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Increased Interest among Malaysian Technical Students with Different Learning Styles

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Abstract--- *Learning style is an important concept and needs to be focused on education as it is a key factor in shaping an individual's quality. Every individual has different learning styles. The learning process of students will be practiced directly through their learning style. This study used quasi-experimental design with pre-post-test groups of unbalanced groups. The study sample was selected to carry out this study using the purposive sampling method. The students involved in this study were from Polytechnic Merlimau, Malacca and Polytechnic Port Dickson, Negeri Sembilan. The findings show that students who are flipped learning experience a 97.9% increase in interest. In addition, the mean of the treatment group was 102.43 and the mean of the control group was 60.59. Active dimension students showed mean values of 82.26 and reflective dimension students mean 80.67. On the whole, students who engage in flipped learning tend to experience increased interest despite having active and reflective dimensions. In conclusion, students' interest in the subject of Electrical Technology 1 can be enhanced if students are aware of their own learning style. Accordingly, this method of flipped learning is proposed to be applied by the lecturers during the learning and teaching process to enhance the interest of students, especially technical students in polytechnic Malaysia.*

Keyword---*Learning Style, Teaching And Learning, Flipped Learning, Student Interest.*

I. INTRODUCTION

Quality educational institutions are capable of producing high quality graduates [14]. In this regard, the quality that a teacher possesses can also influence the quality of his or her teaching and learning achievement. The role of teachers is important in educating students and in the classroom as teachers, facilitators and facilitators. Therefore, diversifying teaching methods, providing teaching aids and deepening the content to be taught are effective teacher practices for teaching and learning [3, 31]. Teaching and learning methods are at the highest level if students are able to overcome the most appropriate cognitive and affective learning methods to enhance their ability [16, 27]. Teachers are expected to encourage students to improve their knowledge and skills through accurate and effective teaching and learning [6]. Therefore, Gijsbers and Schoonhoven (2012) suggest that teachers need to be creative and have the capacity to increase students' interest in exploring various knowledge throughout the learning process [10]. Teachers are individuals who have the knowledge and skills and are given the responsibility to provide knowledge and education to students.

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Teaching and learning strategies are needed for teachers to implement classroom activities effectively. Woolfolk (2004) argues that teaching and learning is the process of internal change that occurs in a person by developing new potentials to generate new feedback [28]. Teaching, therefore, is defined as the delivery of information, knowledge, skills, and concepts to enhance the quality of students' own lives during the classroom activities. Learning is a change in student behavior as a result of learning experiences and not due to developments in nature. The goal of the National e-Learning Policy in Polytechnic is that 50% of courses organized by the IPTA must be online where it adopts a blended learning approach [19, 32]. This is because Malaysia needs to move from a large-scale delivery model to a technology-driven innovation model to expand access to education, and to offer learning that is more individualized [12]. The method of flipped learning is one of the methods of blended learning [16]. The concept of flipped learning is that students gain knowledge and knowledge outside of the classroom and that when students are in the classroom students will be exposed to a variety of active activities to further enhance their understanding and knowledge gained during the classroom. This flipped learning is also a flexible learning as students are free to control their learning patterns with their peers. In addition, the role of the instructor in this method of learning is more than facilitator or observer. Teachers also have the opportunity to reach out to and assist students who really need help during the learning process.

Students who master basic skills can increase their interest in the field [21]. The definition of interest according to Nyman (2017), is to connect an individual to an object that has the effect on a person [18]. Students' interest can be improved through the various ways in which they are taught and taught by the teachers.The findings of the study conducted by Yaapar et al. (2013), found that students who have an interest in something are able to show a high coefficient r of 0.836 [29]. This implies that students who have an interest in the lesson are able to think critically, be active in the classroom, be able to work in groups, improve their communication and communication skills. According to Mironova et al. (2016), flexible learning creates a positive situation as student’s increase interest and make the learning process interesting [17]. This is evidenced by a study conducted on semester 1 of IT courses at Tallinn University of Technology. The findings of Baepler, Walker and Driessen (2014) study indicate that active learning such as group discussions, problem solving, presentations can also enhance student understanding [4]. In addition, in this study the researcher reduced the time of students' meeting in the classroom and replaced it with lecture lectures online.

A research conducted by Man Choi (2013), found that students were better able to understand the subjects presented through flipped learning. This is because students have engaged in activities such as group discussions while students with problems can continue to meet with faculty and classmates for the purpose of learning [15]. Learning styles are also a major contributor to student learning. This is because according to Chen, Masek and Amiruddin (2014), learning style that is appropriate to students can help students improve their learning performance. This is evidenced by the results of a recent study in which students with learning styles that are relevant to themselves have a significant relationship with academic achievement [8]. One of the most commonly used learning styles among technical students is the Filder& Silverman Learning Style. According to this learning style there are 4 domains of which there is a processing domain. This domain is divided into 2 dimensions namely active and reflective dimensions. It means that the student tends to actively or informally process information.

Students who are more likely to actively process information will find it easier to engage in group discussions and they also prefer working in groups and engaging in activities such as carrying out projects. However, for students who have a tendency to process information informally they like to think quietly before understanding in depth. This group also enjoys working alone.

Active students are more likely to understand a concept after they have tried the activities involved and this helps them to discuss the concept [11]. Whereas for students who are reflective they are passive in contributing ideas and often find it difficult to remember formulas. People of this nature usually sit in the back of the class and listen only to what the teacher or lecturer is saying. A person's potential can be highlighted when they have their own skills. One's self-esteem is an important element [16]. This is because it encompasses aspects of life such as cultural, economic, political and social that bring globalization challenges. At a young age one has to hone and explore the skills they have. This is because those who lack the skills or do not know the skills they have will cause them to struggle in their daily lives. These skills can be acquired through a variety of ways including games.

According to Jamaluddin et al. (2016) the method of play in the teaching process can positively impact the student's motivation and creativity [13]. This is evidenced by the results of a study conducted on Level 4 students on the subject of account principles. Students following the teaching and learning process showed that there was a significant increase in test scores before and after the study. In addition, the play method in the learning process can create a fun and effective learning environment and reduce the frustration of students who follow conventional teaching methods. Samsudin et al. (2017) in a study entitled The Effectiveness of Interactive Games in Addressing Mathematics Concerns among students says that interactive games conducted for math subjects can reduce student anxiety levels and improve problem solving skills among students not only students but also a university student. Therefore, this method should be continued to interest students in learning mathematics subjects and also to ensure student success in the future.

In a study conducted by Siong and Osman (2018), the application of the education system using digital gaming techniques is very flexible and has its own advantages. Among these advantages is that it can apply the principles of learning that are at the core of education as found in behavioral theory, cognitive theory as well as constructive theory. In addition, using the teaching and learning method which uses the game method can provide fun and entertainment elements that can stimulate the player's thinking for them to apply some of the concepts and skills learned. In conclusion, elements of games in education can train players, especially students, to improve problem-solving skills, to make wise decisions and to consider things that are interesting and challenging. Therefore, this study was conducted to investigate the method of flipped learning using the active activity medium which is the method of play and presentation during the learning and teaching sessions. The study also followed the characteristics of the students according to Filder& Silverman's learning style. The research questions included in this study are:

i. Are there significant differences between treatment groups and control groups for the interest of polytechnic technical students with active processing dimensions?

ii. Are there significant differences between treatment groups and control groups for the interest of polytechnic technical students with reflective processing dimensions?

II. METHODHOLOGY

A. Research Sample

The study sample was selected to carry out this study using the purposive sampling method. According to Yahya (2007) sampling is a process of sample selection in which the researcher selects samples based on specific characteristics and in accordance with the objective of the study. The student selection in this study was based on a similar learning environment as well as the experience of the instructor teaching the Electrical 1 subject for more than 5 years. A total of 74 students were directly involved in this study. The students sampled for this study were 38 students from Polytechnic Merlimau, Malacca and 36 students from Port Dickson Polytechnic, Negeri Sembilan. The students were divided into 2 groups: treatment group (Polytechnic Merlimau, Melaka) and control group (Poly Dickson Polytechnic, Negeri Sembilan).

B. Material

The teaching materials provided to the treatment group are in the form of active activities and follow one of the topics found in the Electrical Technology course 1. The learning topics for these activities are Delta-Star Transformation and Electrical Power & Energy. This sub topic is in the topic Introduction To Electric Circuit.

C. Procedure

The students involved in this study were students from Merlimau Polytechnic, Malacca and Port Dickson Polytechnic, Negeri Sembilan. A total of 74 students participated in this learning session. Students from the Polytechnic Merlimau were treated as treatment groups while students from the Port Dickson Polytechnic were treated as control groups.For the control group, their learning process was using traditional methods whereby they would carry out their teaching and learning process as usual while the treatment group would carry out the PdP process using flipped learning. Prior to this study, all students were given an ILS (Learning Styles Index) test to find out the category of their input domain (active and reflective). In addition, students are asked to answer the pre test set to find out their basic knowledge of the subject. The time given to students to answer the pre test set is 1 hour and 30 minutes. The time taken to complete this study was eight weeks. After students have completed the PdP process, students are again given a set of post-tests to determine their level of knowledge of the subject they have studied.

III. ANALYSIS DATA

The analysis used to analyze the findings of this study was an ANOVA to find out the increasing student interest in the treatment and control groups. The significance of this analysis test is x = 0.05.

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IV. RESULT

Estimated Marginal Means

1. group

Dependent Variable: skorpost

group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
treatment	102.338	.517	101.307	103.369
control	60.587	.525	59.539	61.635

2. dimension

Dependent Variable: skorpost

dimension	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
active	82.255	.508	81.242	83.269
reflective	80.669	.534	79.604	81.735

Descriptive Statistics

Dependent Variable: skorpost

group	dimension	Mean	Std. Deviation	N
treatment	active	105.86	1.521	22
	reflective	98.81	5.382	16
	Total	102.89	5.050	38
control	active	58.65	2.523	17
	reflective	62.53	2.458	19
	Total	60.69	3.143	36
Total	active	85.28	23.803	39
	reflective	79.11	18.771	35
	Total	82.36	21.648	74

Tests of Between-Subjects Effects

Dependent Variable: skorpost

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	33517.501[a]	3	11172.500	1127.482	.000
Intercept	483925.397	1	483925.397	48835.717	.000
group	31779.419	1	31779.419	3207.045	.000
dimension	45.854	1	45.854	4.627	.035
group * dimension	544.523	1	544.523	54.951	.000
Error	693.648	70	9.909		
Total	536225.000	74			
Corrected Total	34211.149	73			

a. R Squared = .980 (Adjusted R Squared = .979)

Table 1 shows the results of two-way ANOVA tests for the independent samples in this study, which showed that there was a main effect of group independent variables [F (1,70) = 3207.04, p <0.05] and dimensions [F (1,70) = 4.63, p <0.05 for significant dimensional dependent variables. Also, the effect of interaction between the two independent variables (group * dimension) on the dependent variable was also significant [F (1,70) = 54.95, p <0.05]. The results of the data analysis also indicate that the main effects and interaction effects of the two independent variables accounted for 97.9 percent of the change in the dependent variable. This means that 97.9 percent of the increase in interest scores is due to flipped learning, dimensions and the combination of flipped learning and dimension.

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The study data indicated that for the independent variables, the mean value of the treatment group (min = 102.43) outperformed the control group (min = 60.59). This shows that significantly, students who follow flipped learning have an increase compared to students who follow conventional learning. For the non-dimensional variables, the study data showed that the mean value for the active dimension students (mean = 82.26) outperformed the reflective dimension students (mean = 80.67). This shows that significantly, students with active dimensions have an increase in interest compared to students with reflective dimensions.

In addition, for the combination of the two independent variables, the data analysis results indicated that the mean value for the active dimension treatment group (min = 105.86) outperformed the control group (min = 102.89), while the reflective treatment group dimension (min = 98.81) outperformed the group. Reflective dimension control (min = 58.65). This means that students who engage in flipped learning that have an active or reflective dimension tend to achieve an increase in interest in this subject of electrical technology 1.

V. DISCUSSION

Based on the data analyzed, students who learn flipped learning can increase their interest compared to students who have convensional learning. Increased interest in the treatment group students also indicated differences before and after flipped learning were used by their lecturers.Learning through the flipped method means that the process of teaching by the lecturer is carried out at home or outside the classroom while in the lecturer class only discusses topics related to learning [7, 9]. In this process the teacher acts as a facilitator where the teacher will explain the lesson as needed by the student. So this process makes the students a learning center. Student-centered learning strategies can provide learning experiences that will interest students and encourage their involvement in the learning and teaching process.

Interest is the impulse or desire of a particular subject which through the interest of the student will do something with pride[24]. According to Yahaya & Ling (2008) interest is the primary motivation for students to do something as an example of a teacher who successfully stimulates student interest in the lessons presented that will make the student more motivated and active in the learning activities without being forced [30]. Interest needs to be instilled in students from the very beginning[1]. These interests can be stimulated by the encouragement of parents, teachers and friends. Interests are an impetus for students to stay active in the teaching and learning activities delivered by teachers. A study conducted by Andrade et al. (2018)shows that students with an active learning style are fond of manipulating objects, experimenting with existing materials and trying to experiment [2]. While students with reflective learning styles prefer to think about the past and evaluate their choices and learn through the analysis they have gained.

Students in the active category prefer to participate in group discussions while reflective students need space or pause during the teacher presentation process to reflect on what the teacher has to say[20].There are several strategies in student-centered learning or active learning. Among the strategies mentioned are creating learning experiences that will interest students and encourage their involvement in the teaching and learning process. In addition, it provides opportunities for students to learn how to learn individually, in groups and in class. Learning visually in groups and games is one of active learning. The lecturers who used this presentation during the teaching

and learning session were more favored by students than the teaching and learning who used the “talk and chalk” method[5].

Learning through this method is a new and indirect method that enhances students' understanding, encourages students to think creatively and critically, enhances student achievement and motivation and even improves knowledge. students constantly[25]. In addition, inter-group collaboration enables productivity and quality to be enhanced in terms of combining the expertise, knowledge and commitment of all members and energies to produce a work that is minimized[22]. The application of the educational system using digital games techniques is very flexible and in fact has the advantage of applying the principles of learning that are the core of education such as the application of various elements as noted in behavioral theory, cognitive theory and constructive theory[23]. Even through the elements of entertainment and fun present in the game package can actually stimulate the player's mind to realize that they have applied some of the concepts and skills they have learned before.

VI. CONCLUSION

The variety of methods in the learning and teaching process can have a positive impact on students and teachers. Flipped learning methods can increase students' interest in difficult subjects such as Electrical Technology 1 such as the findings of this study.The benefits of active learning include encouraging students to shift from memorizing to understanding the learning itself, shifting from the theory of knowledge transfer to interactive forms, and problem solving, shifting the paradigm from teacher to student learning, and shifting from conventional revolution to authentic assessment such as portfolios, projects , reports, or presentations of students. Active learning encourages active learners to gather learning information. The learning information is received by students by speaking and listening, writing, reading and reflecting. Teachers make learning more exciting with the help of educational technology, teaching aids, external referral resources and more to convey learning content to students.Accordingly, this method of flipped learning is proposed to be applied by the lecturers during the learning and teaching process to enhance the interest of students, especially technical students in polytechnic Malaysia.

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