Student's Readiness on Self-regulated Learning Implementation for 21st Century Learning Approaches

Sahdan, S.*, Masek, A. and Zainal Abidin, N. A.

Faculty of Technical and Vocational Education, Universiti Tun Hussein Onn Malaysia, 86400 Parit Raja, Batu Pahat, Johor, Malaysia

ABSTRACT

Self-Regulated Learning (SRL) is one of the learning strategies in Student-Centred Learning (SCL). Although the theoretical success stories of SRL have been well documented, there are few stories from actual practice and implementation of SRL, especially in technical and vocational education. Hence, this paper investigates postgraduate students' readiness for the implementation of SRL. The results of the investigation are encouraging; students appear ready for the implementation of SRL for specific subjects and levels. This is a good indicator for educators to improve teaching and learning, steering it away from a teacher-centred to a student-centered orientation. Hence, in the future, students will become student-centred learners and apply SRL in the learning process to increase the quality of their academic achievement and vocational qualification.

Keywords: Readiness, Self-Regulated Learning (SRL), Student-Centred Learning (SCL), teaching and learning

INTRODUCTION

Student-Centred Learning (SCL) is a learning approach that gives students autonomy to control their own learning and to gain knowledge without being fully monitored by their teachers (Olsen & Pedersen, 2005). SCL trains students to apply deep learning in their studies, especially among polytechnics student (Mustapha, Bunian, Rahman, Hussain, & Ahamad Bahtiar, 2014). Technical and Vocational Education and Training (TVET) also focusses on SCL to guide each student in attaining appropriate learning and life skills. Self-Regulated Learning (SRL) is SCL approach that provides these advantages.

The present century is indeed conducive for the implementation of SRL as a more effective learning strategy for students. Information and Communication Technology (ICT) provides the appropriate tools for students to manage their learning effectively (Teo, Tan, Lee, Chai, Koh, & Chen, 2010). Students need to have a suitable learning strategy in order to gain knowledge. In SRL, students actively build cognitive knowledge in and evaluate their learning based on accurate content and correct knowledge (Mega, Ronconi, & De Beni, 2013). According to Sahdan and Abidin (2017) and Hassan and Puteh, (2017), the use of advanced technology requires good strategies and an effective lesson plan to succeed as advanced technology in itself will not guarantee a student success in his/her studies.

Previous studies have highlighted that many activities can be implemented during teaching and learning using SRL such as setting goals before starting to study, managing the learning strategy, monitoring one's progress and lastly, evaluating the results using one's own strategies. This kind of activity can be conducted through group work, individual assignments and presentations. Activities such as peer assessment can be implemented in the SRL process as it can increase the efficiency of cognitive and metacognitive processes (Abidin & Sahdan, 2017). These activities are based on the basic phases that should be conducted in order to implement SRL, which are forethought, performance and self-reflection (Ross, 1999). These activities serve as stimuli that improve SRL among students. Some of these stimuli are Information-Technology integration (IT-integration) in the learning environment, student-teacher interactions, motivational beliefs, self-regulative knowledge, information literacy and attitudes toward IT (McCombs, 1989; Schunk, 1989; Czaja & Sharit, 1998; Salomon & Almog, 1998; Kwon, 2001; Ee, 2002).

However, previous studies highlighted several challenges in implementing SRL due to stakeholders' (teachers'/students') perception and readiness. These included low level of students' acceptance and lack of confidence in applying SRL. Yusri, Rahimi, Shah, Wah and Hassan (2012) found that students did not have confidence in applying the strategies of SRL and lacked time to help their friends. This caused them to totally not accept SRL. In addition, students had a problem determining the correct techniques and effective learning strategies for themselves (Kailani & Ismail, 2010). If a strategy were not applied properly, the students' achievement and motivation to learn were also affected, although it is believed that SRL strategies can improve students' performance in learning (Skaalvik & Skaalvik, 2005).

More specific evidence from previous studies indicated that the level of students' readiness in applying SRL was at a moderate level (Tri, 1993; Klunklin, Viseskul, Sripusanapan, &Turale, 2010; Yusri et al., 2012). Several studies found that students were not prepared (Chen, 2002; Litzinger, Wise, & Lee, 2005) to implement SRL.

However, Daud, Rahman and Samsudin (2013) found that all students were ready to apply SRL in learning, including students of engineering. The study found that there were various issues concerning practices of SRL strategies among students. For example, students did not accept SRL as they found that it was not suitable for topics that were difficult, had difficulty choosing a learning style that was suitable and lacked confidence in applying SRL in the learning process. These challenges will make SRL difficult to apply in learning institutions. The results of previous studies also showed that problems in implementing SRL among students still exist. Hence, a survey was conducted to investigate the level of students' readiness for the implementation of Self-Regulated Learning.

SRL can be defined as an affective rule implemented in the learning process of an individual in order for him or her to achieve his/her goals (Nietfeld, Shores, & Hoffmann, 2014). Put simply, SRL is a student-centred learning strategy and students who implement this strategy will control and manage their own study plan to achieve their own goals. There are several learning theories related to SRL. One is constructivist. Constructivist theory related to SRL states that students should be allowed to learn from past experience, looking for information for their learning process from what they have themselves experienced (Briner, 1999). In the context of SRL, students find their own methods of learning and getting knowledge such as searching information via the Internet, books and previous experience. Another theory related to SRL is Gagne's learning theory. Gagne's theory focusses on the students' method in their process of finding new knowledge and new people (Gagne, 1985). Hence, when students implement SRL, they have the ability to search new knowledge on their own, acting independently.

METHODOLOGY

A quantitative survey study was conducted involving descriptive and inference statistics analysis. A set of questionnaires was used to identify the readiness of students in applying SRL. The questionnaire, measured by the Likert scale, was used because it coincided with the objectives of the study and respondents could choose their response within an appropriate time frame in order to provide better information (Sabitha, 2005).

The population of this study were the postgraduate students of the Master of Technical and Vocational Education (TVE) programme at Universiti Tun Hussein Onn Malaysia (UTHM) who had enrolled as full-time students. A total sample of 86 postgraduate students had been chosen as the samples of the study. To obtain the total sample of 86 individuals, a simple random sampling was used. Scheduled random numbers is a tool for conducting random sampling. The sample will be choosen randomly based on the number in the name list of students (Zikmund, Babin, & Griffin, 2010).

The questionnaire consisted of two sections, Section A and Section B. Section A contained questions on demographic

data relating to basic information of the respondents i.e. age, gender, race, semester of study and specialization. Section B contained questions that investigated the level of readiness of students in applying SRL. It used a 5-point Likert scale. The Self-Directed Learning Readiness Scale (SDLRS) was used in answering questions that were developed by Gugleilmino in 1977. Thirty-two items were used to study level of readiness for SRL and 32 positive items were selected based on items used by Hamid, Junoh, Mad and Balwi (2004), which were summaries of items proposed by Gugleilmino (1977).

The questionnaire was validated by three experts in order to check the style of language and sentence structure. The pilot study was conducted before the actual study was run. The Cronbach's Alpha (α) for the SDLRS was 0.879, which indicated that the relationship between the items was very good and suitable for use in the study.

The main method of analysing the data was descriptive and inference statistical. The analysis of data collected from Section A used frequency and percentage analysis, while data collected in Section B were analysed using descriptive analysis of mean and standard deviation. Inferential analysis involved several steps to determine the appropriate tests to validate the hypothesis. The first step was to determine whether the data collected were normal or not. According to the Central-Limit Theorem (CLT), the estimated data distribution is normal regardless of the initial distribution of data as long as the sample size is large

enough i.e. held at least 30 people (Rumsey, 2011). Data can also be seen as normal or not based on the value of skewness and kurtosis. Data are normally distributed if the skewness and kurtosis of each datum in the study is between 1.0 and -1.0.

RESULTS

Out of 86 returned questionnaires, a total of 80 questionnaires were analysed and six were incomplete. The response rate for this study was 93%; according to Dommeyer, Baum, Hanna and Chapman (2004), a 75% response rate is acceptable. Hence, the response rate for this study was acceptable for use.

The results for Section A, which was on demographics, showed that the majority of the respondents were women (60 respondents), while male respondents numbered only 20. This suggested that females were the dominant gender in the postgraduate programme, the Master of TVE, in UTHM. Distribution by gender of the respondents is given in Table 1.

Table 1
Number of respondents by gender

Gender	Respondents (Frequency)	Percentage (%)
Male	20	25
Female	60	75
Total	80	100

TVE postgraduate students are divided into three semesters. The TVE programme runs for a year and a half. Respondents for this study were drawn from the three

semesters in order for full representation of the overall population. The majority of the respondents were students in their final semester, the third semester, totalling 50 students. This was followed by students in Semester 1 (17) and Semester 2 (13). This distribution is seen in Table 2.

Table 2
Number of respondents by semester

Semester of Study	Respondent (Frequency)	Percentage (%)
Semester 1	17	21.3
Semester 2	13	16.3
Semester 3	50	62.5
Total	80	100

The result for the overall mean score for the level of readiness of students to apply SRL as derived from Section B was 4.09 (Standard Deviation=0.36), which was high. This indicated that the students were ready to practise SRL and they were willing to apply SRL strategies. The mean scores according to item were also high, from 4.25 to 3.85. However, one item, item 21, had an average mean score of 3.74. Item 21 refers to factors that made the students open to learning opportunities. Hence, these factors gave less impact on the level of readiness of students towards SRL practice. However, the overall mean score was still high. A summary of the data analysis on the readiness of the postgraduate students of the TVE Master's programme are summarised in Table 3.

Table 3
Mean scores for students' readiness for SRL

No	Item	Score	SD
1	I have a great respect for people who love to learn new things. (Item no 12)	4.25	0.67
2	I tried to find a relationship between what I had learnt and my long-term goal. (Item no 14)	4.23	0.57
3	I am responsible for my studies. (Item no 28)	4.23	0.57
4	Learning is a pleasure. (Item no 26)	4.19	0.64
5	I have no problem using any kind of learning method. (Item no 16)	3.94	0.68
6	My study was less effective because in every test, I got low marks. (Item no 10)	3.85	0.86
7	I like being the leader during group study. (Item no 21)	3.74	0.85
Overall Score		4.09	0.36

Descriptive analysis was conducted to identify the differences in readiness of students to apply SRL according to gender. Based on the mean scores, the difference in the mean of male and female students in readiness to apply SRL was 0.10, indicating that there was indeed a difference in the level of readiness to apply SRL. However,

a more thorough test was run using the independent sample t-test to further clarify the difference. Table 4 shows the mean score for the level of readiness.

Table 4
Mean score of TVET students

Level of Readiness	Mean	Standard Deviation
Male	4.01	0.31
Female	4.11	0.37

The independent sample t-test was selected to see whether there was a difference in readiness to apply SRL by gender. The results of the analysis showed that the significant value of Levene's test for equality of variances was p=0.118, where the value was greater than 0.05, indicating that the variance for the two groups was similar. The analysis of data on the first line was used as a reference. Next, the value of (p) Sig. (two-tailed) was referred to i.e. 0.261; this value was greater than the value of α=0.05, indicating that the null hypothesis failed to be rejected. Two groups were derived from the same population because there were no significant differences seen, t (78)=-1.133, p>0.05. Therefore, there were no significant differences in readiness to apply SRL among the students by gender. This means that readiness to apply SRL among female and male students was equal. A summary of the analysis of the independent-sample t-test can be seen in Table 5.

Table 5
Analysis of independent-sample T-test

		Levene's Test for Equality of Variances				
		F	Sig.	t	df	P value
Readiness	Equal variances assumed	2.501	0.118	-1.133	78	0.261
	Equal variances not assumed			- 1.243	38.837	0.221

DISCUSSION

TVE postgraduate students' readiness for the implementation of SRL was high and they were ready to apply SRL strategies. The results of this study have led to the students beginning Level 4 of SRL, rated Grow, where they were able to set directions for themselves, with the instructor or teacher acting as consultant. This showed that the students were ready to implement SRL. Student activities at this stage included individual work, group SRL and practical work. However, these findings contradict the findings of previous studies such as that by Yusri et al. (2012), who found that the level of readiness of students to apply SRL was average. According to Litzinger et al. (2005), students are not ready to implement SRL due to difficulty in learning subjects that need the full guidance of teachers. In

conclusion, the results of this study show a positive change in our education system as students seemed to have gained exposure to the advantages of using the strategy of SRL.

A further finding of the study was that there was no difference in readiness to apply SRL among students by gender. This proves that the level of readiness for SRL practice was not affected by gender. This findings of this study are supported by the work of Yukselturk and Bulut (2009), who in their study "Gender Differences in Self-Regulated Online Learning Environment", found that there was no significant difference in interest to apply SRL according to gender and achievement of students. The findings also contradict previous studies that found that female students were more ready to apply SRL than male students (Bezzina, 2010). The findings had shown that male preferred to be guided by teachers and that they lacked confidence to practise SRL.

CONCLUSION

It can be concluded that TVET students are ready for implementation of Self-Regulated Learning (SRL) in and out of the classroom. In addition, gender did not make a difference in student readiness to practise SRL. This suggests that students today are aware that they should choose an effective learning strategy in order to succeed in their academic achievement and personal skills.

REFERENCES

Abidin, N. A. B. Z., & Sahdan, S. (2017). Peer assessment: A challenge in the new generation. *Advanced Science Letters, 23*(2), 908–911.

Bezzina, F. H. (2010). Investigating gender differences in mathematics performance and in self-regulated learning. *Equality, Diversity and Inclusion: An International Journal, 29*(7), 669–693.

Briner, M. (1999). *What is constructivism?* University of Colorado: Denver School of Education.

Chen, C. C. (2002). Self-regulated learning strategies and achievement in an introduction to an information systems course. *Information Technology, Learning, and Performance Journal, 20*(1), 11–23.

Czaja, S. J., & Sharit, J. (1998). Age differences in attitudes toward computers. *Journal of Psychological Science, 5*3(5), 329–340.

Daud, K. A., Rahman, M. B., & Samsudin, M. A. (2013). E-Solms: *Kajian tentang tahap pembelajaran terarah melalui sistem pengurusan pembelajaran berorientasikan pelajar*. Retrieved from http://umkeprints.umk.edu.my/2849/1/artikel%20Teniat%20FTKW.pdf

Dommeyer, C. J., Baum, P., Hanna, R. W., & Chapman, K. S. (2004). Gathering faculty teaching evaluations by in-class and online surveys: Their effects on response rates and evaluations. *Assessment and Evaluation in Higher Education, 29*(5), 611–623.

Ee, J. (2002). *How teachers relate to high-achieving students*. Retrieved from http://www.el-usm.my/academic/sp100/02.pdf

Gagne, R. M. (1985). *Th*e conditions of learning and theory of instruction (4th ed.). New York: Holt, Rinehart & Winston.

Guglielmino, L. M. (1977). *Development of the self-directed learning readiness scale.* (Doctoral thesis). Available from university Microfilms International Theses database, Record No. 78–6004.

Hamid, M. A., Junoh, A., Mad, I., & Balwi, M. K. (2004). *Self-Directed learning and its relationship with awareness toward e-learning: A research among academic staff in Universiti Teknologi Malaysia, Skudai.* (Master's Thesis). Universiti Teknologi Malaysia, Malaysia. Retrieved from eprints.utm.my/2719/1/71977.pdf

Hassan, N. F., & Puteh, S. (2017). A survey of technology enabled active learning in teaching and learning practices to enhance the quality of engineering students. *Advanced Science Letters, 23*(2), 1104–1108.

Kailani, I., & Ismail, K. (2010). Mengenal pasti faktor-faktor yang menyebabkan pelajar kurang cemerlang dalam mata pelajaran sains. Satu kajian tinjauan di sekolah menengah luar bandar (1–7).

Klunklin, A., Viseskul, N., Sripusanapan, A., & Turale, S. (2010). Readiness for self-directed learning among nursing students in Thailand. *Nursing and Health Sciences, 12*(2), 177–181.

Kwon, S. Y. (2001). *Investigating the relationship between motivational factors and self-regulatory strategies in the knowledge construction process.* Graduate school of Ewha- Women's University, Seoul, Korea. Retrieved from http://www.icce2001.org/cd/pdf/poster3/krola.pdf

Litzinger, T. A., Wise, J. C., & Lee, S. C. (2005). Self-directed learning readiness among engineering undergraduate students. *Journal of Engineering Education, 94*(2), 215–221.

McCombs, B. L. (1989). Self-regulated learning and achievement: A phenomenological view. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement: Theory, research and practice.* New York: Springer-Verlag.

Mega, C., Ronconi, L., & De Beni, R. (2013). What makes a good student? How emotion, self-regulated learning, and motivation contribute to academic achievement. *Journal of Educational Psychology, 106*(1), 121–131. doi:10.1037/a0033546

Mustapha, R., Bunian, S., Rahman, S., Hussain, Y., & Ahamad Bahtiar, R. (2014). Environmental factors and students' learning approaches: A survey on Malaysian polytechnics students. *Journal of Education and Learning, 8*(4), 387–398.

Nietfeld, J. L., Shores, L. R., & Hoffmann, K. F. (2014). Self-regulation and gender within a game-based learning environment. *Journal of Educational Psychology, 106*, 961–973.

Olsen, P. B., & Pedersen, K. (2005). *Problem oriented project based learning: A workbook.* Roskilde University Press.

Ross, J. D. (1999). *Regulating hypermedia: Self-regulation learning strategies in a hypermedia environment. Components.* Virginia Polytechnic Institute and State University.

Rumsey, D. J. (2011). *Statistics for dummies* (2nd ed.). United States: Ohio State University.

Sabitha, M. (2005). *Kaedah Penyelidikan Sains Sosial.* Selangor: Pearson Prentice Hall.

Sahdan, S. B., & Abidin, N. A. B. Z. (2017). Self-Regulated learning: A literature review for 21st century learning technology. *Advanced Science Letters, 23*(2), 912–915.

Salomon, G., & Almog, T. (1998). Educational psychology and technology: A matter of reciprocal relations. *Teachers Collage Record, 100*(1), 222–241.

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.* New York: Springer-Verlag.

Skaalvik, S., & Skaalvik, E. M. (2005). Self-concept, motivational orientation, and help-seeking behavior in mathematics: A study of adults returning to high school. *Social Psychology of Education,* 8, 285–302.

Teo, T., Tan, S. C., Lee, C. B., Chai, C. S., Koh, J. H. L., & Chen, W. L., (2010). The self-directed learning with technology scale (SDLTS) for young students: An initial development and validation. *Computers and Education, 55*(4),1764–1771.

Tri, D. (1993). *Readiness for self directed learning and achievement of the student of universiti terbuka.* (Doctoral thesis). University of Victoria. Retrieved from http://repository.ut.ac.id/6276/

Yukselturk, E., & Bulut, S. (2009). Gender differences in a self-regulated online learning environment. *Educational Technology and Society, 12*(3), 12–22.

Yusri, G., Rahimi, N. M., Shah, P. M., Wah, W. H., & Hassan, A. T. (2012). Penggunaan s t r a t e g i belajar bersama rakan dalam kalangan pelajar kursus Bahasa Arab di UniversitiTeknologi MARA (UiTM). *Asia Pacific Journal of Educators and Education, 27*, 37–50.

Zikmund, W. G., Babin, B. J., & Griffin, M. (2010). *Business research methods* (8th ed.). Canada:South-Western, Cengage Learning.