfolios at the behavioural level, as they tended not to value online portfolios. These students were likely to create their online portfolios and use them as a showcase tool to collect and present their artefacts because it was required by the programme, not because of their own personal motivation. The environmental factors then would be used by these low SRL learners in a different way from high SRL learners.

By getting course support, such as using the helpdesk or having discussions with others, many of the low SRL students did gain confidence during the year, especially after they learnt how to create and use online portfolios, and they then developed better perceptions of the usefulness of online portfolios. Some of these students extended their use of online portfolios from showcase (product) to workspace (process) through self-reflection on their artefacts. Consequently, their SRL strategies increased across the three SRL phases of forethought, performance, and self-reflection. While initially their

low SRL approach and low personal perceptions of the usefulness of online portfolios could have limited their learning, the social interactions provided within the programme at the environmental level supported the students to move to all three stages of online portfolio use: collection, selection, and reflection.

Interestingly, low SRL students changed both their learning behaviours and their personal perceptions of the usefulness of online portfolios. These changes could be due to their university experiences. Graduate students have greater experience as learners at university level and are expected to be more motivated to learn (Artino & Stephens, 2009), as well as to be more independent (Nilsen, 2007) than undergraduate students. The low SRL students in the current study were postgraduate professional learners, who were mostly pursuing the degree for their careers. Therefore, they may have had greater task value and self-efficacy beliefs to extend their motivation to create and use online portfolios in the programme.

This model in Figure 5.2 integrates the three frameworks of Zimmerman's (1998b) cyclical SRL phases of forethought, performance, and self-reflection; Barrett's (2010) three stages of collection, selection, and reflection in the use of online portfolios; and Bandura's (1986) social cognitive theory of the interrelated personal, behavioural, and environmental factors in learning. This model can help to show how understanding the interrelationships between SRL and online portfolio use can serve to improve both at the personal, behavioural and environmental levels. SRL is influenced by and can enhance online portfolio use at all three levels of person, behaviour, and environment. An appreciation of this dynamic interrelationship of SRL and online portfolio use at the forethought (collection online portfolio), performance (selection online portfolio) and self-reflection (reflection online portfolio) has implications for both students and

teachers. As illustrated in Figure 5.2, actions can be made at all three levels of learning (personal, behavioural, and environmental) to bring about growth and changes.

5.8 Chapter Summary

This chapter discussed the findings of the study within the context of the research literature. The discussion was guided by five research questions. In relation to research question one the discussion focused on a positive relationship between students' SRL and their perceptions of the usefulness of online portfolios. The discussion on research question two focused on the reciprocal relationship between students' SRL and their perceptions of the usefulness of online portfolios – that is, that they both moderately influenced each other. The discussion for research question three focused on two different findings. The first was that students' SRL skills increased over the time that students participated in the course. The second was that students' perceptions of the usefulness of online portfolios also became more positive during the course. Further, when comparing students with high and low SRL, the rate of increase in perceptions of the usefulness of online portfolios appeared greater for low SRL students than for high SRL students, but the difference was not statistically significant.

In relation to research question four, discussion focused on the finding that online portfolios can play an important role in facilitating the improvement of students' SRL. This included using online portfolios to set their own learning goals, to control and manage their own learning, and to reflect on their learning.

Lastly, emphasis was placed on the interaction among personal, behavioural, and environmental factors as enablers and barriers to students' construction and use of online portfolios. The environmental factors (course support, peer support, and lecturer support) and personal factor (self-motivation) were identified as enabling factors in the

construction of students' online portfolios, while behavioural factors (lack of technology skills and lack of time) were identified as barriers to the construction and use of students' online portfolios.

The implications of this study showed that there were close relationships between the factors that contributed to students' three phases of SRL (forethought, performance, and self-reflection) as well as the three stages of students' use of online portfolios (collection, selection, and reflection), and the reciprocal interactions of learning, namely personal, behavioural, and environmental factors.

The following chapter presents the final conclusion of this study, including the implications for theory, research, and practice.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This study explored the link between students' self-regulated learning (SRL), their use of online portfolios, and their perceptions of the usefulness of online portfolios. The study involved students in a postgraduate specialised teaching programme. This chapter draws conclusions from the findings and makes recommendations for educational practice based on these conclusions. This chapter also outlines the limitations of the study and makes suggestions for future research. Lastly, the author's final thoughts are included.

6.2 Conclusions of the Study

Students' three phases of SRL, namely forethought, performance, and self-reflection, are linked to their use of online portfolios in terms of collection and selection of their artefacts, and reflection on their learning. The regulation of behaviour and the use of online portfolios are also associated with Bandura's (1986) reciprocal interactions of learning, namely personal, behavioural, and environmental factors.

Online portfolios were perceived as being useful in two ways: 1) they were convenient, and 2) they supported learning and professional practice. The students viewed online portfolios as a convenient tool that allowed them to work anywhere and at any time (accessibility), manipulate the online portfolios' content depending on personal needs at any point in time (flexibility), and share their work with others. Extending the work of other researchers (Knight et al., 2008; Lin, 2008), the current study found that both high

and low SRL students perceived online portfolios as convenient tools for learning. This finding suggested that online portfolios are convenient for use by students in higher education.

However, high SRL students placed more value on the use of online portfolios in relation to supporting their learning and practice, and they used them more strategically than low SRL students. According to Barrett's (2010) affordances of online portfolio use, high SRL students tended to use online portfolios as both product (storage space) and process (self-reflective tool). While low SRL students valued and used online portfolios as a storage place for their work, high SRL students used online portfolios to help regulate their learning and as a self-reflective tool.

When using a cross-lagged panel analysis (CLPA) to further examine the interrelationship between SRL and the perceptions of the usefulness of online portfolios, findings indicated that the influence of initial SRL on subsequent perceptions of the usefulness of online portfolios was not causally predominant over the influence of initial perceptions of the usefulness of online portfolios on subsequent SRL. Both constructs had a moderate, reciprocal relationship – that is, they moderately influenced each other.

Further findings showed that both SRL and the perceptions of the usefulness of online portfolios developed over the year for both high and low SRL students. This development related to the view of social cognitive theory that learners' beliefs, perceptions, and values are malleable and are influenced by their surrounding environments (Kaplan et al., 2012). Students' increased perceptions of the usefulness of online portfolios could have been affected by their interactions with other students in the course in relation to their use of online portfolios. This increase in perceptions of the usefulness of online portfolios could have contributed to the increase in students' SRL

skills. Students would have acted based on their perceptions, as suggested by social cognitive theorists (Schunk et al., 2014).

One interesting difference between high and low self-regulated learners in this study was that although both SRL groups seemed to increase their SRL skills at a relatively similar rate, the low SRL group increased their SRL skills in the forethought phase more than the high SRL group. This finding could be explained by the fact that both high and low SRL groups were professional learners and also had similar university experiences, so they were assumed to be independent learners.

Additionally, low SRL students were found to be as well-prepared as high SRL students in terms of goal setting at the beginning of the course. However, they had reported lower self-efficacy because of their lack of experience in using online portfolios and weaker technology skills. Once they had resolved these issues, their confidence and beliefs in their ability to use online portfolios increased. This finding suggested that motivation, confidence, and self-efficacy, which are positioned in the forethought phase, are important, especially for low SRL students, to help them improve other skills across the SRL phases.

Also of note was the change in students' perceptions of the usefulness of online portfolios. Both high and low SRL groups showed increased positive perceptions of online portfolio use over the year. However, there was a tendency for the low SRL group to increase their perceptions of the usefulness of online portfolios more rapidly in comparison to the high SRL group. This higher rate of increase could relate to the low SRL students initial lack of experience in using online portfolios and other online support and technology. Their limited experience and weaker technology skills could have led to lower motivation and delay in creating online portfolios. Zimmerman (2011) noted that when students are not motivated they tend not to participate in a task. When

these limitations were reduced, students' motivation increased and they engaged in the use of online portfolios and recognised their value. When students are interested in or value a task, they will persist on that task longer (Pajares, 2008).

Students believed that the use of online portfolios helped them to increase their SRL skills across the three SRL phases. They reported that online portfolios helped them to set their own learning goals (forethought), control their learning (performance), and then reflect on their learning (self-reflection). Reflection is critical in the use of portfolios (Barrett, 2010; Blackburn & Hakel, 2006; Riedinger, 2006) because reflection on learning helps users to strengthen their critical thinking, develop learning strategies, and plan for further learning. All these processes could encourage students to be disciplined and responsible for their own learning.

Several factors were found to influence students in the development of their online portfolios. While course support, motivation, peer support, and lecturer support were found to help students construct their online portfolios, lack of technology skills and time constraints were major barriers impeding construction and use. From a social cognitive perspective, Bandura (1986) pointed out that learning is influenced by personal, behavioural, and environmental interactions.

Based on Bandura's approach, course, peer, and lecturer support were found to be environmental factors that helped students construct their online portfolios. Students used guidelines, examples of how to create online portfolios, and the helpdesk. They also discussed the issues related to online portfolios with their peers. These environmental factors influenced students' motivation (personal factors). When students knew the process of online portfolios and saw other models, they were motivated to learn how to use them. When students were motivated, they engaged more in creating and using online portfolios, suggesting that their personal factors (motivation, self-

efficacy) influenced the behavioural factors (learning skills). Lack of technology skills and time constraints were found to be hindering factors that delayed students from constructing and using their online portfolios. If students' motivation increased, these issues could have been reduced, because students participate and persist in tasks longer when they are motivated (Pajares, 2008; Zimmerman, 2011) and value the task at hand.

When students used the supports that were provided, discussed and shared ideas about online portfolios with friends, and critiqued feedback and made improvements based on suggestions, their technology skills improved and problems related to time constraints decreased (as environmental → behavioural interaction). Their motivation also increased (as environmental → personal interaction). Similarly, when students were motivated, they were more likely to attend workshops and become involved in other supports that they thought would help them learn how to construct and use online portfolios (as personal → environmental interaction), thus enhancing their technology skills and reducing the time spent in trial and error (as personal → behavioural interaction). Likewise, if students felt competent in constructing and using online portfolios, their motivation increased (as behavioural → personal interaction), resulting in continued engagement with online portfolios and the course (as behavioural → environmental interaction).

6.3 Recommendations

The findings of this study have extended the outcomes from previous studies and indicate crucial points in developing the relationship between SRL and the use of online portfolios.

The key findings were as follows:

- Students' SRL skills and their use of online portfolios were linked to the reciprocal interaction of their personal, behavioural, and environmental factors.
- Students' SRL skills were not automatically increased when they used an online portfolio; students had to be motivated and to recognise the usefulness of online portfolios.
- High and low SRL students used online portfolios at different levels, that is, high SRL students used them as both a storage and reflective tool to regulate their learning, whereas low SRL students tended to limit their use to the storage function to show their artefacts.
- Initially, technology skills were a major problem for many students in both the high and low SRL groups in constructing and using their online portfolios.

These key findings provide a base from which to examine the implications for practice for both students and course coordinators.

6.3.1 Recommendations for students

Online portfolios can be considered a useful reflective tool for postgraduates to enhance their SRL strategies. To be successful in creating and using online portfolios, students should do the following (see Figure 5.2 in Chapter Five):

- Read guidelines, either in a hard copy or a digital form, to help them understand the process of the creation of online portfolios.
- Observe examples of how to create and use online portfolios.
- Ensure that they get the support they need and have adequate technological skills to construct and use an online portfolio.

- Engage in online forum discussions, attend workshops and block courses, and set up their own study groups to discuss issues and strengthen their technological skills in relation to the use of online portfolios, as well as seek help from appropriate sources – technicians for technical problems and lecturers for the process of writing an online portfolio.
- Set their own professional learning plan to direct their learning throughout the year.
- Set their own learning goals, which are proximal, specific, and relevant to their professional practice.
- Use cognitive and metacognitive learning strategies to pursue their goals.
- Select evidence of learning or artefacts, and discuss and share ideas with others in relation to their learning goals, artefacts, and use of online portfolios.
- Revisit goals regularly, modify goals if necessary, and check their own learning progress.
- Use feedback from peers and course coordinators to improve their learning related to an online portfolio, and then submit their artefacts of learning for each goal.
- Evaluate and reflect on their learning outcomes by using their professional learning plan to reflect on those outcomes.
- Plan what needs to be done next, as well as set future learning goals.

These recommendations can serve as guidelines for students to focus on their use of online portfolios and the activities that they need to undertake to promote and improve their SRL skills.

6.3.2 Recommendations for course coordinators

The course coordinators could use these findings to help their students succeed in constructing and using online portfolios for regulating their learning behaviour. The course coordinators could do the following:

- Provide explicit instructions and hands-on support for students to make choices and set learning goals at the start of the course.
- Give students critiques of their work, positive persuasion, and informative feedback.
- Ensure that students have gained technological competence and knowledge of the construction and use of online portfolios for both showcase and workspace purposes.
- Make student attendance at workshops, block courses, and GAN meetings compulsory. Alternatively, create a flexible timetable and more follow-up workshops as some students in the course have suggested (e.g., B/H/In).
- Initially encourage students to perceive the usefulness of online portfolios.
- Initially train students how to set specific, proximal, and relevant goals.
- Initially train students how to select strategies that are appropriate to their learning situations, as well as how to regularly monitor their learning progress.

6.4 Contributions to Knowledge

This study has investigated the relationship between postgraduate students' SRL, their use of online portfolios, and their perceptions of the usefulness of online portfolios. It

has contributed to knowledge in five main areas. First, the three theories of Zimmerman's (1998) SRL, Barrett's (2010) use of online portfolios, and Bandura's (1986) have been integrated to help to explain motivational factors that are related to students' use of online portfolios.

Second, this study has provided evidence that within a postgraduate professional programme, high SRL students use online portfolios at higher levels – that is, they use them for both product/showcase and process/workspace (Barrett, 2010) – whereas low SRL students use them at the surface level (product/showcase).

Third, this study has demonstrated that within an online postgraduate learning environment, students' perceptions of the usefulness of online portfolios had a positive relationship with their SRL skills across the three phases of forethought, performance, and self-reflection. Further, these variables moderately influenced each other – that is, they both needed to be focused on to get maximum value from them.

Fourth, the findings of this study have ascertained that behavioural factors (see Figure 5.2, Chapter Five) were the key issues in online postgraduate students' delaying the construction of their online portfolios and influencing their motivation, confidence, and perceptions of the usefulness of online portfolios. These factors included lack of technological skills and time constraints, which were related to each other. When students have limited technological skills, they need extra time to learn how to create and use an online portfolio. This would be particularly difficult for those who have family and work commitments.

The environmental factors of peer and lecturer support (see Figure 5.2, Chapter Five) were also important in helping students construct and use their online portfolios. The models of lecturers' or peers' online portfolios, their suggestions, and their feedback

influenced students to learn how to create and use online portfolios, and these also had an impact on the personal factors (motivation, confidence, self-efficacy, and perceptions of online portfolios). When students understand the process of online portfolio use and receive positive feedback from others, their skills increase, and the issue of time constraints is reduced. Consequently, their confidence and self-efficacy are increased, and they are motivated to continue using online portfolios. The interaction of these factors (personal, behavioural, and environmental) is consistent with Bandura's (1986) *reciprocal interactions*.

Finally, at a practical level, this study has developed a conceptual framework (see Figure 5.2 in Chapter Five), including suggestions for students and course coordinators to make better use of online portfolios, which in turn will help students to regulate their learning behaviours. Students need to regulate their behaviours to understand how to construct and use their online portfolios – for example, taking advantage of technical support to ensure competence in constructing and using online portfolios, and to gain knowledge about the process (behavioural and environmental factors). This competence and knowledge can lead to confidence in constructing and using an online portfolio (personal factor). The course coordinators could also provide feedback and other supports that students need (environmental factors). In turn, better use of online portfolios in terms of collection, selection, and reflection on artefacts can have a positive impact on SRL skills.

6.5 Limitations of the Study

Any study has limitations, which are important to acknowledge, and the limitations of this study follow. One limitation was the relatively small sample sizes. The data were collected at two points in time, at the beginning and the end of the course, to examine the changes in SRL and the perceptions of the usefulness of online portfolios (to answer

research questions two and three). Students were asked to participate voluntarily both times. However, even though the response rate for each questionnaire was relatively high, only a moderate number of students participated in both questionnaires. Consequently, the number of students in the high and low SRL groups was relatively small and could have contributed to the non-significance of some of the findings because of lower statistical power.

Another limitation was the participants in the study. The current study involved postgraduate students, who were expected to be independent learners and to have better-developed SRL skills than younger students. Undergraduate students and those who study in discipline areas other than education might have responded differently.

A third limitation was the age and gender of the sample of the current study, which was mostly women, between 41 and 60 years of age. Men, who are generally stereotyped as and thus expected by society to be more technologically savvy than women, may have responded differently. Also others who are younger, especially those aged in their 20s and 30s, are assumed to be more familiar with new technologies and again may have responded differently.

Further, the lecturers were not included as part of the sample of this study. This can also be considered a limitation, as their viewpoints have not been incorporated into the study in comparison with the viewpoints of the students.

Finally, the validity of the scales of the questionnaire in terms of correlation with other related variables is unknown at this stage.

6.6 Suggestions for Future Research

Several questions that require further exploration have emerged from this study. First, if the study had been done in different contexts, would the results have been the same as this study? It would be interesting for future research to examine SRL and the perceptions of the usefulness of online portfolios across different programmes, subject disciplines, and universities. Future research could also be done in other cultures to observe if the results were consistent with the current study.

No previous study could be found that examined the increase in rates of SRL skills and the perceptions of the usefulness of online portfolios between high and low self-regulated learners. Therefore, future research could continue to examine in various locations and learning environments whether the increase in rates of SRL skills and the perceptions of the usefulness of online portfolios between high and low self-regulated learners was similar or different from this study, and what possible explanations might exist for the similarities and differences.

Next, if the sample size had been larger, would the results have been different from this study? Given that the relatively small sample size was a limitation of this study, future research could be done using a larger sample size.

Another possible investigation could explore the results if only a high or only a low SRL group received special intervention to help them improve their SRL strategies. Would the SRL group receiving the intervention improve their SRL skills across the three SRL phases significantly more than the control group?

Moreover, further research could examine the implementation of the recommendations for using online portfolios made in this study. If these recommendations were put into practice within a postgraduate professional programme or similar course, would it

encourage low SRL students to use a learning portfolio for both a showcase and a workspace, rather than just as a showcase for their learning evidence?

Lastly, further research could expand the sample and the context of this study. The sample could include course lecturers, so that their views could be compared with those of the course participants. The context could be extended to include the students' perceptions of the usefulness of online portfolios within the Specialist Teaching programme, as well as to document and analyse the use of the actual online portfolios as data sources.

6.7 Final Thoughts

As online postgraduate courses and the importance of online portfolios as tools for capturing and demonstrating professional competence increase, it is essential for students in this context to be aware of their learning behaviours to discover how to use online portfolios successfully to regulate their learning behaviour. Hopefully, this study has uncovered and made recommendations for future research and practice that will contribute to the effective use of online portfolios – that is, using them for both *product* and *process* (Barrett, 2010) at tertiary levels.

Additionally, this study can help inform students and professionals about using online portfolios for their lifelong learning and continuing professional development, as well as for documenting their ongoing professional competence. More importantly, however, the ongoing use of these online portfolio processes can help strengthen their SRL, which is a key to supporting their lifelong learning.

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APPENDIX A:

ETHICAL APPROVED WITH LOW-RISK NOTIFICATION

27 January 2011

Lalida Sasai
8 Humphries Place
Awapuni
PALMERSTON NORTH 4412

Dear Lalida

Re: The Relationship between Self-Regulated Learning and Portfolio Use in an Online Learning Environment

Thank you for your Low Risk Notification which was received on 17 December 2010.

Your project has been recorded on the Low Risk Database which is reported in the Annual Report of the Massey University Human Ethics Committees.

The low risk notification for this project is valid for a maximum of three years.

Please notify me if situations subsequently occur which cause you to reconsider your initial ethical analysis that it is safe to proceed without approval by one of the University's Human Ethics Committees.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

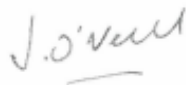
A reminder to include the following statement on all public documents:

"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research."

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director (Research Ethics), telephone 06 350 5249, e-mail humanethics@massey.ac.nz."

Please note that if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to provide a full application to one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerely



John G O'Neill (Professor)
Chair, Human Ethics Chairs' Committee and
Director (Research Ethics)

cc Prof James Chapman, Pro VC
College of Education
PN900

Mrs Roseanne MacGillivray
Graduate School of Education
PN900

APPENDIX B:
PERMISSION OF PRO VICE-CHANCELLOR,
THE COLLEGE OF EDUCATION, MASSEY UNIVERSITY

8 Humphries Place
Awapuni, Palmerston North, 4412

27 April 2011

Dear Pro Vice-Chancellor, the College of Education, [REDACTED]

My name is Lalida Sasai. I am doing a PhD on "*the relationship between self-regulated learning and the use of portfolios in an online learning environment*" at Massey University. This study is being supervised by Professor James Chapman, Dr. Alison Kearney and Dr. Mandia Mentis. I am writing this letter to seek your permission to allow the research project being conducted with postgraduate diploma students [REDACTED]
[REDACTED]

The research seeks to find out the relationship between self-regulated learning and the use of portfolios in an online learning environment. This will provide a useful contribution to current teaching and learning methods at tertiary level and in particular will provide input into the development of the [REDACTED] programme in terms of portfolio use. The research will also benefit students by finding how to use portfolios effectively and engage in online learning.

Please read the enclosed Information Sheet describing my proposed study. If you agree to allow the research, I will send each individual student an information sheet, which describe my research, and invite them to participate.

If you have any questions, I will be pleased to provide further information regarding the proposed study.

I am looking forward to hearing from you.

Yours sincerely,

Lalida Sasai

Lalida Sasai

Phone: 06 358 9219, 021 0290 7579

Email: L.sasai@massey.ac.nz

Approved
[Signature]
28-4-11

APPENDIX C:

THE QUESTIONNAIRE ONE INFORMATION SHEET



MASSEY UNIVERSITY
COLLEGE OF EDUCATION
TE KUPENGA O TE MĀTAURANGA

THE RELATIONSHIP BETWEEN SELF-REGULATED LEARNING AND THE USE OF PORTFOLIOS IN AN ONLINE LEARNING ENVIRONMENT

PARTICIPANT INFORMATION SHEET QUESTIONNAIRE

My name is Lalida Sasai. I am about to conduct research on the relationship between self-regulated learning and the use of portfolios in an online learning environment at postgraduate study level. I am seeking students doing the [REDACTED] programme to be participants because in this programme portfolios are a compulsory component. The research will involve a questionnaire at the beginning and end of the programme and face-to-face interviews.

The research will provide a useful contribution to current teaching and learning methods at tertiary study level and in particular will provide input into the development of the [REDACTED] programme in terms of portfolio use. The research will also benefit students in helping them to use portfolios effectively and engage in online learning.

You are invited to complete this questionnaire and by doing so your consent is assumed. The questionnaire consists of three sections: A) personal information; B) self-regulated learning strategies; and C) portfolio use. It will take approximately 30 minutes to complete.

The findings from your questionnaire will be analysed and presented in a manner such that you will remain anonymous. This information will be confidential and will be accessed only by the researcher and her supervisors. You will be asked your name on this survey. This is so that your responses can be linked to your responses to the survey at the end of the course. Your responses in the questionnaires will have no affect on your course grade.

As a participant, you have the right to:

- Decline to answer any particular question
- Withdraw from the study (up to three months after the completing the questionnaire)
- Ask any questions about the study at any time during participation
- Provide information on the understanding that your name will not be used
- Be given access to a summary of the project findings when it is concluded.

Name and contact details of researcher:

~~Lalida Sasai~~

School of Educational Studies

Massey University, College of Education

Private Bag 11 222

~~Palmerston North~~

PH 356 9099 ext 8804

L.sasai@massey.ac.nz

Supervisor

Professor James Chapman

Massey University, College of Education

Private Bag 11 222

~~Palmerston North~~

PH 356 9099 ext 8938

J.chapman@massey.ac.nz

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the university's Human Ethics Committee. The researcher named above is responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher, please contact Professor John O'Neill, Director (Research Ethics), telephone 06 350 5249, email humanethics@massey.ac.nz.

APPENDIX D:

THE QUESTIONNAIRE TWO INFORMATION SHEET



MASSEY UNIVERSITY
COLLEGE OF EDUCATION
TE KUPENGA O TE MĀTAURANGA

THE RELATIONSHIP BETWEEN SELF-REGULATED LEARNING AND THE USE OF PORTFOLIOS IN AN ONLINE LEARNING ENVIRONMENT

PARTICIPANT INFORMATION SHEET QUESTIONNAIRE

My name is Lalida Sasai. I am conducting research on the relationship between self-regulated learning and the use of portfolios in an online learning environment at postgraduate study level. I am seeking students doing the [REDACTED] programme to be participants because in this programme portfolios are a compulsory component. The research will involve a questionnaire at the beginning and end of the programme and face-to-face interviews.

The research will provide a useful contribution to current teaching and learning methods at tertiary study level and in particular will provide input into the development of the [REDACTED] programme in terms of portfolio use.

You are invited to complete this post questionnaire and by doing so your consent is assumed. The questionnaire consists of three sections: A) personal information; B) self-regulated learning strategies; and C) portfolio use. It will take approximately 30 minutes to complete.

The findings from your questionnaire will be analysed and presented in a manner such that you will remain anonymous. This information will be confidential and will be accessed only by the researcher and her supervisors. You will be asked your name on this survey. This is so that your responses can be linked to your responses to the survey at the beginning of the course. Your responses in the questionnaires will have no affect on your course grade.

As a participant, you have the right to:

- Decline to answer any particular question
- Withdraw from the study (up to three months after completing the questionnaire)
- Ask any questions about the study at any time during participation
- Provide information on the understanding that your name will not be used
- Be given access to a summary of the project findings when it is concluded

Name and contact details of researcher:

Lalida Sasai

School of Educational Studies

Massey University, College of Education

Private Bag 11 222

Palmerston North

PH 356 9099 ext 8804

L.sasai@massey.ac.nz

Supervisor

Professor James Chapman

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Private Bag 11 222

Palmerston North

PH 356 9099 ext 8938

J.chapman@massey.ac.nz

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the university's Human Ethics Committee. The researcher named above is responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher, please contact Professor John O'Neill, Director (Research Ethics), telephone 06 350 5249, email humanethics@massey.ac.nz.

APPENDIX E:

THE INTERVIEW INFORMATION SHEET



MASSEY UNIVERSITY
COLLEGE OF EDUCATION
TE KUPENGA O TE MĀTAURANGA

THE RELATIONSHIP BETWEEN SELF-REGULATED LEARNING AND THE USE OF PORTFOLIOS IN AN ONLINE LEARNING ENVIRONMENT

PARTICIPANT INFORMATION SHEET

INTERVIEW

My name is Lalida Sasai. I am about to conduct research on the relationship between self-regulated learning and the use of portfolios in an online learning environment at postgraduate study level. I am seeking students doing the [REDACTED] programme to be participants because in this programme portfolios are a compulsory component. The research will involve a questionnaire at the beginning and end of the programme and face-to-face interviews.

The research will provide a useful contribution to current teaching and learning methods at tertiary study level and in particular will provide input into the development of the [REDACTED] programme in terms of portfolio use. The research will also benefit students in helping them to use portfolios effectively and engage in online learning.

You are invited to participate to a semi-structured interview, lasting approximately 30-40 minutes. The purpose is to gain further understanding of your studies in relation to the [REDACTED] Programme.

The findings from the interview you provide will be analysed and presented in a manner such that you will remain anonymous. This information will be confidential and will be accessed only by the researcher and her supervisors. Your responses in the interview will have no affect on your course grade.

As a participant, you have the right to:

- Decline to answer any particular question

- Withdraw from the study at any time
- Ask any questions about the study at any time during participation
- Provide information on the understanding that your name will not be used
- Be given access to a summary of the project findings when it is concluded
- Ask for the recorder to be turned off at any time during the interview

Name and contact details of researcher:

Lalida Sasai

School of Educational Studies

Massey University, College of Education

Private Bag 11 222

Palmerston North

PH 356 9099 ext 8804

L.sasai@massey.ac.nz

Supervisor

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J.chapman@massey.ac.nz

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the university's Human Ethics Committee. The researcher named above is responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher, please contact Professor John O'Neill, Director (Research Ethics), telephone 06 350 5249, email humanethics@massey.ac.nz.

APPENDIX F: CONSENT FORM



MASSEY UNIVERSITY
COLLEGE OF EDUCATION
TE KUPENGA O TE MĀTAURANGA

**THE RELATIONSHIP BETWEEN SELF-REGULATED LEARNING
AND THE USE OF PORTFOLIOS IN AN ONLINE LEARNING
ENVIRONMENT**

PARTICIPANT CONSENT FORM

I have read the participant information sheet and have had the details of the study explained to me. Any questions I have, have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I give consent for my interview to be sound recorded.

I agree to participate in this study under the conditions set out in the information sheet.

My preferred time for the interview is:

My contact to arrange this interview is: (mobile number or email number):

Signature:

Date:

Full Name - printed

APPENDIX G:

QUESTIONNAIRE ONE

Self-regulated learning and portfolios

Information

Information sheet

THE RELATIONSHIP BETWEEN SELF-REGULATED LEARNING AND THE USE OF PORTFOLIOS IN AN ONLINE LEARNING ENVIRONMENT

My name is Lalida Sasal. I am about to conduct research on the relationship between self-regulated learning and the use of portfolios in an online learning environment at postgraduate study level. I am seeking students doing the [redacted] programme to be participants because in this programme portfolios are a compulsory component. The research will involve a questionnaire at the beginning and end of the programme and face-to-face interviews.

The research will provide a useful contribution to current teaching and learning methods at tertiary study level and in particular will provide input into the development of the [redacted] programme in terms of portfolio use. The research will also benefit students in helping them to use portfolios effectively and engage in online learning.

You are invited to complete this questionnaire and by doing so your consent is assumed. The questionnaire consists of three sections: 1) personal information; 2) self-regulated learning strategies; and 3) portfolio use. It will take approximately 25 minutes to complete.

The findings from your questionnaire will be analysed and presented in a manner such that you will remain anonymous. This information will be confidential and will be accessed only by the researcher and her supervisors. You will be asked your name on this survey. This is so that your responses can be linked to your responses to the survey at the end of the course. Your responses in the questionnaires will have no effect on your course grade.

As a participant, you have the right to:

- Decline to answer any particular question
- Withdraw from the study (up to three months after the completing the questionnaire)
- Ask any questions about the study at any time during participation
- Provide information on the understanding that your name will not be used
- Be given access to a summary of the project findings when it is concluded.

Name and contact details of researcher:

Lalida Sasal
School of Educational Studies
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Private Bag 11 222 Palmerston North
PH 356 9099 ext 8804, L.sasal@massey.ac.nz

Supervisor:

Professor James Chapman
Massey University, College of Education
Private Bag 11 222, Palmerston North
PH 356 9099 ext 8938, j.chapman@massey.ac.nz

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the university's Human Ethics Committee. The researcher named above is responsible for the ethical conduct of this research. If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher, please contact Professor John O'Neill, Director (Research Ethics), telephone 06 350 5240, email humanethics@massey.ac.nz.

Self-regulated learning and portfolios

Section One

About yourself

1. Name:

2. Gender:

☐

Male

☐

Female

3. Age:

☐

Up to 20

☐

21-30

☐

31-40

☐

41-50

☐

51-60

☐

More than 60

4. Years of experience working in special and inclusive education

☐

Up to 5

☐

6-10

☐

11-15

☐

16-20

☐

21-25

☐

26-30

☐

31-35

☐

36-40

☐

More than 40

5. What is your highest qualification?

☐

No formal qualification

☐

Diploma

☐

Bachelor degree

☐

Degree with Honours

☐

Postgraduate diploma

☐

Master's degree

☐

Doctorate

Self-regulated learning and portfolios

6. Have you participated in any online learning course before taking this course?

☐ Yes

☐ No

If yes, how many courses?

7. Please rate your level of experience in learning online

☐ 0

☐ 1

☐ 2

☐ 3

☐ 4

☐ 5

☐ 6

☐ 7

☐ 8

☐ 9

☐ 10

No
experience

Moderate
experience

Advanced
experience

8. How would you rate your skills as an online learner?

☐ 0

☐ 1

☐ 2

☐ 3

☐ 4

☐ 5

☐ 6

☐ 7

☐ 8

☐ 9

☐ 10

No skills

Moderate
skills

Advanced
skills

Self-regulated learning and portfolios

Section Two

About your study

9. How do you set your study goals?

Statements 10-14: Please use the scale below to rate the following statements in relation to the specialist teaching course

0 = Totally disagree

5 = Neutral

10 = Totally agree

10. I find it difficult to set learning goals for the domain areas in the specialist teaching course

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

11. I find it difficult to finish a piece of my work in the time I have set myself

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

12. I set short-term goals (daily or weekly) as well as long-term goals (monthly or for the semester)

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

13. I feel overwhelmed when I try to get an overview of the course

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

14. I make sure I am clear about the objectives of the course

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

15. Is there anything else you wish to comment on in relation to your goal setting in this course?

16. How confident are you that the amount of work you do in this course will be reflected in your grade?

Self-regulated learning and portfolios

Statements 17-23: Please use the scale below to rate your belief in your ability to...

0 = None

5 = Average

10 = High

17. actively engage in the learning activities (e.g. quiz, glossary)

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

18. resolve any difficulties while learning in this course

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

19. finish assignments by the deadlines given

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

20. do well on the assignments in this course

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

21. achieve the course learning outcomes

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

22. contribute meaningfully to the discussion forums

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

23. cope with the advanced level of this course

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Statements 24-26: Please use the scale below to rate your expectations in relation to the specialist teaching course

0 = Totally disagree

5 = Neutral

10 = Totally agree

I expect to...

24. develop a deeper understanding of the field of special and inclusive education after completing this course

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

25. apply what I learn in this course in my professional work

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

26. achieve the goals that I have set

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Self-regulated learning and portfolios

27. Is there anything else you wish to add in relation to your belief in your ability and your expectations in this course?

28. Please describe the learning strategies and time management skills that you use in relation to this course

Statements 29-47: Please use the scale below to rate the following statements in relation to the specialist teaching course

0 = Totally disagree

5 = Neutral

10 = Totally agree

29. I prefer challenging tasks to easy ones

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

30. I plan what I need to do in each learning domain

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

31. I connect the things I am reading about with what I already know

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

32. I draw on my professional experience to help my learning in this course

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

33. I use specific learning strategies to help me learn (e.g. concept maps)

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

34. I prepare my questions before posting them on to the discussion forum

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

35. I go beyond the set readings and tasks to master the course content

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

36. I ask myself questions to make sure I understand the course content

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

37. I use specific strategies to keep myself on track (e.g. time planner, rewards)

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Self-regulated learning and portfolios

38. Even when difficulties in the course content arise I keep my learning goals in mind

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

39. I start doing my assignment when it is close to the due date

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

40. I know the learning environment that best suits my needs

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

41. I set the learning environment that best suit my needs

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

42. When my studies do not go smoothly I prefer to talk it over with others

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

43. When I have study problems I do not expect much help from others

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

44. Others might think that I am incompetent if I ask for help

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

45. I know people who I can get support from when I have difficulties with my learning

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

46. If I have difficulties in my studies I try to cope on my own

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

47. I share my problems with my classmates online so we know what we are struggling with and how to solve our problems

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

48. Is there anything else you wish to add in relation to your learning strategies and time management in this course?

49. How do you monitor how effectively you are learning in this course?

Self-regulated learning and portfolios

Statements 50-62: Please use the scale below to rate the following statements in relation to specialist teaching course

0 = Totally disagree

5 = Neutral

10 = Totally agree

50. I identify which concepts I do not understand well

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

51. I do not worry much when I am confused about the course content

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

52. When necessary, I make changes to my learning strategies

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

53. I use feedback from others to improve my learning

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

54. I monitor my progress in relation to each learning activity

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

55. I compare my progress against the required learning outcomes

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

56. I record how often I apply knowledge gained from this course to my professional work

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

57. It is too time consuming to reflect on what I have learned from this course

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

58. I use formative assessment to gather information about my academic progress

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

59. I evaluate the degree to which my course objectives have been met

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

60. I am aware of the relevance of what I am learning

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

61. I find it difficult to keep going when problems arise during my learning practices

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Self-regulated learning and portfolios

62. I feel satisfied with the way I have managed my study in this course

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

63. Is reflecting on your learning important to you? Please comment on why or why not?

64. What is the minimum grade that you would consider to be a successful outcome for you?

65. Please list up to 5 factors that you think will be responsible for that outcome

1.

2.

3.

4.

5.

Statements 66-74: Please use the scale below to rate the impact the factors listed below will have on how well you think you will do in this course

0 = None

5 = Neutral

10 = Very high

66. Chance

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

67. Ability

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

68. Learning conditions at home

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

69. Effort

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

70. Help from others

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Self-regulated learning and portfolios

71. Interest in the material

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

72. Being organised

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

73. Tenacity

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

74. Easy material

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

75. What things interfere with or hinder your participation and learning in this course?

76. What things facilitate or help your participation and learning in this course?

Self-regulated learning and portfolios

Section Three

Portfolio use

Statements 77-91: Please use the scale below to rate the following statements

0 = Totally disagree

5 = Neutral

10 = Totally agree

I think that using a portfolio...

77. helps me to set my own learning goals more clearly

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

78. encourages me to spend more time focusing on my studies

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

79. helps me to reflect on my own learning

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

80. motivates me to learn

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

81. helps me to evaluate my own learning practices

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

82. enables me to identify the strengths and weaknesses of my learning

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

83. helps me to have more opportunities to share learning practices with others

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

84. helps me to understand what I am studying

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

I believe that...

85. I fully understand the process of using a portfolio for this course

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

86. I will continue developing a portfolio after completing this course

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Self-regulated learning and portfolios

87. there is no difference in using and not using a portfolio

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

88. using a portfolio is a hassle

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

89. using a portfolio increases my workload

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

90. if I have a choice, I would prefer not to develop a portfolio for this course

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

91. the advantages of using a portfolio outweigh the disadvantages

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

What are the advantages and disadvantages of using portfolio in relation to your learning?

92. Advantages:

93. Disadvantages:

94. To gain further information for the research findings, follow-up interviews will be conducted. Would you agree to being interviewed?

☐ Yes ☐ No

95. If yes, please provide your contact details

Name:

Phone:

Email:

...thank you for taking the time to complete this survey...

APPENDIX H:

INTERVIEW PROTOCOL

Interview Protocol

Q1. In relation to this course, the use of portfolios is compulsory. Which version of the portfolio are you using for this course (online my portfolios or word-document)?

(Prompts: Can you give me the reasons why you chose.....?)

Q2. Have you used a portfolio before?

(Prompts: For what purposes? What were the advantages/limitations?)

Q3. How well do you understand the creation and the use of portfolios in this course?

Q4. Are there any aspects of using a portfolio that you like or dislike in relation to this course?

(Prompts: What are the advantages and limitations? Why you like? or why don't you like?)

Q5. Has using a portfolio been helpful for your study?

(Prompts: if student says yes, ask-

-how has it been helpful?

-What role has it played in your learning?)

(If student says no, ask-

-why not?

-Do you think it has played any role in your learning?

Yes, ask-In what ways? No, ask- why not)

Q6. What factors if any have helped or hindered the construction of your portfolio?

Q7. Do you think using a portfolio will be useful in your professional development after this course?

(Prompts: if student says yes, ask in what ways?)

(If student says no, ask-why not?)

Q8. Do you think you will continue to add to your portfolio after this course?

Let's talk about SRL:

SRL has been described as taking responsibility for setting your own learning goals, selecting and using your own strategies and monitoring your own effectiveness for achieving your learning goals

Q9. Has the creation and use of portfolios in this course helped you set learning goals?

(Prompts: If student says yes, ask- how has it helped?)

(If student says no, ask- why is that?)

Q10. Do you feel confident in creating and using a portfolio in this course?

(Prompts: If student says yes, ask- how confident are you? What has contributed to your confidence?)

(If student says no, ask- why do you think you are not confident?)

Q11. How do you organise your study time?

(Prompts: Does a portfolio help you to do that?)

(Prompts: If student says yes, ask-in what ways?)

Q12. Has the creation and use of portfolios helped you to set your own learning strategies or improve your learning strategies in this course?

(Prompts: If student says yes, ask-in what ways)

(If student says no, ask-why not?)

Q13. Has the creation and use of portfolios helped you to monitor your own learning in this course?

(Prompts: if student says yes, ask- how?)

(If student says no, ask-why not?)

Q14. Do you think that using a portfolio helps you achieve your learning goals?

(Prompts: if student says yes, ask- how?)

(If student says no, ask-why not?)

Q15. Has the creation and use of portfolios helped you to reflect on your learning in this course?

(Prompts: if student says yes, ask- please tell me about that, what have you done, how has it helped?)

(If student says no, ask-why not?)

Q16. Do you think using a portfolio in general helps regulate your learning?

(Prompts: how/ why not)

Q17. Would you consider using a portfolio to support your learning in other situations besides this course?

(Prompts: where, when, why?/why not?)

Q18. Is there anything else you would like to add?

APPENDIX I: INTERVIEW SHEDULES

Interview Schedules

Date (2011)	Time	Student	Room
Monday 29 August	9.30-10.30am	S1	The Large Group Study Room (level3)
	12.30-1.30pm	S2.	The Library's Parent's Room (level2)
	5.30-6.30pm	S3	The Large Group Study Room (level3)
Tuesday 30 August	12.30-1.30pm	S4	The Large Group Study Room (level3)
Wednesday 31 August	12.30-1.30pm	S5	The Large Group Study Room (level3)
	5.30-6.30pm	S6	The Large Group Study Room (level3)
Thursday 1 September			