MOTIVATIONAL BELIEFS AND LEARNING STRATEGY USE: THE CASE OF GRADUATE PRE-SERVICE TEACHERS

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Abstract

This paper presents the findings of a study to investigate graduate pre-service teachers' motivational beliefs and learning strategy use. One hundred and sixty-four graduate pre-service teachers (60 males, 104 females) enrolled in a Diploma in Education Program participated in this study. Their responses to an adapted version of the Motivated Strategies for Learning Questionnaire (MSLQ) (Duncan & McKeachie, 2005; Pintrich, Smith, Garcia, & McKeachie, 1991) provided the data on motivational beliefs and learning strategy use. The results show that graduate pre-service teachers' motivational beliefs for the six motivation subscales were in the 'high' and 'very high' categories, with mean values ranging from 4.81 to 5.86. Meanwhile, they reported of 'high' use of learning strategies, with mean values ranging from 4.88 to 5.65, for the nine learning strategy use subscales. Independent samples *t*-test results showed that there was no significant gender difference ($p > .05$) in motivational beliefs overall as well as for individual subscales. However, overall there was significant gender difference ($p < .05$) in the use of learning strategies. Female graduate pre-service teachers reported significantly greater use of one of the learning strategy subscales, that is, management of time and study environment, than males did. There was no significant gender difference for all other learning strategies subscales. In conclusion, implications of the findings and suggestions for further research are put forward.

Keywords: motivational beliefs, learning strategy use, graduate pre-service teachers, gender differences

Abstrak

Kertas kerja ini membentangkan dapatan kajian yang berkaitan dengan kepercayaan motivasi dan penggunaan strategi pembelajaran guru ijazah praperkhidmatan. Seramai seratus enam puluh empat orang guru ijazah praperkhidmatan (60 orang lelaki, 104 orang perempuan) yang berdaftar dalam Program Diploma Pendidikan terlibat dalam kajian ini. Data kajian kepercayaan motivasi dan penggunaan strategi pembelajaran diperoleh daripada respons mereka kepada soal selidik versi *Motivated Strategies for Learning Questionnaire* (MSLQ) (Duncan & McKeachie, 2005; Pintrich, Smith, Garcia, & McKeachie, 1991) yang telah diadaptasi. Dapatan menunjukkan bahawa kepercayaan motivasi guru ijazah praperkhidmatan untuk keenam-enam subskala berada dalam kategori 'tinggi' dan 'sangat tinggi', dengan nilai min antara 4.81 hingga 5.86. Untuk penggunaan strategi pembelajaran juga melaporkan dapatan berada pada tahap 'tinggi' dengan nilai min antara 4.88 hingga 5.65 bagi kesemua sembilan subskala strategi pembelajaran. Keputusan ujian-*t* sampel bebas menunjukkan bahawa tidak ada perbezaan yang signifikan ($p > .05$) bagi setiap subskala kepercayaan motivasi dan juga secara keseluruhannya berdasarkan jantina. Namun, terdapat perbezaan jantina yang signifikan ($p < .05$) bagi penggunaan strategi pembelajaran pada keseluruhannya. Dapatan kajian melaporkan bahawa guru ijazah praperkhidmatan perempuan menunjukkan penggunaan salah satu subskala strategi pembelajaran, iaitu pengurusan masa dan suasana pembelajaran yang secara signifikan lebih tinggi berbanding dengan lelaki. Tidak ada perbezaan jantina yang signifikan bagi semua subskala strategi pembelajaran yang lain. Sebagai rumusan, implikasi dapatan dan cadangan penyelidikan lanjutan dikemukakan.

Kata kunci: kepercayaan motivasi, penggunaan strategi pembelajaran, guru ijazah praperkhidmatan, perbezaan jantina

Introduction

Educators are often frustrated with the challenge of how to motivate the ever increasing number of students who are psychologically, socially, and academically unprepared for the demands of taking a course. Such students usually exhibit maladaptive behavior such as lack of interest in learning

activities, tardiness, even hostility towards authority. Motivation is one of the most important components of learning in any educational environment. Ryan and Deci (2000) define motivation as concerning energy, direction, persistence, and equifinality of all aspects of activation and intention. They believe that to be motivated is to be moved to do something. Students motivated to learn about a topic are apt to engage in activities they believe will help them learn, such as attend carefully to the instruction, mentally organize and rehearse the material to be learned, take notes to facilitate subsequent studying, check their level of understanding, and ask for help when they do not understand the material (Zimmerman, 2008). Motivation is considered to be one of the best determining factors for student success. A key point is that motivation bears a reciprocal relation to learning and performance; that is, motivation influences learning and performance and what students do and learn influences their motivation (Pintrich, 2003).

Early research on motivation was influenced by behavioral views of learning, with, as McInerney (2005, p. 591) put it, "a pinch of intrinsic motivation and variability theory thrown in to leaven the process." These investigations, driven by reinforcement theory, examined the effects of intrinsic versus extrinsic rewards on motivation. Meanwhile, humanistic approaches to motivation emphasized personal freedom, choice, self-determination, and striving for personal growth and self-actualization (Rogers & Freiberg, 1994). However, there have been advances in research on cognitive and social cognitive theories of motivation (Bandura, 1986). Cognitive and social cognitive theories of motivation include theories such as attribution theory, expectancy-value theory, goal theory, self-determination theory, and self-related constructs such as self-concept, self-efficacy, and self-regulation. This growth in cognitive and social cognitive theories of motivation is one of the most significant of any area of educational psychology in recent years (McInerney, 2005). These motivation studies have provided educators with greater insights on how to lead students to success in learning.

Through the lens of social cognitive learning theorists (Bandura, 2000; Duncan & McKeachie, 2005; Pintrich, Smith, Garica, & McKeachie, 1993), there are several motivational constructs that influence students' motivation to learn. These constructs can be classified into three general components. The first component refers to individuals' perceptions about their ability to accomplish a task. It includes constructs such as self-efficacy, test anxiety, locus of control, and attributions. The second component pertains to individuals' reasons or purposes for engaging in a task. It encompasses constructs such as goal orientation, task value, and intrinsic and extrinsic motivation. The third component, which includes individuals' techniques and strategies for accomplishing a task, refers to self-regulation of learning. In the following paragraphs, the definition and research findings concerning each of the above motivational constructs are presented.

Perceptions of Ability

Perceptions of ability play an important role in all cognitive theories of motivation. This includes constructs such as self-efficacy, test anxiety, locus of control, and attributions. These motivational constructs answer the student's question: "Can I do this task?"

Self-efficacy: Self-efficacy is a major component of Bandura's (1986) social cognitive learning theory. Bandura (1986) defined self-efficacy as referring to people's judgments of their capabilities to organize and execute courses of actions required to attain designated types of performance. These perceptions of self-efficacy influence individuals' actual performances, emotions, choices of behavior, and finally the amount of effort and perseverance expended on an activity (Bandura, 2004). According to Bandura (1986), individuals acquire information to help them assess self-efficacy from four principal sources: (a) enactive attainments, (b) vicarious experiences, (c) verbal persuasion, and (d) physiological indexes. Individuals' own performances (enactive attainments), especially past successes and failures, offer the most reliable source for assessing efficacy. Observation of similar peers performing a task (vicarious experiences) conveys to observers that they too are capable of accomplishing that task. A form of verbal persuasion is when individuals are encouraged to believe that they possess the capabilities to perform a task (e.g., being told "you can do this"). Finally, individuals might interpret bodily symptoms (physiological experiences) such as increased heart rate or sweating as a signal for anxiety or fear, resulting in an indication of their own lack of skills. Information gained through these sources is cognitively appraised before an efficacy judgment is made (Bandura, 1986). Various researchers (Caprara et al., 2008; Lane & Lane, 2001; Liem, Lau, & Nie, 2008) have established that there is a strong positive correlation between self-efficacy and academic performance. In fact, studies have shown that regardless of age, gender, domains, disciplines and countries, a student with higher sense of self-efficacy will achieve better academic performance (Louis & Mistele, 2011).

Test Anxiety: Test anxiety concerns students' feelings of self-doubt, tension, and a general uneasiness concerning taking tests. Researchers (Chapell et al., 2005; Oludipe, 2009; Rizwan Akram Rana & Nasir Mahmood, 2010) have consistently reported a negative correlation between virtually every aspect of school achievement and a wide range of anxiety measures. Generally, anxiety can either be a trait anxiety or a state anxiety. Trait anxiety is a stable characteristic or trait of the person. State anxiety is one which is aroused by some temporary condition of the environment such as an examination, accident, and punishment. Academic anxiety is a kind of state anxiety which relates to the impending danger from the environment of the academic institutions including teachers, certain subjects like Mathematics and English (Lau, Eley & Stevenson, 2006). Anxiety can be

both a cause and an effect of school failure – students do poorly because they are anxious, and their poor performance increases anxiety. Anxiety seems to have both cognitive and affective components. The cognitive side includes worry and negative thoughts, thinking about how bad it would be to fail and worrying that one will fail. The affective side involves psychological and emotional reactions such as sweaty palms, upset stomach, racing heartbeat, or fear (Pintrich & Schunk, 2002). Research shows that whenever there are pressures to perform, severe consequences for failure, and competitive comparisons among students, anxiety prevails (Wigfield & Eccles, 1989).

Locus of control: Another construct influencing students' perceptions of ability is locus of control. Locus of control refers to one's belief in his or her abilities to control life events (Strauser, Ketz, & Keim, 2002). According to this theory, individuals should be more motivated to the extent that they feel they are in control of their own successes and failures (Eccles & Wigfield, 2002). Locus of control is a relatively stable trait, a belief about the extent to which behaviors influence successes or failures (Weiner, 2000). It affects learning, motivation, and behavior (Schunk, 2000). Individuals with an internal locus of control believe that success or failure is due to their own efforts or abilities. On the other hand, individuals with an external locus of control are more likely to believe that other factors, such as luck, task difficulty, or other people's actions, cause success or failure. Locus of control is an important factor in explaining students' school performance. Several researchers investigating locus of control in traditional environments found that students with a high internal locus of control earned better grades and test scores than did students of the same intelligence and with a low internal locus of control (Syeda Salma Hasan & Ruhi Khalid, 2014; Yazdanpanah, Shragrad & Rahimi, 2010).

Attributions: Causal attributions are individuals' perceptions of the causes of various achievement outcomes (Weiner, 2000). Students may attribute their successes or failures to two general types of antecedent conditions: environmental factors and personal factors. Environmental factors include teacher feedback, social norms, or situational features. Personal factors include causal patterns, personal bias, prior knowledge, or individual differences. These two general categories of perceived causes influence the actual attributions that individuals will make in terms of whether they attribute their failure to low ability, lack of effort, bad luck, a hard test, a bad mood, fatigue, unfairness, anxiety, or just about any other explanation, justification, or excuse students produce for failure at a test or task. According to Weiner (1986, 2000), most of the causes to which students attribute their successes or failures can be characterized in terms of three dimensions: (a) locus of causality, (b) stability, and (c) control. The locus-of-causality dimension refers to whether a cause is perceived as being internal or external to the individual. For example, ability and effort are both

classified as internal causes, whereas task difficulty and luck are classified as external causes. The stability dimension refers to whether the cause is fixed and stable (e.g. aptitude and task characteristics), or whether it is variable and unstable across situations and over time (e.g., skills, knowledge, and chance). The controllability dimension refers to how much control a person has over a cause (Weiner, 2000).

Reasons for Engaging in a Task

Individuals' reasons, purposes or incentives for engaging in a task also play an important role in cognitive theories of motivation. This includes constructs such as goal orientation, task value, and intrinsic and extrinsic motivation to learn. It answers the question "Why am I doing this task?"

Goal orientation: An achievement goal is what an individual is striving to accomplish (Locke & Latham, 2002). Goals are specific targets. There are four main gaol orientations, namely mastery (learning), performance (looking good), work-avoidance, and social (Murphy & Alexander, 2000; Schunk, Pintrich & Meece, 2008). Learning-goal-oriented individuals extend their learning beyond the minimum required and pursue the learning process as long as they perceive that they are making progress. They seek challenging tasks and increase their effort in the face of difficulty. Learning goal-oriented students are also more likely to engage in self-regulatory activities such as the use of monitoring, planning, and deep-level cognitive strategies. Students who adopt learning goals tend to find the topic under study more intrinsically rewarding. Individuals oriented toward performance goals are concerned with positive evaluations of their abilities in comparison to others. They are focused on how they are judged by others (such as peers, teachers, or parents). They want to look smart, and they try not to seem incompetent. For these reasons, they may avoid challenging tasks and exhibit low persistence when they encounter difficult work (Maehr & Midgley, 1991). By doing so, they adopt failure-avoiding strategies such as pretending not to care, making a show of "not really trying," or simply giving up. The evaluation of their performance is what matters to them, instead of learning the course material. Individuals with a performance-goal orientation tend to process information at a superficial level and generally fail to pursue learning beyond the level necessary to achieve positive recognition. Meanwhile, social goal orientation depends on a wide variety of needs and motives such as maintaining friendships, peer influence, having fun, and bringing honor to the family or team (Pintrich, 2003; Ryan & Deci, 2000).

Task value: Task value beliefs refer to students' perceptions of the importance of the task, their personal interest in the task, utility value of the task for future goals, and cost (Eccles & Wigfield, 2001). Perceptions of task value predict the choices students make. According to Eccles and Wigfield (2002), the value of a given task or activity has four components: attainment value, which refers to the personal value of doing well on a task; intrinsic

value, which refers to subjective interest or enjoyment of performing a task; utility value, which refers to the extent to which task completion is perceived to facilitate current or future goals; and cost, which refers to the negative aspects of engaging in a given task, such as anxiety and fear of failure (Eccles & Wigfield, 2002; Stipek, 1996). Students who believe that the task is important, of interest or useful to them will be more motivated to expend more effort at the task. Individuals who possess the constituent skills and a strong sense of self-efficacy that they can execute them well may not choose to perform the activities unless they have the incentive to do so. Pintrich and De Groot (1990) found that intrinsic value was strongly related to use of cognitive strategies and self-regulation. Students who were motivated to learn the material and believed that their schoolwork was interesting and important were more cognitively engaged in the learning task. Ertmer, Newby, and MacDougall (1996) made a similar observation in their study on veterinary students' response to case-based instruction. Students who perceived the approach to be beneficial used more reflective self-regulatory strategies than those who appeared to fluctuate in their perceptions concerning the value of the approach. Therefore, how students view a task creates a value that affects motivation and engagement in that task.

Intrinsic and extrinsic motivation: Students' reasons or purposes for engaging in tasks are also influenced by their relative intrinsic or extrinsic motivation. Motivation that stems from factors such as interest or curiosity is called intrinsic motivation. Intrinsic motivation is the natural tendency to seek out and conquer challenges as individuals pursue personal interests and exercise their capabilities (Anderman & Anderman, 2009; Reiss, 2004). When students are intrinsically motivated, they tend not to need any incentives because the activity itself is rewarding to them. In contrast, extrinsic motivation is motivation to engage in an activity as a means to an end. Students who are extrinsically motivated tend to work on tasks because they believe that participation will result in desirable outcomes such as a reward (a good grade, or a diploma), teacher praise, or avoidance of punishment (Reeve & Jang, 2006).

Strategies for Accomplishing a Task

Individuals' strategies for accomplishing a task also play an important role in cognitive theories of motivation. This concerns students' self-regulatory practices, which include cognitive and metagcognitive strategies, and resource management strategies. This construct answers the question: "How can I do this task?" Self-regulation refers to students' ability to understand and control their learning (Schunk, 2005; Zimmerman, 2002). According to Zimmerman (1994), learners who self-regulate possess three important characteristics. First, they actively control their own learning by employing a range of cognitive strategies that assist in the construction of meaning and retention of information. Second, learners mindfully use

metacognitive strategies such as planning and monitoring to control their own progress towards their educational goals. Finally, they are intrinsically motivated, focused upon the task at hand, and thoughtfully control emotional difficulties. Students who monitor and regulate their own learning tend to overcome more educational difficulties than students who do not (Zimmerman, 2008).

Cognitive and metacognitive strategies: Self-regulated students, who employ cognitive and metacognitive strategies plan, organize, self-instruct, and self-evaluate at various stages during the process of information acquisition. Cognitive strategies are the behaviors and thoughts in which students are engaged in while studying. Metacognition entails the management of affective and motivational states, and metacognitive strategies can improve persistence at challenging tasks (Martinez, 2006). Pintrich and De Groot (1990) in constructing the MSLQ categorized cognitive and metacognitive strategies and compared within the contextual environment of a specific course. These categories include (a) rehearsal, (b) elaboration, (c) organization, (d) critical thinking, and (e) metacognitive self-regulation strategies. Rehearsal strategies include naming items from a list to be learned, actively reading assignments according to a plan, listening to lectures, and rewriting class notes. Elaboration strategies require students to edit notes, compare reading assignments with lecture notes, summarize, paraphrase, and to find their own examples from real-world events and problems. Organization strategies include outlining, grouping, selecting the main idea from reading passages, and paying attention to headings, subheadings, diagrams, tables, figures, charts, and graphs. Critical thinking strategies refer to the degree to which students apply previous knowledge to new situations to solve problems, make decisions, or make critical evaluations with respect to standards or excellence. Finally, metacognitive self-regulation refers to the awareness and control of cognition (Duncan & McKeachie, 2005; Pintrich et al., 1991). Planning, monitoring, and regulating are examples of processes that build metacognitive self-regulatory activities.

Resource management strategies: Besides self-regulation of cognition and metacognition, students must be able to (a) manage and regulate their time and their study environments, (b) monitor their effort, (c) learn from peers, and (d) seek help and support from peers and instructors (Pintrich & De Groot, 1990). These resource management strategies enable students to manage their environment and the available resources (Duncan & McKeachie, 2005; Pintrich et al. 1991). Time management involves scheduling a time to study, planning weeks or months ahead, choosing a location to study, and effectively using the study time for the realistic setting of goals. Study environment management refers to the physical place where students study. Choosing a location provides students with control over possible distractions or availability of supportive materials or people. Effort monitoring refers to students' ability to monitor and manage their effort and

attention in order to persist through boring tasks as well as distractions from those tasks. Peer learning refers to dialogue between peers and exchange of ideas and information that can help students clarify course materials and discover information that would not be able to do on their own. Finally, help seeking refers to the process where students ask peers and instructors to clarify confusing course material and hence expedite achievement.

Gender Differences in Motivational Beliefs and Learning Strategy Use

A further aim of this study was to investigate gender differences in pre-service teachers' motivational beliefs and learning strategy use. Previous research indicates that gender is one of the variables that have been related to differences found in self-regulated learning. Bembenutty (2007) investigated gender differences in academic achievement and learners' use of self-regulation of learning and reported that males had lower rehearsal scores than females. It was also reported that male students had less frequent use of organizational strategies than females. Yukselturk and Bulut (2009) analyzed gender differences in self-regulated learning components, motivational beliefs, and achievement in self-regulated online-learning environments and found that test anxiety was a significant factor in female students' achievement and self-efficacy for learning and performance as well as task value were significant factors in male students' achievement. Their research reported no statistically significant gender differences in terms of motivation, self-regulation, and achievement. Meanwhile, a study by Balam and Platt (2014) reported that there were no statistically significant differences between male and female undergraduate students in motivation or learning strategies. Erol Suzuk, Cem Gurel and Hakan Olgun (2014), in a study involving high school students, found that students' scores on motivation and learning strategies differ significantly according to gender in some sub factors namely intrinsic goal orientation", "task value", "control of learning beliefs", and "self-efficacy for learning and performance". A more recent study by Balam (2015) also found that there was no statistically significant difference between male and female post-graduate students in terms of motivation or learning strategies. There were, however, differences across the dimensions, such as extrinsic goal orientation, test anxiety (motivation), effort regulation, and peer learning (learning strategies). The present study aimed to investigate the situation among local graduate pre-service.

Statement of the Problem

The above review of literature shows that motivational constructs such as self-efficacy, test anxiety, locus of control, attributions, goal orientation, task value, intrinsic and extrinsic motivation, and self-regulated learning strategies such as cognitive and metacognitive strategies and resource management strategies greatly impact students' motivation to learn and, subsequently, their academic performance. However, there are differing findings concerning gender differences in motivation and the use of specific

learning strategies. Furthermore, as Boekaerts (1998, p. 1) observed, "the research findings of student learning, motivation, and self-regulation may not be generalizable to classrooms in different cultures. Most research findings are culture bound." Boekaerts (1998, p. 1) added, "moreover, pedagogical methods and social practices are by definition culturally embedded and should be transplanted only with great caution." Besides that, Duncan and McKeachie (2005, p. 119) cautioned that the social-cognitive model on which the MSLQ is based "assumes that students' responses might vary as a function of different courses, so that the same individual might report different levels of motivation or strategy use depending on the course." A review of the local literature on MSLQ research also shows that there are few documented studies on the motivational beliefs and learning strategy use among graduate pre-service teachers. There have been studies on validation and adaptation of MLSQ aimed to assess students' use of self-regulated learning (Sadiah Baharon et al., 2009), and self-regulated learning and achievement (Azlina Mohd Kosnin, 2007) but hardly any investigate motivational beliefs and learning strategy use among graduate pre-service teachers. To fill the gap in this area of research, the present study therefore aimed to assess local graduate pre-service teachers' motivational beliefs and their self-regulation practices.

Purpose of the Study

The main aim of this study was to investigate the motivational beliefs and learning strategy use of graduate pre-service teachers. This study provides insights into motivational beliefs such as self-efficacy, test anxiety, attributions, task value, goal orientations, and efforts at self-regulation of learning, aspects that are not easily apparent to teacher-educators in their daily interactions with the graduate pre-service teachers. The findings of this study will, therefore, be useful to teacher-educators in planning activities that could increase awareness and even adjustment of pre-service teachers' motivational beliefs and self-regulatory practices with the aim to make them better learners and subsequently, better future teachers.

Objectives of the Study

This study set out to assess motivational beliefs and learning strategy use as well as investigate whether there are any gender differences in motivational beliefs and learning strategy use of pre-service teachers. Specifically, this study aimed to:

1. Assess motivational beliefs and learning strategy use of graduate pre-service teachers.

2. Investigate whether there are any significant gender differences in motivational beliefs and learning strategy use of graduate pre-service teachers.

Method

Participants

Participants were 164 graduate pre-service teachers (60 males, 104 females) enrolled in a Diploma in Education Program for graduate pre-service teachers in a teacher education institute in Sarawak. These graduate pre-service teachers were in 11 intact groups selected at random from a total of 14 groups of graduate pre-service teachers. The mean age of the participants was 26.73 years, *SD* = 2.34. Fifty-five graduate pre-service teachers (20 males, 35 females) from the three remaining groups of graduate pre-service teachers were involved in the pilot study.

Instrument

Motivated Strategies for Learning Questionnaire

An adapted version of the MSLQ, an 81-item, self-report instrument designed to assess college students' motivational orientations and their use of different learning strategies (Pintrich, et al., 1991) was used for data collection. The MSLQ was founded on the assumption that motivational variables and learning strategy use are changeable across tasks (Duncan & McKeachie, 2005), an assumption recently shown to be valid by Rotgans and Schmidt (2009). This instrument consists of two sections: one section to assess motivation beliefs, and another to assess use of SRL strategies. The motivation scales tap into three broad areas namely: (1) value, which include intrinsic goal orientation (Items 1, 16, 22, 24), extrinsic goal orientation (Items 7, 11, 13, 30), and task value (Items 4, 10, 17, 23, 26, 27), (2) expectancy, which include control beliefs about learning (Items 2, 9, 18, 25), self-efficacy for learning and performance (Items 5, 6, 12, 15, 20, 21, 29, 31); and (3) affect, which refers to test anxiety (Items 3, 8, 14, 19, 28). The learning strategies section is comprised of nine scales, which can be distinguished as cognitive, metacognitive, and resource management strategies. The cognitive strategies scales include (a) rehearsal (Items 39, 46, 59, 72), (b) elaboration (Items 53, 62, 64, 67, 69, 81), (c) organization (Items 32, 42, 49, 63), and (d) critical thinking (Items 38, 47, 51, 66, 71). Metacognitive strategies are assessed by one large scale that includes planning, monitoring, and regulating strategies (Items 33, 36, 41, 44, 54, 55, 56, 57, 61, 76, 78, 79). Resource management strategies include (a) managing time and study environment (Items 35, 43, 52, 65, 70, 73, 77, 80); (b) effort management (Items 37, 48, 60, 74), (c) peer learning (Items 34, 45, 50), and (d) help-seeking (Items 40, 58, 68, 75). All items are Likert scale items and respondents use a 7-point option format ranging from *1 = "Not at all true of me"* to *7 = "Very true of me"* to respond to each item. Eight of the 81 items (Items 33, 37, 40, 52, 57, 60, 77, & 80) are reverse scored. The MSLQ has been used extensively by hundreds of researchers and countless instructors either in part or in its entirety in many different research studies. The utility of the theoretical model and the operationalization of the MSLQ scales were established through

confirmatory factor analyses by Pintrich, Smith, Garcia, and McKeachie (1993). The results indicated that the MSLQ showed reasonable factor validity (for complete results see Duncan & McKeachie, 2005; Pintrich et al., 1993). Internal consistency estimates of reliability for all the 15 subscales (Cronbach's Alpha) and zero-order correlations between the different motivational and cognitive scales (Pintrich et al.) showed that the MSLQ had relatively good internal reliability. A recent meta-analytic review by Credé and Phillips (2011, p. 6) suggests that the "MSLQ is a reasonably reliable measure of constructs, some of which exhibit meaningful relationships with college academic performance."

In the present study, the MSLQ was translated into Bahasa Melayu to facilitate respondents' understanding of the items in the questionnaire. The three-step back-translation procedure (Brislin, 1986) was used to check on the equivalence of the English and Bahasa Melayu version. The Bahasa Melayu version was next pilot-tested on the three groups of graduate pre-service teachers (N = 55) not involved in the actual study. Cronbach Alpha values for the motivation subscales ranged from .58 to .88 while those for learning strategies subscales ranged from .50 to .78. The test-retest stability (after two weeks) correlation values for the motivation subscales ranged from .48 to .75, all $ps < .01$, while those for learning strategies subscales ranged from .41 to .66, all $ps < .01$ for eight of the subscales and .33, $p < .05$ for metacognitive self-regulation. The Cronbach Alpha values for the actual sample were moderately high for motivation subscales, with values ranging from .61 to .87, while those for learning strategies subscales were moderate, ranging from .56 to .84 for all except two subscales which had low Cronbach Alpha values, namely, effort regulation (.34) and help seeking (.23). Generally, the items in the Bahasa Melayu version of the MSLQ Scale had moderately high internal consistency.

Procedure

The MSLQ was administered to each intact group with the help of the monitor of each group when the graduate pre-service teachers had been in the one-year program for four months. Participants were told that they were involved in a study to investigate motivational beliefs and use of learning strategies. They were told that there are no right or wrong answers. What was important was that they responded as accurately as possible to the statements in the questionnaire. Most of the participants completed the 81-item questionnaire in 45 minutes.

Data Analysis

To assess motivational beliefs and learning strategy use, descriptive statistics were computed to obtain means and standard deviation values for all the items and subscales in the MSLQ. The mean values were classified into five arbitrary categories (Table 1) to describe the level of motivational beliefs and learning strategy use of graduate pre-service teachers.

Meanwhile, independent samples *t*-test was used to investigate gender differences in motivational beliefs and learning strategy use of graduate pre-service teachers.

Table 1

Range of mean values for each category

Category	Mean range
Very Low	1.00 - 2.20
Low	2.21 - 3.41
Medium	3.42 - 4.62
High	4.63 - 5.83
Very High	5.84 - 7.00

Findings and Discussion

Graduate Pre-Service Teachers' Motivational Beliefs and Learning Strategy Use

Motivational Beliefs

One of the aims of this study was to assess graduate pre-service teachers' motivational beliefs. Table 2 presents findings on the means and standard deviations for the six subscales of motivational beliefs. Generally, the mean values for the subscales were within the categories of 'very high' (task value, control of learning beliefs, intrinsic goal orientation, and extrinsic goal orientation) and 'high' (self-efficacy for learning and performance, and test anxiety) for all the subscales (overall mean = 5.56, *SD* = 0.66). The findings show that task value was given the highest rating (*M* = 5.86). As shown in Table 3, three of the six items in the task value subscale (Items 10, 23 & 27) had very high mean values (*M* = 6.07, 5.99 & 6.01 respectively). This shows that graduate pre-service teachers were motivated to study because they saw the importance (Items 10 & 27) and usefulness (Item 23) of the course to them. Perhaps this explains why graduate pre-service teachers generally report of a high level of usage of learning strategies (refer to the section on Learning Strategy Use). Meanwhile, the findings show that graduate pre-service teachers also suffer from test anxiety (*M* = 4.81). The highest mean value for this subscale was for Item 14 (*M* = 5.57) (refer to Table 3), indicating that when they take tests they think of the consequences of failing (cognitive component of test anxiety), followed by Item 28 (*M* = 5.05), that is, they feel their heart beating fast when taking an examination (affective component of test anxiety). However, it is heartening to note that graduate pre-service teachers have internal locus of control over their own learning (*M* = 5.71), which, as researchers (Syeda Salma Hasan & Ruhi Khalid, 2014; Yazdanpanah, Shragrad & Rahimi, 2010) have found, is associated

with better grades and test scores. Graduate pre-service teachers believed that if they try hard enough, then they will be able to understand the course material (Item 18, *M* = 6.07), and if they study in appropriate ways, then they will be able to learn the material in the course (Item 2, *M* = 5.98).

Table 2

Means and Standard Deviations for Motivational Beliefs Subscales (N = 164)

No.	Motivational Belief	Means	Standard Deviation
1	Intrinsic goal orientation	5.70	0.78
2	Extrinsic goal orientation	5.70	0.95
3	Task value	5.86	0.75
4	Self-efficacy for learning and performance	5.55	0.78
5	Control of learning beliefs	5.71	0.79
6	Test anxiety	4.81	1.08
	Overall	5.56	0.66

Table 3

Means and Standard Deviations for Motivational Beliefs (N = 164)

Item No.	Item	Means	Standard Deviation
1	In a class like this, I prefer course material that really challenges me so I can learn new things.	5.52	1.05
2	If I study in appropriate ways, then I will be able to learn the material in this course.	5.98	0.94
3	When I take a test I think about how poorly I am doing compared with other students.	4.23	1.82
4	I think I will be able to use what I learn in this course in other courses.	5.79	1.01
5	I believe I will receive an excellent grade in this class.	5.57	1.14
6	I'm certain I can understand the most difficult material presented in the readings for this course.	5.00	1.17
7	Getting a good grade in this class is the most satisfying thing for me right now.	5.87	1.23
8	When I take a test, I think about items on other parts of the test I can't answer.	5.01	1.41
9	It is my own fault if I don't learn the material in this course.	5.68	1.17

10	It is important for me to learn the course material in this class.	6.07	0.91
11	The most important thing for me right now is improving my overall grade point average, so my main concern in this class is getting a good grade.	5.55	1.23
12	I'm confident I can learn the basic concepts taught in this course.	5.88	0.87
13	If I can, I want to get better grades in this class than most of the other students.	6.03	1.02
14	When I take tests, I think of the consequences of failing.	5.57	1.50
15	I'm confident I can understand the most complex material presented by the instructor in this course.	5.29	0.98
16	In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn.	5.85	0.99
17	I am very interested in the content area of this course.	5.63	1.02
18	If I try hard enough, then I will understand the course material.	6.07	0.92
19	I have an uneasy, upset feeling when I take an exam.	4.20	1.75
20	I'm confident I can do an excellent job on the assignments and tests in this course.	5.53	1.06
21	I expect to do well in this class.	5.87	0.94
22	The most satisfying thing for me in this course is trying to understand the content as thoroughly as possible.	5.84	1.00
23	I think the course material in this class is useful for me to learn.	5.99	0.88
24	When I have the opportunity in this class, I choose course assignments that I can learn from even if they don't guarantee a good grade.	5.60	1.17
25	If I don't understand the course material, it is because I didn't try hard enough.	5.13	1.51
26	I like the subject matter of this course.	5.68	1.00
27	Understanding the subject matter of this course is very important to me.	6.01	0.92
28	I feel my heart beating fast when I take an exam.	5.05	1.57
29	I'm certain I can master the skills being taught in this class.	5.54	1.04
30	I want to do well in this class because it is important to show my ability to my family, friends, employer, or others.	5.34	1.47
31	Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this class.	5.75	0.99
	Overall	5.55	0.63

Graduate pre-service teachers were also highly motivated to learn extrinsically, as shown by the high mean values for Items 7 (*M* = 5.87) and 13 (*M* = 6.03). Getting good grades was an important source of motivation for them to learn. High mean values were also obtained for intrinsic goal orientation, particularly for Item 16 (*M* = 5.85) and Item 22 (*M* = 5.84) which refer to curiosity and understanding course content respectively as motivation to learn. The findings also show that generally graduate pre-service teachers had high self-efficacy for learning and performance (*M* = 5.55), with high mean values for Item 12 (*M* = 5.88) and Item 21 (*M* = 5.87) which indicate confidence in being able to learn course content and expecting to do well in class respectively.

Learning Strategy Use

Regarding learning strategy use, the findings on learning strategy use subscales (Table 4) show that generally graduate pre-service teachers' use of learning strategies was in the category of 'high' (*M* = 5.29), with mean values ranging from 4.88 to 5.65. The three highest mean values was for elaboration strategies (*M* = 5.65), followed by organization strategies (*M* = 5.56), and peer learning strategies (*M* = 5.50). This shows that graduate pre-service teachers apply elaboration strategies such as pulling together information from different sources (Item 53, *M* = 5.60), relating ideas from different courses (Item 62, *M* = 5.54), relating the material to prior knowledge (Item 64, *M* = 5.73), writing brief summaries (Item 67, *M* = 5.70), make connections between the readings and concepts from lectures (Items 69, *M* = 5.60), and applying ideas from course readings in other class activities such as lecture and discussion (Item 81, *M* = 5.73) (Table 5). It is encouraging to note that they use these elaboration strategies as this ensures understanding and meaningful learning of course content and subsequently improves their memory for what they have learned. They also use organization strategies such as making an outline of materials to organize thoughts (Item 32, *M* = 5.55), trying to identify the most important ideas in the readings and notes (Item 42, *M* = 5.63), organizing course materials graphically (Item 49, *M* = 5.46), and making an outline of important concepts (Item 63, *M* = 5.62). Use of organization strategies helps them to store knowledge in an orderly manner in their memory and enhances memory for what they have learned. The use of elaboration and organization strategies is certainly better than use of rehearsal strategies such as memorization because elaboration and organization strategies promote meaningful learning, memory and recall for what is learned (Anderson, 2005; Schunk, 2004). Next, as shown by the high mean value (*M* = 5.50) for peer learning strategies, graduate pre-service teachers often work with other students in that they explain course material to a classmate or friend (Item 34, *M* = 5.10), complete course assignments together (Item 45, *M* = 5.99), and discuss course material with a group of classmates (Item 50, *M* = 5.41). This is a good practice as it fosters understanding and encourages exchange of ideas.

Table 4

Means and Standard Deviations for Learning Strategy Use Subscales (N = 164)

No.	Learning Strategy	Means	Standard Deviation
1	Rehearsal	5.45	0.85
2	Elaboration	5.65	0.76
3	Organization	5.56	0.79
4	Critical thinking	5.37	0.81
5	Metacognitive self-regulation	5.08	0.66
6	Managing time & study environment	4.88	0.70
7	Effort regulation	5.07	0.84
8	Peer learning	5.50	0.81
9	Help seeking	5.08	0.70
	Overall	5.29	0.58

Table 5

Means and Standard Deviations for Learning Strategy Use (N = 164)

Item No.	Item	Means	Standard Deviation
32	When I study the readings for this course, I outline the material to help me organize my thoughts.	5.55	1.08
33	During class time, I often miss important points because I'm thinking of other things.	3.84	1.67
34	When studying for this course, I often try to explain the material to a classmate or friend.	5.10	1.22
35	I usually study in a place where I can concentrate on my course work.	5.57	1.07
36	When reading for this course, I make up questions to help focus my reading.	5.23	1.18
37	I often feel so lazy or bored when I study for this class that I quit before I finish what I planned to do.	4.26	1.70
38	I often find myself questioning things I hear or read in this course to decide if I find them convincing.	5.23	1.13
39	When I study for this class, I practice saying the material to myself over and over.	5.09	1.17
40	Even if I have trouble learning the material in this class, I try to do the work on my own, without help from anyone.	3.55	1.55

41	When I become confused about something I'm reading for this class, I go back and try to figure it out.	4.92	1.46
42	When I study for this course, I go through the readings and my class notes and try to find the most important ideas.	5.63	0.97
43	I make good use of my study time for this course.	5.57	1.08
44	If course readings are difficult to understand, I change the way I read the material.	5.55	1.01
45	I try to work with other students from this class to complete the course assignments.	5.99	0.97
46	When studying for this course, I read my class notes and the course readings over and over again.	5.62	1.04
47	When a theory, interpretation, or conclusion is presented in class or in the readings, I try to decide if there is good supporting evidence.	5.37	1.03
48	I work hard to do well in this class even if I don't like what we are doing.	5.40	1.27
49	I make simple charts, diagrams, or tables to help me organize course material.	5.46	1.17
50	When studying for this course, I often set aside time to discuss course material with a group of students from the class.	5.41	1.06
51	I treat the course material as a starting point and try to develop my own ideas about it.	5.43	1.01
52	I find it hard to stick to a study schedule.	3.72	1.82
53	When I study for this class, I pull together information from different sources, such as lectures, readings, and discussions.	5.60	1.03
54	Before I study new course material thoroughly, I often skim it to see how it is organized.	5.27	1.13
55	I ask myself questions to make sure I understand the material I have been studying in this class.	5.48	1.14
56	I try to change the way I study in order to fit the course requirements and the instructor's teaching style.	5.58	1.05
57	I often find that I have been reading for this class but don't know what it was all about.	3.45	1.56
58	I ask the instructor to clarify concepts I don't understand well.	5.42	1.20
59	I memorize key words to remind me of important concepts in this class.	5.70	1.01
60	When course work is difficult, I either give up or only study the easy parts.	4.71	1.74

61	I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying for this course.	5.08	1.28
62	I try to relate ideas in this subject to those in other courses whenever possible.	5.54	0.99
63	When I study for this course, I go over my class notes and make an outline of important concepts.	5.62	0.95
64	When reading for this class, I try to relate the material to what I already know.	5.73	1.05
65	I have a regular place set aside for studying.	5.24	1.33
66	I try to play around with ideas of my own related to what I am learning in this course.	5.41	1.15
67	When I study for this course, I write brief summaries of the main ideas from the readings and my class notes.	5.70	0.91
68	When I can't understand the material in this course, I ask another student in this class for help.	5.71	1.11
69	I try to understand the material in this class by making connections between the readings and the concepts from the lectures.	5.60	1.04
70	I make sure that I keep up with the weekly readings and assignments for this course	5.24	1.18
71	Whenever I read or hear an assertion or conclusion in this class, I think about possible alternatives.	5.42	1.09
72	I make lists of important items for this course and memorize the lists.	5.41	1.14
73	I attend this class regularly.	6.27	1.01
74	Even when course materials are dull and uninteresting, I manage to keep working until I finish.	5.93	0.94
75	I try to identify students in this class whom I can ask for help if necessary.	5.62	1.07
76	When studying for this course I try to determine which concepts I don't understand well.	5.53	1.07
77	I often find that I don't spend very much time on this course because of other activities.	3.77	1.84
78	When I study for this class, I set goals for myself in order to direct my activities in each study period.	5.49	1.06
79	If I get confused taking notes in class, I make sure I sort it out afterwards.	5.50	1.08
80	I rarely find time to review my notes or readings before an examination.	3.64	1.67
81	I try to apply ideas from course readings in other class activities such as lecture and discussion.	5.73	1.08
	Overall	5.24	0.58

Meanwhile, the management of time and study environment subscale had the lowest mean value (*M* = 4.88). Although this is so, the mean values for individual items in the subscale (Table 5) show that graduate pre-service teachers have the right attitude and practices regarding management of time and study environment: they were able to select a suitable physical environment for studying in (Item 35, *M* = 5.57), make good use of study time (Item 43, *M* = 3.37), have a regular place set aside for studying (Item 65, *M* = 5.24), keep up with weekly readings and assignments (Item 70, *M* = 5.24), and attend class regularly (Item 73, *M* = 6.27). The mean values for the negatively worded items (Items 52, 77 & 80) in this subscale were in the medium category (mean values ranging from 3.64 to 3.77), showing that graduate pre-service teachers reported of relatively less incidences of: finding it hard to keep to a study schedule (Item 52), not spending much time on studying for the course (Item 77), and rarely find time to revise for examinations (Item 80).

As for the other subscales, namely rehearsal, critical thinking, metacognitive self-regulation strategies, effort regulation, and help seeking, graduate pre-service teachers reported of high use of the learning strategies as well, with mean values ranging from 5.07 to 5.45. These findings are very encouraging as they show that graduate pre-service teachers use a variety of learning strategies during learning. Rehearsal strategies used included practice (Item 39, *M* = 5.09), reading over and over again (Item 46, *M* = 5.62), memorizing key words (Item 59, *M* = 5.70), and making lists of important items for the course and memorizing them (Item 72, *M* = 5.41). Critical thinking skills applied included questioning about course content (Item 38, *M* = 5.23), looking for evidence before accepting theories or course content (Item 47, *M* = 5.37), developing own ideas (Item 51, *M* = 5.43), playing around with own ideas related to the course (Item 66, *M* = 5.41), and thinking about possible alternatives (Item 71, *M* = 5.42). Metacognitve self-regulation strategies such as self-questioning, reflecting, setting learning goals, reviewing were also applied widely as shown by their responses to the items (Table 5). Negatively worded metacognitive self-regulation strategies (Items 33 & 57) had lower mean values (*M* = 3.84 & 3.45 respectively), indicating that graduate pre-service teachers were not often distracted in class (Item 33) and often understood what they had read for the class (Item 57). Graduate pre-service teachers also employed effort regulation strategies such as forcing oneself to work hard to do well or complete it despite lack of interest (Item 48, *M* = 5.40; Item 74, *M* = 5.93). Negatively worded effort regulation items such as quitting without completing work due to feeling lazy or bored (Item 37, *M* = 4.26), and giving up or only studying the easy parts (Item 60, *M* = 4.71) had slightly lower mean values, showing that graduate pre-service teachers practiced good effort regulation. Finally, help seeking strategies were also used by graduate pre-service teachers, such as asking the instructor for further clarification (Item 58, *M* = 5.42), asking a classmate for help (Item 68, *M* = 5.71), and

identifying classmates who can help if necessary (Item 75, *M* = 5.62). For the negatively worded help seeking item (Item 40), that is, trying to do difficult work without seeking help had a lower mean value (*M* = 3.55). This finding regarding help seeking strategies shows that the graduate pre-service teachers were resourceful in seeking social assistance when necessary.

Gender differences in Motivational Beliefs and Learning Strategy Use

Gender Differences in Motivational Beliefs

A further aim of this study was to investigate gender differences in motivational beliefs and learning strategy use. Regarding motivational beliefs, independent samples *t*-test showed that overall, there was no significant difference ($p > .05$) between males (*M* = 5.10, *SD* = .49) and females (*M* = 5.32, *SD* = .62), in their motivational beliefs, $t(162) = -.45$, $p = .65$. Examination of individual motivation subscales also showed that there was no significant gender difference for each of the subscales ($p > .05$). These findings concur with those of other reseachers (Balam, 2015; Balam & Platt, 2014; Yukselturk & Bulut, 2009) in that they also found that there was no significant gender difference in motivational beliefs.

Gender Differences in Learning Strategy Use

However, unlike the findings of the above mentioned researchers, independent samples *t*-test results revealed that overall, there was significant gender difference in learning strategy use, $t(162) = -2.32$, $p = .02$, with females (*M* = 5.32, SD = .62) reporting of more strategy use than males (*M* = 5.10, *SD* = .49). Perusal of the results for the subscales (Table 4) showed that females (*M* = 5.02, SD = .74) reported of significantly greater use of one of the learning strategies, $t(162) = -3.51$, $p = .001$, that is, management of time and study environment, than males (*M* = 4.63, *SD* = .55) did. There was no significant gender difference ($p > .05$) for all other learning strategy subscales. This finding concurs with those of other researchers (Balam, 2015; Balam & Platt, 2014; Erol Suzuk, Cem Gurel, & Hakan Olgun, 2014; Yukselturk & Bulut, 2009) in that there was significant gender difference in the use of certain learning strategy subscales.

Conclusion

Summary of Findings

The findings of this study show that generally, graduate pre-service teachers' motivational beliefs concerning learning were in the 'high' and 'very high' categories, with overall mean value of 5.56 out of a scale of 7. Out of the six motivational subscales, the highest mean value obtained was for task value (*M* = 5.86) while the lowest mean value was for test anxiety (*M* = 4.81). Graduate pre-service teachers also reported of a high level of use of learning strategies, with an overall mean value of 5.29. Meanwhile,

overall, graduate pre-service teachers' reported use of learning strategies were in the 'high' category. Among the nine subscales for learning strategies, the highest mean value was for elaboration strategies (*M* = 5.65) while the lowest mean value was for management of time and study environment strategies (*M* = 4.88). Overall as well as for individual subscales, there was no significant gender difference in graduate pre-service teachers' motivational beliefs. However, overall there was significant gender difference in their use of learning strategies. Among the nine subscales, there was significant gender difference in the use of management of time and study environment only, with females reporting of significantly greater use of the strategy.

Implications

Several important implications can be drawn from the findings of this study. Graduate pre-service teachers' reports of suffering from test anxiety should be addressed as it can have debilitating effects on learners (Zeidner, 1998) and are negatively correlated with achievement scores (Cassady & Johnson, 2002). Teacher educators could perhaps provide tips on how to deal with the cognitive (negative thoughts, doubts about ability), affective (physiological reactions such as increased heart rate, feeling nauseated, frequent urination, increased perspiration) (Zeidner, 1998), and behavioral (having inefficient study and test-taking skills, procrastinating) components of test anxiety (Sarason & Sarason, 1990). For example, they could encourage them to be optimistic about tests, and praise them for their achievements more often as this boosts their self-confidence. They should explain to them that physiological reactions in their bodies are normal and they should not be too preoccupied with them. They should also teach them how to study and sit for tests effectively by exposing them to suitable study and test-taking strategies.

The findings also show that male graduate preservice teachers employed relatively less management of time and study environment strategies compared to their female counterparts. Teacher educators could perhaps provide instruction and encouragement on the use of these strategies to male graduate preservice teachers. They should be informed of the importance of (a) selecting a suitable physical learning environment where they learn best, (b) how to make good use of study time so that quality learning takes place, (c) having a regular place set aside for studying in, (d) keeping up with weekly readings and assignments, and (e) attending class regularly. It has been found that students who pursue positive learning climates and are resourceful in the use of management strategies perform better on academic tests and measures of student performance and achievement (Schunk, 2001; Zimmerman, 2008).

As reflected in the mean values for the nine learning strategies subscales, there is still room for improvement in graduate pre-service teachers' use of learning strategies, since the mean values were in the 'high' category only. Teacher educators might want to encourage the use of the nine types of learning strategies through instruction and implementing teaching and learning activities that require them to employ these learning strategies.

Suggestions for Further Research

The findings of this study are limited to the graduate pre-service teachers involved in the study. To add to the generalizability of the findings, future researchers might want to replicate the study on a similar sample of graduate pre-service teachers in other institutes of teacher education. In addition, interviews could perhaps be carried out on selected respondents to substantiate the findings from the MSLQ. It would be interesting to investigate the relationship between motivational beliefs and learning strategy use as well as academic achievement.

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