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Students' self-directed learning readiness towards using the "SolveMe" Web in Technical and Vocational Education

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ABSTRACT

Self-directed Learning Readiness (SDLR) is an essential skill in continuous Tearning and Leaching (T&L) that needs to be applied to any student. The study aimed to look at the Self-directed Learning Readiness Level (SDLRL) among the final semester students. The total number of students involved was 136 students, covering seven areas namely Catering, Electrical and Electronics, Building Construction, Creative Multimedia, General Machining, Welding, and Air Conditioning. The questionnaire instrument used was adapted from Guglielmino(1997). The results of the study were analyzed using descriptive statistics involving average use, standard deviation, percentages, frequency and scores. Inference statistics involve t-tests. Studies showed that the students' Key Performance Indexes (KPIs) were at moderate levels for three aspects of self-management, learning to learn and self-control. The t = .119 test, p <.905 showed no significant difference in SDLRL based on gender (female, average = 3.4002, SP = .37393 and male, average = 3.3925, SP = .37146) which served as a reference that could benefit the academic institution for adapting the T&L technique involving SDLR.

Key words: Self-directed Learning, Web, Teaching and Learning

1. INTRODUCTION

Global transformations in science, industrial development and public life have now led to changes in the pattern of maintenance of the education system in the world [1]. Education is a medium that can be used to help improve the economy of individuals, families and countries. Education is also an important platform for exposing students to science. According to Hamid (2007) in the study of [2], education is a key pillar of quality human capital development. Therefore, the process of implementing education transformation needs to be carried out in the context of new pedagogy where it is intended to help every student acquire and master the learning skills needed in the 21st century.

According to the Malaysian Education Development Plan, 2013-2025, Education Transformation does not only increase the number of staff and facilities, but also focuses on understanding and enhancing the T&L process. T&L skills in the 21st century refer to several core competencies namely collaborative, digital literacy, thinking and problem-solving skills. [3] illustrates that 21st century learning is a form of need for students to master content, apart from producing, synthesizing or integrating. Another requirement is to evaluate information from a variety of subjects and sources by understanding and respecting different student cultures.
In order to meet the 21st century educational goals, the transformation of the education system has focused on changes in T&L [4]. Therefore, one of the approaches proposed in 21st century education is constructivism, in addition to cooperative learning, problem solving, contextual approaches and future research approaches. [5] through the Curriculum Development Division (CPC) has outlined the guidelines for implementing a constructivism approach to education in schools in all the subjects taught. This new perspective assumes that students not only receive passive knowledge from their teachers but also develop their knowledge through interaction with their environment [6].

2. PROBLEM STATEMENT

Constructivism has several important elements and one of them is self-learning. Self-learning is an important element in which it can have a positive impact on constructivism approaches. In this constructivism approach, self-learning is closely related to students' cognitive abilities, especially in the process of assessing knowledge. Highly knowledgeable students have high skills in processing information and improving memory and information storage. According to [7], teachers must ensure that the given problem has information that can help students explore additional information from various sources to solve the problem. This means that the characteristics of the constructivism approach based on student interaction with the environment and teaching aids help students achieve good academic performance [8]. However, students in Malaysia are still less successful in using self-study than students in developed

countries such as Europe [9]. Therefore, this should be emphasized because according to the study conducted by [10], 2009, it was stated that the level of readiness of self-learning among students was low. Teacher guidance is very important for students to implement self-directed learning [11]. The inability to implement self-learning also causes students' academic performance to be inconsistent and declining [12].

3. LITERATURE REVIEW

3.1 Self-directed Learning

The culture of spoon feeding still exists at the public or private institutes of higher learning. Providing students with all the information during the lecture and learning sessions in the lecture is not a culture to be adopted for the student curriculum. Educators should be aware that students' inability to perform Self-directed Learning (SDL) well leads to a decline in the students' academic performance (Sukseemuang, 2009). [13] introduced SDL in the education world by defining SDL as a process for individuals to take initiative, with or without the assistance from others in identifying their learning needs such as formulating goals, identifying resources, selecting and implementing appropriate learning strategies, and assess learning outcomes. Therefore, T&L approaches for students need to change from teacher-centered (spoon feeding) to student-centered balance of knowledge, skills and attitudes. It is clear here that SDL is not a new approach to T&L but we need to look at it broadly as it is still relevant for practice as an effective T&L strategy for students. [14] emphasize that although skills such as self-direction, creativity, critical thinking, and innovation may be outdated in the 21st century but these skills are still relevant in today's job demands and are still considered the basis for success.

3.2 Web Applications In Teaching And Learning

[15] described a website as a site that contains a wealth of information such as text, graphics, audio, and video animations based on the suitability and creativity of the sites. In describing the web as a source of teaching and learning, there are two commonly used terms: (i) Web-based Teaching and (ii) Learning Through Web Education (EWS-Education Web Sites). In Teaching and Learning (T&L), WBI is seen as an intermediate medium in delivering lessons to students [16]. Millions of information can be obtained through the use of specialized websites for teaching and learning purposes such as by using emails, chat rooms, bulletin boards and discussions.

There are several key features that distinguish websites from other media, such as the ability to provide an environment where students can interact with teachers, students interact with other students or students interact with the site itself. Learning through EWS is developed specifically for the purpose of teaching and learning. In addition, EWS is also a part of the purpose of WBI, and is sometimes used only for the purpose of presenting educational information [17]. Web-based learning is a combination of educational and electronic elements known as E-Learning, m-learning or mobile learning.

4. RESEARCH METHODOLOGY

This study is descriptive in the form of survey design. The researcher used the questionnaire form to get feedback from the respondents to identify the level of student Self-directed Learning Readiness (SDLR).

4.1 Research Population And Sample

The target population of the study was the final year Bachelor of Vocational Education students from the Faculty of Engineering and Vocational Education (FPTV), University of Tun Hussien Onn Malaysia (UTHM). The total number of students involved was 200 students from seven areas namely Catering, Electrical and Electronics, Building Construction, Creative Multimedia, General Machining, Welding and Air Conditioning. According to [18] in [19], the sample of the study is the number of respondents in a study population based on the sample size of the population size. For this study, the population was 200 and the random sample needed was 136 students according to [18] sample size determination table.

4.2 Instrument

This study used questionnaire as the instrument. The questionnaires had two (2) sections, which were sections A and B. Part A contained two (2) items with questions related to student demographics and section B contained thirty-six (36) items covering questions related to self-management, determination to learn and self-control. Each questionnaire used a four-level Likert Scale to assess respondents' level of agreement on 36 items ranging from 1 as strongly disagree to 4 as strongly agree. The results from the questionnaire were analyzed using SPSS software. Table 1 shows the content distribution in the questionnaire.

Table 1 : Questionnaire Content Distribution

Section	Aspects	Item
A	Demographic respondents	2
B	Self-Management	12
	Determination to Learn	10
	Self-Control	14

5. RESEARCH AND DISCUSSION

Descriptive statistical methods were used by the researchers to describe the information obtained from the respondents, processed, analysed and evaluated by the mean and frequency of the method used. Table 1 shows the scale of interpretation used for the mean of this study.

Table 2 : Interpretation of Mean Scale

Mean value	Interpretation Mean
1.00 – 2.33	Low
2.34 – 3.67	Moderate
3.68 – 5.00	High

Source:[20]

5.1 Respondents' Demographic Distribution Analysis

Table 3 shows the frequency distribution of respondents to the questionnaire by gender and field of study. Based on the table, the researchers found that the number of male respondents was 69 and the female was 67. In the field of study, the analysis showed that the numbers of respondents who answered the questionnaire were 21 General Machining, 21 Building, 21 Catering, 20 Catering, 16 Welding, 23 Electricity and Electricity, 19 Creative Multimedia, and finally air 16 conditioning. The highest number of respondents was from the field of Electrical and Electrical Engineering.

Table 3: Respondent Demographic Distribution

Item	Category	Frequency	Total
Gender	Male	69	136
	Female	67	
Field	Catering	20	136
	Electricity and Electronics	23	
	Building construction	21	
	Creative Multimedia	19	
	General machining	21	
	Welding	16	
	Air conditioner	16	

5.2 Levels of Self-directed Learning Aspects of Self-Management

Table 4 shows the analysis of the levels of self-directed learning preparedness aspects of self-management. From the analysis, the researcher found that the highest average value was 3.56 which was "I am disciplined". This finding is in line with the study of [21], who stated that attitude is a factor influencing self-monitoring learning among adult learners. While the lowest item was "I have a tight learning schedule" with an average value of 2.99. Therefore, this method of self-study is ideal because it enables individuals to participate in open and independent learning sessions and based on their own abilities without having to follow a schedule or attend a designated class [22]. On the other hand, the average value of the self-management aspect was at a moderate level of 3.30.

Table 4 : Levels of Self-directed Learning Disorders Self-Management Aspects

No	Item	Score Mean	Level
1.	I am a disciplined person	3.56	Moderate
2.	I am a very organized person	3.45	Moderate
3.	I have a tight schedule for learning	2.99	Moderate
4.	I have good self-management skills	3.38	Moderate
5.	I'm a systematic person	3.24	Moderate
6.	I'll set a specific time for studying	3.10	Moderate
7.	I was able to solve the problems I had planned	3.30	Moderate
8.	I do my job according to my priorities	3.51	Moderate
9.	I am confident that I can continue to learn on my own	3.35	Moderate
10.	I prefer to study alone	3.23	Moderate
11.	I'm confident in my ability to get the information I want	3.37	Moderate
12.	I can manage my time really well	3.14	Moderate
	Total	3.30	Moderate

5.3 Levels of Self-directed Learning Disorders Aspect of Learning to Learn

Based on Table 5, the highest average value item was "I need to know why something is happening" where the average value was 3.67 (which was at moderate level). This attitude was one of the most important attitudes and needs of every student to keep learning unlimitedly. This finding was in line with the findings of [23] where it was found that curiosity could influence students' achievement in a given learning situation. In addition, the lowest average value in terms of willingness to learn was 3.13 on the item "I am very critical of evaluating new ideas". Thus, two-way interactions are important to ensure that students truly understand the content of the knowledge delivered by the lecturers. It is only after understanding the content that is taught that students can reflect on the whole lesson in a short period of time to prove

that they really understand and the elements for active learning are listening, writing, reading and reflection [24]. On the whole, however, the average level obtained was at a moderate level with an average value of 3.46.

Table 5 : Level of Self-directed Learning Readiness Aspects of Learning to Learn

No	Item	Score Mean	Level
1.	I want to learn something new	3.49	Moderate
2.	I find it very important to keep studying	3.53	Moderate
3.	I really like the challenge of learning	3.46	Moderate
4.	I like to study by myself	3.26	Moderate
5.	I'm very critical of evaluating new ideas	3.13	Moderate
6.	I like to get valid information before making a decision	3.41	Moderate
7.	I like to judge something I do	3.46	Moderate
8.	I'm very open to new ideas	3.55	Moderate
9.	I learned through past mistakes	3.60	Moderate
10.	I need to know why something happened	3.67	Moderate
	Total	3.46	Moderate

5.4 The Levels of Self-directed Learning Aspect of Self-Control

Based on Table 6, the findings showed that the item "I am very responsible" has the highest average number of 3.59. This showed that the attitude of student responsibility could be accepted as an essential element of teaching and learning as needed [25]. The lowest average value was 2.98 on the item "I prefer to make decisions on my own." This is because students are naturally interested in interacting with classmates and good interactions can be a major factor that could drive student engagement in active learning [26]. Overall, the average score for the self-control aspect was 3.43 which was categorized as moderate.

Table 6 : Self-directed Learning Readiness Aspects of Self-Control

No	Item	Score Mean	Level
1.	I prefer to make my own decisions	2.98	Moderate
2.	I'm very responsible for every decision I make	3.53	Moderate
3.	My life is always governed by a set plan	3.16	Moderate
4.	I have a very good level of personality	3.41	Moderate
5.	I prefer to set my own learning goals	3.58	Moderate
6.	I personally evaluate my achievement	3.41	Moderate
7.	I'm a logical person	3.57	Moderate
8.	I'm a very responsible person	3.59	Moderate
9.	I have high expectations	3.47	Moderate
10.	I have the ability to pay close attention to any problems I have	3.57	Moderate
11.	I'm always careful with my own weaknesses	3.57	Moderate
12.	I can get the information I need on my own	3.41	Moderate
13	I strongly believe in my own abilities	3.41	Moderate
14.	I prefer to determine the criteria to be followed in assessing my own performance	3.42	Moderate
	Total	3.43	Moderate

5.5 Self-directed Learning Readiness Level Between Gender

Based on Table 7, the respondents had the highest average value of the study factor (average = 3.4362, SP = 0.36095) while the lowest was the self-management factor (average = 3.3128, SP = 0.42067. For female respondents, the highest average was the willingness to learn (average = 3.4716, SP = 0.35921) and the self-management factor showed the lowest value (average = 3.2886, SP = 0.43720). Both genders showed Self-Directed Learning Readiness Levels (SDLRL) on the three aspects.

Table 7 : Comparison of Self-directed Learning Readiness by Gender

Aspects	Male		Female	
	Average	SP	Average	SP
Self-Management	3.3128	.42067	3.2886	.43720
Determination to Learn	3.4362	.36095	3.4716	.35921
Self-control	3.4286	.48923	3.4403	.48868

The data were analyzed to test the hypothesis (there was no significant difference in SDLRL among students by gender) using t-test. The results showed that the student population had a higher SDLRL (average = 3.3925, SP = .37146) than the female (average = 3.4002, SP = .37393), with a t = .119, p = .905> .05 as shown in Table 8 This study shows no gender difference in the SDLRL. These results are driven by the learning and self-concept factors of students as effective learners and thus, influence students' interests and attitudes towards self-directed learning. This is in line with the

findings of [21]. This finding is also supported by the findings of [26] who stated that there was no difference in SDLRL based on gender. However, this study does not support the findings of [27] study.

Table 8 : t-test Comparison of Self-directed Learning Readiness Comparison by Gender

Gender	Number	Average	SP	Value-T	Sig
Male	69	3.3925	.37146	.119	.905
Female	67	3.4002	.37393		

* Significant on the level p< .05.

6. CONCLUSION

In conclusion, the study revealed that self-study of teaching and learning should be conducted as the SDLRL was at a moderate level. This shows that students are ready to conduct SDL but need attention and guidance from the educators. The SDL Element has proven to have a significant impact on the success of a student especially in the academic field. The integration of effective teaching and mentoring aspects, together with the motivation and ability of good SDL students will contribute to the development of human capital as envisaged in the National Education Framework. [28] stated level of student acceptance also varies by people and causes weak students to be left behind if they do not understand clearly and do not accept the input they have been given". In addition, the researchers hoped that this study could have important implications for various stakeholders in higher education institutions [29].

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