

ASSESSING STUDENTS' SELF-EFFICACY FOR LEARNING AT AN INTERNATIONAL UNIVERSITY IN THAILAND

Richard Lynch¹

Abstract: Development of a commitment to lifelong learning among students has become a key objective of education throughout the world. This is particularly the case in university study at both the undergraduate and, more especially, at the graduate levels, where the students are expected to shoulder increasingly greater responsibility for their own learning in both classroom-based and online learning contexts. An important aspect of that responsibility lies in the acquisition of metacognitive self-regulatory skills whereby students are enabled to manage their own learning in a variety of environments. Social cognitive self-regulation theory posits that an individual's beliefs in their ability to manage their own learning will be predictive of their active participation in current learning which will in turn be predictive of their commitment to lifelong learning. This paper describes a small scale validation study – prelude to an intended large scale university-wide study - of a questionnaire to measure self-efficacy for university level learning. The original 10-item scale, composed of 2 sub-scales (self-efficacy for information processing and self-efficacy for information finding), was first developed by researchers in Italy in 2007. It was slightly modified for the current study (a further 2-item sub-scale being added to measure self-efficacy for English listening and reading comprehension) and completed by a convenience sample of graduate (M.Ed.) students ($n = 38$) at an English-medium international university in Thailand. Each of the 3 sub-scales attained satisfactory degrees of internal consistency reliability. As well, in line with self-efficacy theory, correlations between each of the 3 sub-scales as well as the total scale and the respondents' self-reported expected grades were robust and statistically significant.

Keywords: Academic Self-Regulation, International, Lifelong Learning, Self-Efficacy for Learning, Social Cognitive Learning Theory, Measurement Scale, Metacognition, Motivation for Learning, Thailand

Introduction

In 2010, the European Union issued a report entitled *Mapping Major Changes to Education and Training in 2025* (European Commission Joint Research Centre,

2010). One of the most important findings of the report was the central role that lifelong learning will come to play in the coming decades. A set of 12 thematic clusters (including technology in education, globalization of education, open education and resources, etc.) were described in the report, which summarized what experts considered will be the main changes to education and training over the next 10 to 20 years. The lifelong learning cluster was a connection point for all other clusters, suggesting that many of the projected changes to education generally are related to the likelihood that in the near to medium future, skills and competences will be acquired in a Lifelong learning continuum.

Although the above-mentioned report focused on the situation for education in Europe, the concept of promoting lifelong learning is not foreign to Thailand. Although the concept has a long presence within the Thai education community as embodied in efforts to promote adult literacy since 1932, provision for lifelong learning was first introduced formally as education policy in Thailand in the National Education Act of 1999 (Jariyavidyanont, 2002; Krissanapong, 2001; Lao, 2009). In 2001, Mahidol University hosted an ASAIHL-Thailand Conference on Lifelong Learning. Although the Office of the Higher Education Commission organized a conference in June 2012 entitled *Smart Innovations in Education and Lifelong Learning*, it can be noted that the practical realization of lifelong learning in Thailand remains more an ambitious goal than a practical reality (Lao, 2009).

Lifelong learning is prominently mentioned in the official Thailand Basic Education Core Curriculum of 2008. The terms “continuous lifelong self-development” and “lifelong learning” are mentioned throughout the official curriculum document. The development of lifelong learning capability in Thai students is stated as a key goal of the curriculum in the Vision section (Thailand Ministry of Education, 2008). Muongmee (2007, p. 8) highlighted the importance of the link between lifelong learning and self-regulation of learning in Thailand when she stated that “. . . lifelong learning takes, as one of its principal aims, equipping people with skills and competencies required to continue their own ‘self-education’ beyond the end of formal schooling. In this sense, self-directed learning is viewed simultaneously as a means and an end of lifelong education.”

Given the importance now placed upon the development of lifelong learning skills, inclusive of

¹ Assistant Professor, Graduate School of Education, Assumption University, Thailand
richardlynch@alumni.usc.edu

self-regulatory efficacy for learning, as well as the ever increasing use of the Internet as a learning resource, the purpose of this small-scale research study was to assess the validity, in the context of an international English-medium Thai university, of a measurement scale for self-efficacy for university learning in both classroom and online contexts first developed by researchers in Italy in 2007 (Klobas, Renzi & Nigrelli, 2007). The researcher's ultimate intention is to use the scale being assessed in the current study as a subscale within a larger scale investigating a number of lifelong learning predictor variables applicable to both classroom-based and online learning environments among a much larger university-wide sample of participants.

Theoretical Framework

Practical success as a lifelong learner, whether in Thailand or elsewhere, can be linked directly to an individual learner's ability to engage in autonomous, self-regulated learning throughout their lives (Klug, Ogrin, Keller, Ihringer & Schmitz, 2011). However, autonomous, self-regulated learners are not born; they are made. That is, academic self-regulation is comprised of proactive use of a variety of metacognitive skills that learners learn through instruction and practice (Downing, 2009; Van Merriënboer, Kirschner, Paas, Sloep, & Caniëls, 2009). Learner initiative as well as effective teacher modeling and coaching all plays important roles in the development of those skills which enable a lifelong learning orientation among students at all levels of education.

The social cognitive perspective of self-regulation provides a framework for education research that can offer insights into the functioning of autonomous learners (Schunk, 1994, 1989; Schunk & Ertmer, 2000). Working within this perspective, Zimmerman (2000, 1998, 1990, 1989) defined academic self-regulation as the extent to which learners are metacognitively, motivationally, and behaviorally active in achieving their learning goals. Self-regulated learners set task-specific learning goals and employ appropriate strategies to attain those goals (Zimmerman & Martinez-Pons, 1990). They monitor and evaluate their progress and adjust their learning strategies as necessary. They motivate themselves and focus on learning in the face of distractions. They seek assistance as necessary and ensure that their learning environment is conducive to learning. In short, autonomous self-regulated learners are active, adaptive constructors of meaning who control important aspects of their cognition, behavior, and environment in attaining their learning goals (Pintrich, 2000). Zimmerman (2002) pointed out that self-regulation is also important because it addresses a

major educational goal, i.e., it enables the development of lifelong learning skills.

The degree of an individual's self-regulation of learning is determined in large part by their general motivation for learning as well as their self-efficacy for learning in specific areas. Motivation for learning focuses on why learners choose to learn (Pintrich and Schunk, 1996), and is a dimension of learner autonomy frequently cited in the education literature (see e.g., Boekaerts, 2002; Ormrod, 2008; Pintrich, 2003; Pires, 2009; Svinicki, 2005, 1999; Weimer, 2012; Wlodkowski, 1996). Although it is a truism to state that if an individual has no motivation to learn, then that individual will not learn at all, simply knowing that motivation is an important variable in successful learner autonomy is not particularly helpful. It is necessary to isolate specific components of motivation that can contribute to learner autonomy and then to create learning experiences that will support and enhance those components. One important component of motivation consists of the beliefs about one's personal efficacy (ability) for mastering a specific task (Bandura, 2001b, 1997).

A key element of motivation in general, therefore, is an individual learner's perceptions of self-efficacy (Bandura, 2001a, 1997, 1977; Clark, 1997; Pintrich & Schunk, 1996; Schunk, 1994; Schunk & Ertmer, 2000). Bandura (1994, p. 2) defined self-efficacy as "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. Self-efficacy beliefs determine how people feel, think, motivate themselves and behave."

An important aspect of self-efficacy, and that which distinguishes it from the more general notion of self-concept (or self-esteem), is its domain or context specific nature (Bandura, 1997; Pajares, 1996; Zimmerman, 1994). An individual's perception of self-efficacy will differ from domain to domain, from context to context. A self-efficacious learner in a math course may not be a self-efficacious learner in a history course. As Linnenbrink and Pintrich (2002) pointed out, however, research evidence indicates that adaptive self-efficacy beliefs can function as enablers of academic success. That is, learners with high self-efficacy beliefs are likely to employ adaptive self-regulatory learning strategies and study skills in a variety of learning contexts. Such learners are also likely to become lifelong learners.

Learner perceptions of personal efficacy have a reciprocal relationship with the self-regulatory processes that affect motivation and performance (Winne, and Perry, 2000). A high sense of self-regulatory efficacy enhances task performance efficacy, which in turn motivates further self-regulation in pursuit of further academic attainment.

Self-regulatory efficacy as well as general academic self-efficacy is the result of interactions among personal, social, and environmental factors (Bandura, 1997; Schunk, 1989; Zimmerman, 1994, 1989).

This interplay of diverse factors in the development of self-efficacy perceptions is a key element of social cognitive learning theory. As Schunk and Ertmer (2000) pointed out, "effective self-regulation depends on feeling self-efficacious for using skills to achieve mastery" (p. 635). In social cognitive learning theory, personal, or cognitive, factors (including the self-belief system of which self-efficacy is a crucial component) influence and in turn are influenced by both behavioral and environmental factors (see Figure 1). The same reciprocity of influence holds for the latter two sets of factors as well. Therefore, in order to influence behavior, one needs to influence both the personal and environmental factors which act as determinants of behavior. In terms of social cognitive learning theory, then, if individual learning self-efficacy perceptions (personal) play the expected strong and significant role as predictors of individual learning performance (behavior), then enhancement of those perceptions through both cognitive and environmental means in course design and delivery will have a beneficial effect on individual learners' performance outcomes and will contribute to the learner's development of a lifelong learning orientation (Pajares, 2002, 1996).

and study skills (Downing, 2009). Learner perceptions of personal efficacy, therefore, have a reciprocal relationship with the self-regulatory processes that affect motivation and performance. A high sense of self-regulatory efficacy enhances task performance efficacy, which in turn motivates further self-regulation in pursuit of further academic attainment.

Self-efficacy has been noted as important in the development of autonomous learning (Dembo, Junge, & Lynch, 2006). Ponton, Derrick, Carr, and Hall, (2004) as well as Bandura (2001) pointed out the domain specific nature of self-efficacy assessments and argued that an individual's efficacy judgments need to be considered within the specific contexts to which they apply. This applies to autonomous learning, a learning context in its own right. If learners have confidence in their ability to successfully engage in specific autonomous learning activities that will result in outcomes which they value then it is probable that self-efficacy in autonomous learning will precede such learning (Lynch & Dembo, 2004; Ponton, Derrick, Carr, & Hall, 2004).

The link has also been drawn in the literature between self-efficacy for autonomous self-regulation of learning and successful lifelong learning (Derrick, 2003; Hoskins, & Fredriksson, 2008; Klobas, Renzi, & Nigrelli, 2007; Shuy, 2010; Zimmerman, 2000; Zimmerman & Risemberg, 1997; Zumbrunn, Tadlock,

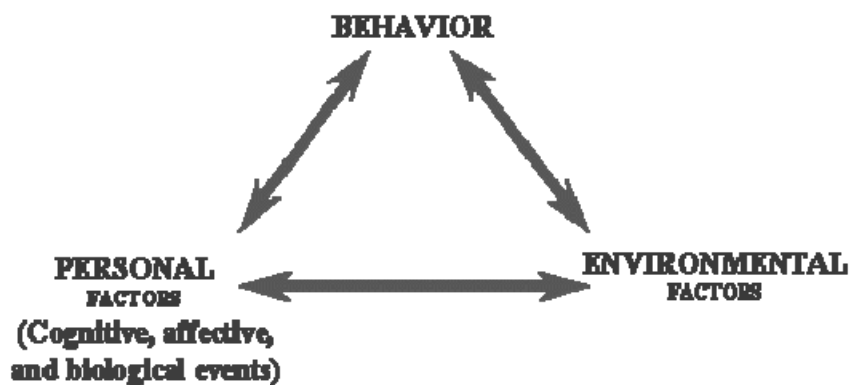


Figure 1: Bandura's Reciprocal Determinism Model (From Pajares, 2002)

Personal perceptions of self-efficacy for learning, therefore, are a critical element of motivation for learning generally (Bandura, 1997; Pintrich and Schunk, 1996; Zimmerman, 2000). Linnenbrink and Pintrich (2002) pointed out that adaptive self-efficacy beliefs can function as enablers of academic success because they enable learners to plan and carry out the necessary behaviors to achieve specific learning goals. Learners with high self-efficacy are likely to employ adaptive self-regulatory learning strategies

& Roberts, 2011). Self-efficacy, then, is a key element of self-regulated autonomous learning which in turn undergirds the development among students of effective lifelong learning practices.

Method

Participants

The research participants ($n = 38$) were students in two M. Ed classes taught by the researcher at an

English-medium international university in Bangkok, Thailand. Since the purpose of the research was to assess the quality of a new self-efficacy for university level learning scale developed in Italy in 2007 by Klobas et al, the small sample functioned as an instrument tryout in preparation for a larger university-wide study.

Instrumentation

The basis for the scale used in this study was the 10-item self-efficacy for university learning scale developed and validated by Klobas et al in 2007. As noted by the scale developers,

...we concentrate [ed] on SE [self-efficacy], in the context of study of meta-response to participation in learning at university. Our goal [was] to develop a scale to measure SE for learning (SEL) that can be used in situations where SE forms one of several meta-responses of interest. Thus, our goal [was] to develop a parsimonious scales capable of discriminating among different levels of SEL” (Klobas, et al, 2007, pp. 2-3).

The scale validation process conducted by Klobas et al involved two major studies. In the first, with 1737 Italian university students as participants, the researchers used a scale adapted from an earlier scale developed by Wood and Locke (1987). That scale did not focus on specific subject or course areas, but rather on 6 general activities which university students typically perform in all of their classes (class concentration, memorization, understanding, explaining concepts, discriminating concepts, and note-taking). Klobas et al (2007) noted that the Wood and Locke scale, since it was developed in the 1980s, contained items not appropriate in the new education era in which online learning has become a significant instructional modality. Therefore, in their new scale, they “sought to develop a new scale, based on the Wood and Locke scale, that would be appropriate for use with students who study online as well as in the classroom” (Klobas et al, 2007, p. 5). In their first study, Klobas et al removed two activities from the Wood and Locke scale - note-taking and class concentration – because they were deemed to be of potentially less relevancy in computer-supported learning environments. However, they added 3 activities - ability to organize work to meet course deadlines, connecting ideas, and updating knowledge.

The new Klobas et al scale measured all items on an 11 point scale ranging from 0 (*I am definitely not able to do this*) to 10 (*I definitely can do this*). Klobas et al (2007) noted that

... such a scale was more effective than a Likert-type scale when gradations of challenge were presented in more

generic terms than percentages. The use of the 11 point scale is also supported by Pajares, Hartley and Valiante’s (2001) findings that greater scale variation provides more satisfactory results when measuring SE. (p. 6)

The results of the first study rendered 10 discriminating items which formed a scale with high internal reliability – Cronbach’s alpha was .89 to .91. However, Klobas et al sought to refine the instrument further to achieve greater discrimination in identifying changes in self-efficacy for learning in different learning situations by adding items of greater difficulty.

The second Klobas et al study attempted to validate a revised longer scale on which items were linked to Bloom’s (1969) taxonomy of educational objectives. This was intended to provide a sounder theoretical base for the new scale. Several items from the first study scale were matched to the first five levels of Bloom’s taxonomy (knowledge, comprehension, application, analysis, synthesis). There were no items to measure Bloom’s top level, evaluation. Klobas et al, therefore, developed new items to measure evaluation which would increase the difficulty level of the scale. As well, since the validated items from the first study focused on activities usually associated with classroom-based learning, they added new items at Bloom’s lower levels to tap self-study of learning materials and learning from other students. The first study scale items mostly focused on cognitions or information processing activities associated with learning. Just one item targeted the self-directed gathering of new information from non-classroom sources such as the library and the World Wide Web. Therefore, for the revised scale, further items were developed to tap activities associated with gathering information beyond the classroom (Klobas et al, 2007).

The revised 27-item scale was tested by Klobas et al in a second study with 265 Italian university students in various years of study. Both exploratory and confirmatory factor analysis were employed to arrive at a validated 10-item, theory-based, self-efficacy for learning at university scale incorporating items across a range of difficulties and at each of Bloom’s 6 levels. As well items to measure learners’ self-efficacy for finding information from both traditional and electronic resources, the library and the World Wide Web were included (Klobas et al, 2007). The resulting validated self-efficacy for learning at university scale contained a total of 10 items in two sub-scales. The first sub-scale (6 items) was keyed to Bloom’s taxonomy focusing on learners’ confidence in their information processing skills at each of Bloom’s 6 levels; the second sub-scale (4

items) measured learners' confidence in their information finding skills.

The current study used all 10 items on the Klobas et al validated scale and added a third sub-scale (language) comprised of 2 items, one measuring learners' confidence in understanding spoken English (i.e., listening comprehension) and one measuring learners' confidence in understanding written English (i.e., reading comprehension). These items were added because English is a second or foreign language for the majority of the students at the international university in Thailand where this study was conducted.

The final scale used in this study, then, consisted of 12 items in 3 sub-scales. The first sub-scale consisted of 6 items developed by the original scale validators measuring keyed to Bloom's cognitive taxonomy measuring confidence in information processing skills; the second sub-scale consisted of 4 items developed by the original scale validators measuring confidence in information finding skills. The third sub-scale, developed by the current researcher, consisted of 2 items measuring confidence in English listening and reading comprehension skills. There was also a demographic section where participants indicated their gender, their nationality, their semester of study in the graduate education program and their *expected* course grade. The latter was correlated with their self-efficacy for university learning score because, according to self-efficacy theory, there should be a significant correlation between self-efficacy for a task and the expected performance of that task.

Procedure

A non-experimental descriptive, correlational research design using non-random sampling was employed to explore the characteristics of the revised 12-item self-efficacy for university learning scale in the context of an international university in Thailand.

The questionnaire was distributed to students in two researcher-taught M. Ed classes. This was done after mid-term in Semester 1 of 2012 so that the participants would have received some instructor feedback on their performance in the course. This was done because the participants needed some basis on which to predict their expected grade. Of a total of 38 questionnaires distributed, 38 useable questionnaires were returned, representing an overall return rate of 100%.

Results

The study employed both descriptive and correlational statistics. The descriptive analysis included an overview of the demographics of the

sample, scale descriptive analysis, as well as reliability analysis of the subscales.

In terms of demographics, the sample was split almost evenly between males and females (53% male and 47% female). Three of the participants were native speakers of English; 35 were non-native English speakers. In terms of semester of study in the M. Ed program, 42% (n=16) were in their first semester, 29% (n=11) in their second semester, 21% (n=8) in their third semester, and 8% (n=3) in their fourth semester. A total of 15 nationalities were represented in the sample, with Burmese representing the majority (n=14 or 35%) followed by Thais (n=5 or 12%), Filipinos (n=3 or 8%), Chinese (n=3 or 8%), Cambodian and British (both n=2 or 5%) followed by American, Bangladeshi, Belgian, Indian, Indonesian, Iranian, Korean, Nigerian, and Vietnamese (all n=1 or 3%).

Table 1 shows the results of the reliability analysis of the subscales in the current study. The subscales on the Klobas et al original questionnaire ranged from .89 to .91. The table indicates that two of the sub-scale alpha coefficients - those for self-efficacy for information processing and self-efficacy for language - both attained highly satisfactory alpha scores (.89). The .68 value for self-efficacy for information finding, while marginally below the .70 benchmark value, is sufficiently close to that value to be acceptable. However, the reliability analysis revealed that if one of the 4 items in the finding subscale is removed, the alpha coefficient will increase to .75. That item will be removed in the main study. Reliable measures increase statistical power and, as DeVellis (1991) observed, "a reliable measure, like a larger sample, contributes relatively less error to the statistical analysis" (p. 32). Overall, then, the generally robust internal consistency reliabilities for the subscales on the questionnaire employed in this study, served to mitigate somewhat the low sample size and generally accorded with the 2007 findings of Klobas et al..

Table 1: Cronbach Alphas for each Subscale on the Self-Efficacy for University Learning Scale

Scales	Alpha Score
Information Processing	.89
Information Finding	.68 (.75 if 1 item removed)
Language	.89

Table 2 gives the mean scores and standard deviations for each subscale on the self-efficacy for university learning scale, as well as for the dependent variable, expected grades. As Table 2 indicates, mean

values and standard deviations were computed for the 3 subscales. As with the original Klobas et al 2007 scale, all subscales in this study were on an 11-point scale (0-10). The expected grade scores were scaled as percentages. The mean scores were further divided by the number of items to render the item-mean scores. The standard deviations were also further divided by the number of items, giving item standard deviations. As can be seen in Table 2, item means for the three self-efficacy subscales were all relatively moderate to high, with self-efficacy for English language and self-efficacy for information processing scoring the highest and self-efficacy for information finding scoring the lowest. The mean scores for the expected course grades were also very high at 91.21.

grades was not surprising. Such a relationship is predicted in the literature and was also noted by Klobas et al in their original validation studies of the self-efficacy for university learning scale (2007). The sample studied in the current study was likely one in which self-efficacy for learning was not problematic. Since it was comprised of students who self-selected to study in a graduate education program at an English-medium international university, the sample likely possessed relatively high self-confidence in their ability to study successfully in the program and also in their English language skills.

In terms of the specific findings, the lower reliability of the self-efficacy for information subscale as well as the relatively low correlation between it and

Table 2: Means and Standard Deviations for the Self-efficacy for University Learning Subscales and Expected Grades

Subscales N = 38	# of Items	Mean	S.D.	Item Mean	Item S.D.
Processing	6	44	8.48	7.33	1.41
Finding	4	30.78	5.77	7.69	1.44
Language	2	15.76	2.93	7.88	1.46
Expt Grades	1	91.21	4.37		

Table 3 shows the Pearson Product-moment correlations of the subscale variables. All correlations are significant with those between expected grade and each of the subscales acceptable and in line with results from the Klobas et al 2007 studies.

expected grade can be explained by the generally low use of library resources by the study participants, the Internet being their preferred modality for searching course-related information. This is because, although the study was conducted in an English-medium international university in Thailand, up-to-date

Table 3: Pearson Product-Moment Correlations of the Subscale Variables

Variable N = 38	1	2	3	4
1. Information Processing	-	.525**	.892**	.660**
2. Information Finding	.525**	-	.418**	.446**
3. Language	.892**	.418**	-	.614**
4. Expected Grade	.660**	.446**	.614**	-

Note: Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

Discussion

Overall, the results of this study for the most part replicate the findings of Klobas et al (2007) in their development studies of the original 10-item scale and suggest that the new 12-item self-efficacy for university learning scale used in the present study is both reliable and valid in measuring university students self-efficacy for learning at international universities where English is a second or foreign language

The significant and positive relationship between self-efficacy for learning generally and expected

physical English language resources for the students' study field are limited. This is particularly the case for education journals. It is not surprising, therefore, that the students rely primarily on Internet resources for their study purposes, this being reflected in their responses on the library-based items on the scale.

Self-efficacy has been demonstrated to be an important aspect of performance in classroom-based learning (Pintrich and Schunk, 1996). The significant correlation between self-efficacy and expected grades in this study indicates the concurrent validity of the self-efficacy for university learning scale (Klobas et al, 2007). The reciprocal relationships among self-

efficacy for learning, self-regulation of learning and autonomous learning are important to encourage, enhance and develop among students because of their theoretically predictive relationship with lifelong learning orientations among learners.

There are several suggestions for further research. First, research should be conducted employing the current 12-item self-efficacy for learning scale with a much larger, university wide sample employing confirmatory factor analysis for further validation of the subscales. Subsequently, a large scale study should be conducted using an extended instrument composed of the current scale/subscales in conjunction with learning strategies subscales from validated instruments such as the Motivated Strategies of Learning Questionnaire (MSLQ, Pintrich, Smith, Garcia, & McKeachie, 1991) or the Learning and Study Skills Inventory (LASSI, Weinstein, & Palmer, 2002). This would enable researchers to investigate the predictive capability of a range of motivation and strategy variables on both current student learning outcomes as well as future lifelong learning orientation.

References

- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215.
- Bandura, A. (1994). Self-efficacy. In Ramachandran, V. S. (Ed.), *Encyclopedia of human behavior* (Vol. 4, pp. 71-81). New York: Academic Press. (Reprinted in H. Friedman [Ed.], *Encyclopedia of mental health*. San Diego: Academic Press, 1998). Retrieved from <http://des.emory.edu/mfp/Bandura1994EHB.pdf>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A. (2001a). Social cognitive theory: An argentic perspective. *Annual Review of Psychology*, 52(1), 1-26.
- Bandura, A. (2001b). Guide for Constructing Self-Efficacy Scales (revised). Published in *Self-Efficacy Beliefs of Adolescents*, 2006, 307-337. Information Age Publishing Retrieved from <http://des.emory.edu/mfp/014-BanduraGuide2006.pdf>
- Boekaerts, M. (2002). *Motivation to learn. Educational Practices Series*. (pp. 1-27). International Academy of Education-International Bureau of Education (UNESCO). Retrieved from http://www.ibe.unesco.org/fileadmin/user_upload/archive/publications/EducationalPracticesSeriesPdf/prac10e.pdf
- Clark, R. E. (1997). The CANE model of motivation to learn and to work: a two-stage process of goal commitment and effort. Unpublished paper presented at the University of Leuven, Belgium, 27 November, 1997.
- Commission of the European Communities. (2006). *Adult learning: It is never too late to learn*. Retrieved from http://eurlex.europa.eu/LexUriServ/site/en/com/2006/com2006_0614en01.pdf
- Dembo, M. H., Junge, L. G., & Lynch, R. (2006). Becoming a self-regulated learner: Implications for web-based education. In H. O'Neil (Ed.), *Web-based learning: Theory, research, and practice* (pp. 185-202). Mahwah, NJ: Lawrence Erlbaum Associates.
- Derrick, M. G. (2003). Creating Environments Conducive for Lifelong Learning. *New Directions for Adult and Continuing Education*, no. 100. Retrieved from [http://www.pgme.utoronto.ca/Assets/PGME+Digital+Assets/pd+\\$!26+faculty+resources/ref4.pdf](http://www.pgme.utoronto.ca/Assets/PGME+Digital+Assets/pd+$!26+faculty+resources/ref4.pdf)
- DeVellis, R. F. (1991). *Scale development: theory and applications*. Newbury Park, CA: Sage Publications.
- Downing, K. J. (2009). Self-efficacy and Metacognitive Development. *The International Journal of Learning*, Volume 16, Number 4, 185-199.
- European Commission Joint Research Centre. (2010). *Mapping Major Changes to Education and Training in 2025*. Institute for Prospective Technological Studies. Luxembourg: Publications Office of the European Union. Retrieved from http://ftp.jrc.es/EURdoc/JRC59079_TN.pdf
- Hoskins, B. & Fredriksson, U. (2008). Learning to Learn: What is it and can it be measured? European Commission Centre for Research on Lifelong Learning (CRELL). Retrieved from <http://publications.jrc.ec.europa.eu/repository/bitstream/111111111/979/1/learning%20to%20learn%20what%20is%20it%20and%20can%20it%20be%20measured%20final.pdf>
- Jariyavidyanont, P. (2002). Legislation, Policies, and Accreditation of Lifelong Learning in Thailand. In Singh, M. Ed. *Institutionalising Lifelong Learning*. UNESCO Institute for Education. Hamburg, Germany. pp. 239-248. Retrieved from <http://www.unesco.org/education/uie/pdf/ILLBOOK.pdf>
- Kiliç-Çakmak, E. (2010). Learning strategies and motivational factors predicting information literacy self-efficacy of e-learners. *Australasian Journal of Educational Technology*, 26(2), 192-208. Retrieved from <http://www.ascilite.org.au/ajet/ajet26/kilikcakmak.pdf>
- Klobas, J. E., Renzi, S. & Nigrelli, M. L. (2007). A scale for the measurement of self-efficacy for

- learning (SEL) at university. Dondena Working Papers No 2. Carlo F. Dondena Centre for Research on Social Dynamics Università Bocconi, Milan, Italy. Retrieved from http://www.dondena.unibocconi.it/wps/wcm/connect/Centro_Dondena/Home/Working+Papers/Working_Paper_2_CdR_Dondena
- Klug, J., Ogrin, S., Keller, S., Ihringer, A. & Schmitz, B. (2011). A plea for self-regulated learning as a process: Modelling, measuring and intervening. *Psychological Test and Assessment Modeling*, Volume 53(1), 51-72. Retrieved from http://www.psychologie-aktuell.com/fileadmin/download/ptam/1-2011_20110328/04_Klug.pdf
- Krissanapong, K. (2001). Higher Education in Thailand and the National Reform Roadmap. Invited Paper presented at the Thai-US Education Roundtable, Bangkok, 9 Januar2001. Retrieved from <http://www.kmutt.ac.th/pi/backup/fileKK/Higher%20Edu%20Reform%20Roadmap.pdf>
- Lao, R. (2009). Lifelong learning for Thailand: rhetoric versus reality. *The Nation Newspaper*, Bangkok. May 26, 2009. Retrieved from http://www.nationmultimedia.com/2009/05/26/opinion/opinion_30103582.php
- Linnenbrink, E. A., and Pintrich, P. R. (2002). Motivation as an enabler for academic success. *The School Psychology Review* 31(3): 313 – 327.
- Lynch, R., & Dembo, M. (2004). The relationship between self-regulation and online learning in a blended learning context. *International Review of Research in Open and Distance Learning*, 5 (2). Retrieved from <http://www.irrodl.org/content/v5.2/lynchdembo.html>
- Ministry of Education, Thailand. (2008). *Thailand Basic Education Core Curriculum*. Retrieved from academic.obec.go.th/web/doc/d/147
- Muongmee, S. (2007). The Role of Lifelong Learning and Self-Directed Learning in Educational Reform in Thailand. *Educational Journal of Thailand*, Vol. 1, No. 1, 33-42. Retrieved from <http://www.edu.buu.ac.th/journal/journalinter/p33-42.pdf>
- Ormrod, J. E. (2008). How Motivation Affects Learning and Behavior. *Educational Psychology: Developing Learners* (6th Edition). Prentice Hall. Retrieved from <http://www.education.com/reference/article/motivation-affects-learning-behavior>
- Pajares, F. (1996). Self-Efficacy Beliefs in Academic Contexts. *Review of Educational Research*, 66(4), 543-578. Retrieved from <http://www.des.emory.edu/mfp/PajaresSE1996.html>
- Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning. In M. Boekaerts, P. R. Pintrich, and M. Zeidner (Eds.) *Handbook of Self-Regulation* (p. 452-502). San Diego, CA.: Academic Press.
- Pintrich, P. R. (2003). A Motivational Science Perspective on the Role of Student Motivation in Learning and Teaching Contexts. *Journal of Educational Psychology*, Vol. 95, No. 4, 667–686. Retrieved from https://netfiles.uiuc.edu/bwmler/shared/epsy552/March29/Pintrich_Motivation.pdf
- Pintrich, P. R. (2003). A Motivational Science Perspective on the Role of Student Motivation in Learning and Teaching Contexts. *Journal of Educational Psychology*, Vol. 95, No. 4, 667–686. Retrieved from https://netfiles.uiuc.edu/bwmler/shared/epsy552/March29/Pintrich_Motivation.pdf
- Pintrich, P. R., and Schunk, D. H. (1996). *Motivation in Education: Theory, research, and application*. Englewood Cliffs, NJ.: Prentice Hall.
- Pintrich, P. R., Smith, D. A. F., Garcia, T., & McKeachie, W. J. (1991). *A manual for the use of the motivated strategies for learning questionnaire (MSLQ)* (91-B-004). Ann Arbor: The Regents of the University of Michigan.
- Pires, A. L. O. (2009). Higher education and adult motivation towards lifelong learning: An empirical analysis of university post-graduates perspectives. *European journal of vocational training*, No 46, pp. 129-150. Retrieved from http://www.cedefop.europa.eu/etv/Upload/Information_resources/Bookshop/570/46_enPires.pdf
- Ponton, M. K., Derrick, M. G., Carr, P. B., & Hall, J. M. (2004, February). *The relationship between self-efficacy and autonomous learning*. 18th International Self-Directed Learning Symposium, Cocoa Beach, FL. Retrieved from www.mathstat.atastate.edu/~mhall/documents/AutonomousLearning.doc
- Schunk, D. H. & Ertmer, P. A. (2000). Self-regulation and academic learning: self-efficacy enhancing interventions. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 631-650). San Diego: Academic Press.
- Schunk, D. H. (1989). Social cognitive theory and self-regulated learning. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement: theory, research, and practice* (pp. 83-110). New York: Springer-Verlag.
- Schunk, D. H. (1994). Self-regulation of self-efficacy and attributions in academic settings. In D. H. Schunk & B. J. Zimmerman (Eds.), *Self-regulation of learning and performance: issues and educational applications* (pp. 75-99). Hillsdale, NJ: Lawrence Erlbaum Associates.

- Shuy, T. (2010). *Self-Regulated Learning*. TEAL Center Fact Sheet No. 3. Retrieved from <http://communitycolleges.wy.edu/Data/Sites/1/commissionFiles/abe/training/abe-ntt/mod-6-articles/ntt--module-6---fs-3-teal-center-self-regulated-learning-fact-sheet-air-logo-rev-12-01-11.pdf>
- Svinicki, M. D. (2005). Student Goal Orientation, Motivation, and Learning. Retrieved from http://www.theideacenter.org/sites/default/files/Idea_Paper_41.pdf
- Svinicki, M. D. (1999). New Directions in Learning and Motivation. *New Directions for Teaching and Learning*, no. 80, Winter 1999. Retrieved from <http://education.gsu.edu/ctl/FLC/Foundation/Overview.pdf>
- Van Eekelen, I.M., Boshuizen, H.P.A., & Vermunt, J. D. (2005). Self-regulation in higher education teacher learning. *Higher Education*, 447-471. Retrieved from <http://igitur-archive.library.uu.nl/ivlos/2007-0106200146/Article%20Van%20Eekelen%20et%20al%202005%20High%20Educ.pdf>
- Van Merriënboer, J. J. G., Kirschner, P. A., Paas, F., Sloep, P. B. & Caniëls, M. C. J. (2009). Towards an Integrated Approach for Research on Lifelong Learning. *Educational Technology Magazine: The Magazine for Managers of Change in Education*, 49(3), 3-15. Retrieved from <http://telearn.archivesouvertes.fr/docs/00/69/63/99/PDF/MERRIENBOER-JEROEN-2009.pdf>
- Weimer, M. (2012). *Cultivating More Autonomous, Motivated Learners*. Retrieved from <http://www.facultyfocus.com/articles/teaching-professor-blog/cultivating-more-autonomous-motivated-learners/>
- Weinstein, C. E. & Palmer, D. R. (2002). *User's Manual for those administering the Learning and Study Skills Inventory (LASSI)*. Second Edition. Retrieved from http://www.hhpublishing.com/_assessments/LASSI/LASSI_Users_Manual.pdf
- Winne, P. H., and Perry, N. E. (2000). Measuring self-regulated learning. In M. Boekaerts, P. R. Pintrich, and M. Zeidner (Eds.) *Handbook of self-regulation* (p. 532-566). San Diego, CA.: Academic Press.
- Wood, R. E., & Locke, E. A. (1987). The relation of self-efficacy and grade goals to academic performance. *Educational and psychological measurement*, 47, 1013-1024
- Wlodkowski, R. J. (1996). Developing Motivation for Lifelong Learning. Retrieved from <http://www.context.org/iclib/ic27/wlodkowski/>
- Zimmerman, B. J. (2002). Becoming a Self-Regulated Learner: An Overview. *Theory into Practice*, Volume 41, Number 2, 64-70. Retrieved from <http://commonsenseatheism.com/wp-content/uploads/2011/02/Zimmerman-Becoming-a-self-regulated-learner.pdf>
- Zimmerman, B. J. (2000). Self-Efficacy: An Essential Motive to Learn. *Contemporary Educational Psychology* 25, 82-91. Retrieved from <http://www.itl.usyd.edu.au/news/pdfs/Zimmerman%202000.pdf>
- Zimmerman, B. J. (2000). Attaining Self-Regulation: a social cognitive perspective. In M. Boekaerts, P. R. Pintrich, and M. Zeidner (Eds.) *Handbook of self-regulation* (p. 13-39). San Diego, CA.: Academic Press.
- Zimmerman, B. J. (1998). Developing self-fulfilling cycles of academic regulation: an analysis of exemplary instructional models. In D. H. Schunk and B. J. Zimmerman (Eds.) *Self-Regulated Learning: From teaching to self-reflective practice* (p. 1-19). New York: The Guilford Press.
- Zimmerman, B. J. (1994). Dimensions of academic self-regulation: a conceptual framework for education. In D. H. Schunk and B. J. Zimmerman (Eds.) *Self-regulation of learning and performance* (p. 3-21). Hillsdale, NJ.: Lawrence Erlbaum Associates.
- Zimmerman, B. J. (1990). Self-Regulated Learning and Academic Achievement: An Overview. *Educational Psychologist*, 25(1), 3-17. Retrieved from http://www.unco.edu/cebs/psychology/kev inpugh/motivation_project/resources/zimmerman90.pdf
- Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology* 81(3), 329 - 339.
- Zimmerman, B. J. & Martinez-Pons, M. (1990). Student Differences in Self-Regulated Learning: Relating Grade, Sex, and Giftedness to Self-Efficacy and Strategy Use. *Journal of Educational Psychology*, Vol. 82, No. 1, 51-59. Retrieved from http://technologication.com/files/2010/03/zimmerman_Pons_Student_Self_Regulation.pdf
- Zimmerman, B. J., and Risemberg, R. (1997). Self-regulatory dimensions of academic learning and motivation. In G. D. Phye (Ed.) *Handbook of Academic Learning: Construction of knowledge* (p. 105-125). San Diego, CA.: Academic Press
- Zumbrunn, S., Tadlock, J & Danielle Roberts, E. D. (2011). Encouraging Self-Regulated Learning in the Classroom: A Review of the Literature. Metropolitan Educational Research Consortium (MERC), Virginia Commonwealth University. Retrieved from <http://merc.soe.vcu.edu/Reports/Self%20regulated%20Learning.pdf>