

## Learning Style Preferences Among Diploma Students of Occupational Therapy in University Teknologi MARA (UiTM)

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**Abstract:** This study investigated the most preference learning styles among Diploma students of Occupational Therapy. One twenty three students of Diploma in Occupational Therapy includes semester 1, 3 and 5 from Faculty of Health Sciences, UiTM Puncak Alam. A cluster sampling method was used for sample selection. The Index of Learning Styles (ILS) questionnaire consists of 44 questions that help to identify the students' learning styles out of four domains: active/reflective, sensory/intuitive, visual/verbal and sequential/global. Finding showed the most preference learning style was visual (48.2%) followed by active style (16.1%). A reasonably high preference was also shown on sensing style (10.7%), reflective style (8.0%) and sequential style (7.1%). However, preferences towards other styles were low; 5.4% for global, 2.7% for verbal and only 1.8% for intuitive style. The most students obtained good CGPA were visual learner mostly fall into the CGPA range 3.00 – 3.49 (14.8%) and 2.50 – 2.99 (29.6%), whereas the less score were intuitive learner. The students' learning styles vary according to gender, semester and academic achievement. There was no significant difference between learning styles of the students according to their academic achievement. However, it was found that there was low correlation between learning styles and academic achievement.

**Key words:** Learning Style • Academic Achievement • Index Of Learning Style (ILS)

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### INTRODUCTION

Learning is the process whereby knowledge is created through the information of experience [1]. It is well acknowledged that education environment is an important element in determining students' ability to reach to their fullest quality [2]. Within the education environment, the establishment and identifying students' learning style has often been recognized in the education system. The importance of learning style could help academics to understand students' preference of learning that could assist in selecting appropriate instructional methods and educational options [3]. If students' learning style is known, academics could anticipate their students' preferences, take advantage of their strengths and avoid their weaknesses [4]. Studies within the education literature have focused on examining and understanding learning style preference [5]. One particular issue within the learning style preference that has been examined is the factors that influence learning style preference.

These studies examined various factors such as personality [6], culture [7], course context [8] and demographic profile [9] among others. These issues were examined using various theories and models [10-13]. One theory that has received great attention is Kolb's model. Kolb's model is particularly well-designed since it offers both a way to understand individual's different learning styles and also an explanation of a cycle of experiential learning that applies to all individuals [14]. Kolb's model of experiential learning model explains that different individual naturally prefer a certain single different learning style [1]. Within this model, the learning style inventory (LSI) was introduced [1]. Kolb developed LSI to measure learning style preferences. Studies in the accounting education literature have used Kolb's model to examine various factors that could influence students' preferred learning style.

Learning style is a characteristic cognitive, affective and physiological behaviors that serve as a relatively stable indicator of how individuals perceive, interact with

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and respond to the learning environment [15]. It is a predisposition to adopt a particular learning strategy involving a particular pattern of information processing activities [16].

According to Kolb [1] "learning is the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping experience and transforming it". He further argued that there are four types of learning style, namely, converger, diverger, assimilator and accommodator. Converger refers to an individual who wants to solve a problem and often focuses on specific problems. An individual is a diverger when the person solves problems by viewing situations from many perspectives and relies heavily on ideas generating and brainstorming. Assimilator refers to an individual who solves problems using inductive reasoning and has the ability to create theoretical models. Accommodator is classified as an individual who solves problems by carrying out plans and performing experiments and adapting to specific immediate circumstances [17]. Studies have shown that students could match their learning style to an appropriate activity or environment [11]. These studies argued that the greater the attention paid to the congruence of learning activities within students' learning style, the better the students will learn. This is due to the fact that students' learning capacity is partially determined by the students' ability and capability of their learning style [18]. Therefore, the failure in recognizing the importance of difference learning styles among the academics would often lead to students' poor performance.

A body of the literature has examined the link between course selection and students' learning style [19-21]. Most of these studies found that course selection could influence students' learning style. For example: Baldwin and Reckers [19] found that accounting students' learning style differ significantly from other business majors and most of these students belong to the converger and accommodator type of study style. Other studies, however, provide contrasting results [22]. Another group of studies have examined whether students' learning style could be influenced by course experience [19, 23]. These studies often compared two groups of students (such as junior and senior students) examining whether the length of time they had in the course that they enrolled in would change their learning style. These studies suggested that more junior students tend to become converger while senior students tend to become assimilator. There are also studies that examined

learning style using Kolb's model in the accounting literature [23, 26]. The results of these studies are mixed. Some of the studies showed that most accounting majors are assimilator [23]. Other studies found that accounting students tend to become assimilators [24, 25]. There are also studies that showed no significant difference in the learning style preferences [26]. Within the education literature, most studies were conducted in the linguistic disciplinary.

Often, these study examined students' learning style in English courses [27]. Other studies have focused on online courses [28-30], mental and/or occupational health [31, 32]. These studies used country setting such as Hong Kong [33], Australia [20], Tibet [5], Gujrat [39] and USA [29]. Study on learning style in Malaysian occupational therapy student, however, is sparse.

Although limited, there are studies that have examined learning style in occupational therapy field. Felder and Silverman's [11] model is used to classify learners' learning styles in terms of four dimensions, i.e., perceiving information (Sensing/Intuitive), inputting information (Visual/Verbal), processing information (Active/Reflective) and understanding information (Sequential/Global). However, as noted before, these studies were examined in other disciplinary. Such limitation provides a gap in the occupational therapy literature and therefore, provides motivation for this study to examine these issues.

As a result, the learning activities are conducted in a manner that does not match the students' style of learning. To identify the students' learning style can only be achieved if they are aware of their own learning style and its impact on academic achievement. Therefore, there is a need to conduct a survey on students' learning preferences in order to improve the quality of teaching and learning process. This paper explores the most Learning style preferences (LSPs) among Diploma students of Occupational Therapy for Semester 1, 3 and 5 in Universiti Teknologi MARA (UiTM), Puncak Alam campus and the association between the Diploma students of Occupational Therapy learning styles (semester 3 and 5) and their academic achievement which measured by cumulative grade point average (CGPA).

## **MATERIALS AND METHODS**

**Participants:** The total population of Diploma students of Occupational therapy (OT) in the present study was 123 for three batches of semesters. Cluster sampling method was used to the samples which selected according to the

number of the students for each semester, whereby, 31 students from semester 1, 37 students from semester 3 and 55 students from semester. In this study a total of 112 students returned the completed and perfect questionnaire. This number was achieved after follow-up was done to ensure they return the questionnaires.

**Research Instrument:** The study tool used was the Index of learning style (ILS) questionnaires developed by Felder and Silverman [11]. The questionnaires contained 44 items. Eleven items each arranged randomly are able to identify the respondent’s learning styles out of the four domain; active/reflective, sensory/intuitive, visual/verbal and sequential/global. The questionnaires forms were distributed to students during the beginning of the semester.

Each respondent’s learning style preference was determined by totaling up the style in each domain and then the difference of the totals within the domain was determined. Learning style with the highest score (total) corresponds to the preferred style.

**Data Analysis:** The data was entered and interpreted by using Statistical Package for Social Sciences (SPSS) version 18. The overall analysis of the respondents’ learning styles was descriptively analyzed using percentage and frequency. To analyze the association between learning styles and academic achievements, chi-squared test was used. Spearman rank order correlation was also carried out to explore the relationship between the learning styles and academic achievement.

**RESULTS**

Table 1 shows the demographic data of sample based on semester, gender, age and CGPA. CGPA refers to academic achievement of the students from previous

semester. Student from semester 1 do not have CGPA because they are new coming students. Out of this, 14 (12.5%) were male students and 98 (87.5%) were female. This is not surprising because the number of female students is greater than male students in all Malaysian public universities. Majority of them are attending semester 5 (39.3%), semester 3 (33.0%) and semester 1 (27.7%) with ages of the students ranged from 18 to 20 years, with a mean = 19.17, SD = 0.837.

In term of academic achievement, majority (59.3 %) of students fall into the CGPA range of 2.50 – 2.99, while 37 % in 3.00 – 3.49 range. Around 2.5% in the 2.00 – 2.49 range, while only 1.2% obtained CGPA more than 3.50 (Figure 1).

Figure 2 show that the most preference learning style was visual (48.2%) followed by active style (16.1%). A reasonably high preference was also shown on sensing style (10.7%), reflective style (8.0%) and sequential style (7.1%). However, preferences towards other styles were low; 5.4% for global, 2.7% for verbal and only 1.8% for intuitive style.

The findings regarding the learning styles and CGPA which refer to academic achievement of students from semester 3 and 5 (N=81). The students student and do not have taken any examination yet. The academic achievement can be interpreted into some category based on the CGPA range, 2.00 – 2.49; below average, 2.50 – 2.99; average, 3.00 – 3.49; good and 3.50 – 4.00; excellent. It was found that students with visual learning styles (dominant style, n=37) mostly fall into good level (14.8%) and average (29.6%) and only 1.2% was below average. For the active learner (n=11), 7.4% obtained good level and 4.9% in the average level and 1.2% got excellent level. The least preference learning style, intuitive (n=2) included in good (1.2%) and average level (1.2%) as illustrated in Figure from semester 1 not involved in this result because they were new coming fig. 3.

Table 1: Frequency Distribution of Sample Based on Gender, Age, Semester and CGPA

	Number of student (%)			CGPA (%)			
	Male (%)	Female (%)	Age (Mean ± SD)	2.00	2.50	3.00	3.50
Semester 1	31 5 (16.1)	(27.7) 26 (83.9)	18.13 ± 0.428	-	-	-	-
Semester 3	37 5 (13.5)	(33.0) 32 (86.5)	19.14 ± 0.536	2 (5.4)	27 (73.0)	7 (18.9)	1 (2.7)
Semester 5	44 4 (9.1)	(59.3) 40 (90.9)	19.53 ± 0.255	0 (0.0)	21 (47.7)	23 (52.3)	0 (0.0)
Total	14	98	19.17 ± 0.837	2 (2.5)	48 (59.3)	30 (37.0)	1 (1.2)

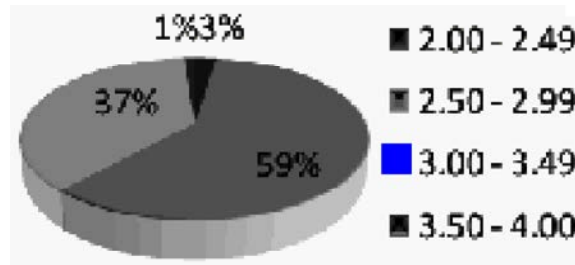


Fig. 1: Frequency of CGPA (semester 3 and 5).

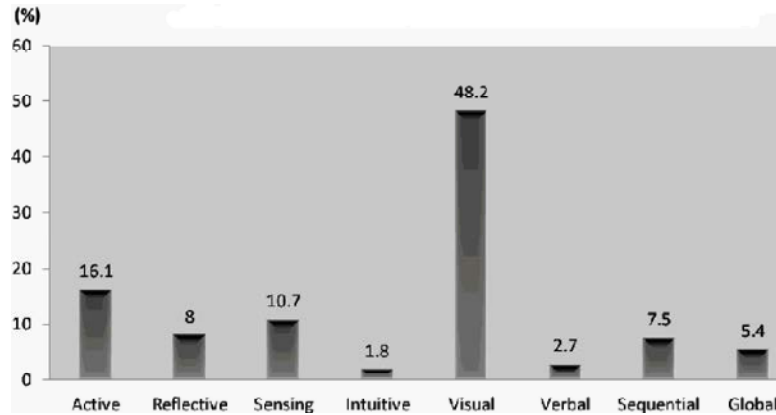


Fig. 2: Descriptive statistic of learning style

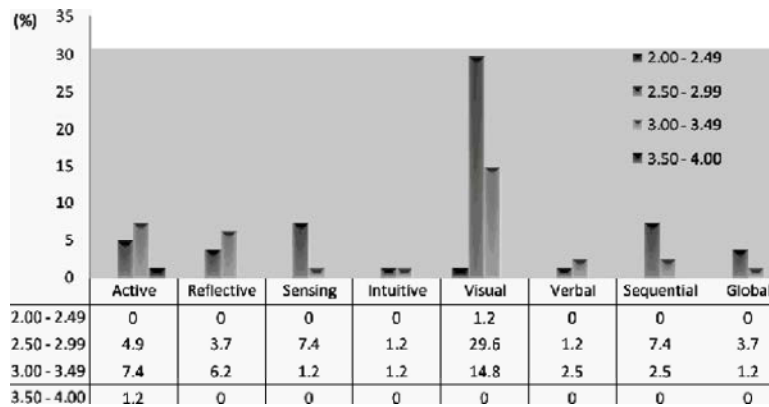


Fig. 3: Learning style based on CGPA

Table 2: Chi-squared test for academic achievement (CGPA)

Relation between academic achievement for:	Statistical value	p-value
Learning styles	18.629	0.609

Table 3: Correlation between learning style and academic achievement (CGPA)

Spearman rank order correlation	r- value	p-value
	0.181	0.105

Table 2 and 3 show the findings from the association and correlation between both variables. Based on the p-value of chi-squared test in Table 5, it was found

that  $p = 0.609$ , which higher than 0.05. Thus, it can be concluded that there was no significance different between learning style and academic achievement,  $H_0$  was accepted. From the Table 6, it was found that there was low and positively correlation between learning styles and CGPA ( $r = 0.181$ ).

## DISCUSSION

Learning styles has been identified as one of the main contributing factors to the effectiveness of an individual learning process. Thus the present study focused on

the preferred learning styles of Diploma students of OT in UiTM and its association to the academic achievement. The results showed that Diploma students of OT in UiTM were most preferred visual learning style, followed by active style and sensing learning styles while moderate preferred in reflective style, sequential and global styles and less preference in verbal and intuitive learning styles. Based on the results of the study, generally there was no significance difference between the learning styles adopted based on Felder and Silverman model and academic achievement which referred to cumulative grade point average (CGPA) but it was found that there was weak relationship between learning styles and academic achievement. In this regards, it can be said that, learning styles was not a significant factor which contribute to the academic achievement of students. The academic achievement of student may vary into several factors such as curriculum syllabus, teaching methods, course materials, learning strategies and learning environment and facilities.

This finding was consistent with that previous studies [34], which were carried out study among medical students and also a study reported there was no relationship between learning style and academic achievement [35]. From different angles, study point out that there was a significant difference between learning style and academic performance. She also stated that ILS could be used to predict academic achievement [36]. There was also important for students to find out their own types of LSP in order to facilitate their learning. Generally, in order to contribute students to be aware of their own learning styles and strengths, inventories of learning style and other processes can be utilized [37,38]. In addition, lecturers should help students understand more about their own preferences of learning and unique learning [40-42]. In terms of teaching, by collecting some information on learners' learning styles can help lecturers identify learners who learn comfortably via the types of tasks designed for the course.

**Limitations and Recommendations:** The sample limited to only Diploma students of OT in Faculty of Health Sciences, not included Degree students. So it cannot be generalized of OT students' population. It was also the difference in group size according to the each semester, such as male gender and the number of students in class. Another limitation of this study is does not account for confounding factors such as socioeconomic status, race, culture, etc.

Finally, further research on learning styles should be carried out among students from various courses and faculties in order to discover whether this finding will apply to other group of students directly enhance the generalizability of the findings. Further research which includes lecturer's perceptions towards student's learning styles and teaching styles used would be useful. This is because, serious mismatches may occur between the learning styles of students in a class and the teaching style of the lecturer or instructor. It also recommend that to conduct further research to determine the influence of learning style on clinical performance, as well as, to investigate the effectiveness of learning style and teaching method during learning process.

## CONCLUSIONS

The results of the study suggested that students can be more attentive and participative in class when lectures are conducted in an organized manner blended with learning tasks that stimulate critical and creative thinking. It is very important for lecturers to accept diversity in learning styles among students and be more creative in conducting lectures and class. Matching of teaching styles to learning styles can significantly enhance academic achievement, students' attitudes and students' behavior; hence, the learning experiences will be more enjoyable and meaningful.

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