Original Article

International Journal of Educational Research and Technology
P-ISSN 0976-4089; E-ISSN 2277-1557
IJERT: Volume 4 [2] June 2013: 70 – 76

ISO 9001: 2008 Certified Organization
Website: www.soeagra.com/ijert/ijert.htm

Relationships between Learning Style Preferences and Academic Performance of Students

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ABSTRACT
The study explored on the student's preferred styles of learning and their academic achievements. The specific objectives of the study were to: describe the learning style preferences of the students; to find out whether learning style preferences of the students differ with age, gender and academic program; and determine the relationship between the learning style preferences and the students' academic performance. The participants of the study consisted of all the freshman students who were accepted during the first trimester of the academic year 2012-2013. The Index of Learning Styles (ILS) questionnaire was utilized to carry out the rationale of the study. Permission to use the questionnaire was granted free of charge via internet. The results demonstrated that generally the students are fairly well balanced in all four dimensions presented in the ILS questionnaire. Results showed that there was no significant effect of gender, age and academic program on the learning style preferences of the students. Based on the result, there was no statistical significant correlation between the academic achievement and the learning style preferences of the students
Keywords: Relationships, Learning- Styles Preference, Academic Performance

Received 19.04.2013 Accepted 28.05.2013

INTRODUCTION

Students learn in diverse ways, each of them has their own different styles or preferences in the way they recognize and process information. Taking into considerations the different style preferences students have is of prevailing significant in the teaching – learning progression. The manner by which each student learns will create a landscape by which the students will either maintain or restrain their intentional cognition. Therefore, the educators' knowledge about the students learning style is beyond doubt. Alfonseca et. al. (2006) stress that to be conscious of the students' learning styles will facilitate the adaption of suitable techniques and methods to match with the students' inclination. Recognizing the students' learning style may very well aid the teachers in becoming more sensitive to students' differences in the classroom, thus promoting enhancement to teaching practices that best suit the students learning styles. As stated by Cuthbert (2005), awareness of the learning styles is vital for allowing adjustment in the educators' pedagogic approaches. Garth-Johnson and Price (2000) pointed out that the learner's unique learning style and their academic achievements are powerfully related.

Purpose and Objectives

Learning style has its insightful impact on the particular dimensions of teaching and learning processes. Students have their own preferred way to recognize, retain and retrieve information. The study will explore on the student's preferred styles of learning and their academic achievements. Utilizing awareness of learning style within the educational background promotes more effective learning. In addition, hoisting the consciousness of educators regarding the diverse learning approaches will facilitate them to be resourceful and adoptable in their teaching schemes. The specific objectives of the study were to: describe the learning style preferences of the students; to find out whether learning style preferences of the students differ with age, gender and academic program; and determine the relationship between the learning style preferences and the students' academic performance

Review of Literature

Learning is generally identified with a change in behavior. Most of us understand it as a change of behavior as a result of the development of a learning experience. According to Rogers A. (2003) there are two contrasting approaches to support learning as a course of action or a process which brought about transformation or change; the acquisition learning and formalized learning. Acquisition learning refers to the unconscious learning or simply called contained learning. It is the unconscious learning and change by a person after doing a specific task. Formalized learning on the other hand takes place through

facilitation. In this approach the learner is aware that what he is doing involves learning. Formalized learning is making leaner conscious of the learning and thus enhancing it further. On this note, enhancing learning would mean involving the learners in the process; it necessitates recognition of how they learn in order for learning to be successful; thus a study of students learning styles is beyond doubt a requisite to appreciate the process called learning.

Learning Style Models

Kolb's learning style is founded on Jung's theory. He classified the learners according to four categories based on their preferences on taking and incorporating information that is; accommodator, diverger, assimilator and converger. For Loo (2004) the model is an attempt to integrate all the four stage sequences to direct the learners from actual experiences to the progression of ideas that will provide the facilitator for a brand new experience. Loo (2004) further asserted that competence is based upon the capability to act in response to various learning situations by successfully making use of each style; nevertheless proponents of this theory have the same opinion that individuals have a preferred stage in which learning is found to be most comfortable. (Goby & Lewis, 2000). As a consequence (Young, 2002) noted that as starting point for learning whichever stage favored by an individual may be considered.

Dunn and Dunn offered another learning styles model in presenting and appraising intelligence. The concept is founded on the theory that there is no definitive linked between intelligence and talent or inborn capabilities (Denig, 2004; Dunn et.al 2001; Lovelace, 2005.) as a replacement for perception, comprehension, the achievement as Denig (2004) established, knowledge through experiences and analytical problem-solving and decision- making skills are acceptable and valid demonstration of intelligence. This learning Style model, views factors such as setting, emotionality, sociological fondness, physiological distinctiveness and psychosomatic processing inclinations shape student learning; The Dunn and Dunn learning style model emphasized the notion that learners should be trained to utilize their main or principal style of learning in order to study and learn new resources as confirmed by (Denig) 2004.

Students in Myers-Briggs Type Indicator or the MBTI are categorized as sociable or loner, responsive or imaginative, intellectuals or feeler and judgers or perceivers. Despite the fact that MBTI is a behavior assessment, which has been related frequently to how people think, learn and formulate decision, in reality people exhibit characteristics of each of the four categories, but individuals play their uniqueness in the extent to which they employ these effectively these characteristics. McPherson (1999) claimed that in order to preserve the weight of this connection the teacher's knowledge of students' personality type can reinforce the development of significant class activities.

The researcher in the present study take on the model by Felder and Silverman's (1988) to discover the participants' learning style for the reason that this model has a wide-ranging system of learning styles which help educators be more aware of the needs of the students and adjust their instruction accordingly. The model although it has its unique combination according to (Felder and Spurlin, 2005) is parallel with the other learning styles Furthermore it was noted that one of the advantages of these model over the others is the richer and more flexible sliding scales support classifying the students styles (Alfonseca, 2006) Felder and Silverman's (1988) learning styles classification includes four dimensions on information: perceiving, participating, processing and understanding. These four dimensions classify the learners into sensible, sensitive, dynamic, insightful, visual, vocal, chronological and holistic. Sensible learners depends on concrete materials they learn best with details while sensitive learners are those that do not care about details they learn best with the use of abstract learning materials. They understand better through theories and fundamental meaning of things. Dynamic learners are actively performing with available learning materials. They learn best as they try things out by themselves. On the other hand insightful learners are often reflective of the materials on hand. Visual learners are those who learn by remembering every details of what they see they learn best through images and illustrations while verbal learners are more for the spoken materials and textual representations. Sequential learners are those who following a step by step process. They have linear learning progress and follows pattern in solving problem. Holistic learners employ holistic judgment practice and learn comprehensively in no time. Indiscriminate absorption of varied learning resources even without prior consideration of their connectivity unexpectedly allows them to recognize the whole work.

MATERIALS AND METHODS

Participants

The participants of the study consisted of all the freshman students who were accepted during the first trimester of the academic year 2012-2013. The participants were composed of 84 males and 47 females; 23 of them are taking Diploma in Informatics Engineering, 16 are in the Diploma in Computer Studies and 92 are enrolled in the program of Diploma in Business Informatics. They were classified into the two

cohorts, male or female referring to their gender. There were two categories in terms of their age; the Nation's Youths those whose age range from 15-25 and the youthful adults whose age fall from 26-35. The study considered the UN definition of youth (www.unpa.org2002). The participants consisted of 118 national youth and 13 young adults.

Instrumentation

The Index of Learning Styles (ILS) questionnaire was utilized to carry out the rationale of the study. Permission to use the questionnaire was granted free of charge via internet. The instrument was produced by Felder and Solomon in 1997. It was designed to assess the preferences of the students on four dimensions of the learning styles models which was a devised by Felder and Silverman in 1988. The ILS questionnaire is composed of forty four items requiring students to choose from two options; a or b compulsorily. Each number is referring to any of the four scopes or dimensions which include; active and reflective, sensing and intuitive, visual and verbal, and sequential and global. For the scoring, summing up the number of a and b responses for each dimension formed scores which range from 1-11. Lower scores are subtracted from the higher score of either a or b. Felder and Spurlin (2005) have defined a score of 1-3 to characterize a fairly well balanced preference on the two dimensions, 5-7 is characterized as having moderate preference for one of the dimensions on the scale and 9-11 as having very strong preference for one dimension on the scale. The difference between the lower score from the higher score of either a or b will determine the learning style that student has. To illustrate, a score for example of 3a and 10b for a participant in Active and Reflective dimension will give a difference of 7b which indicates that the student has strong preference to the reflective dimension and that he/she is a reflective learner.

To quantify for the Students' academic achievement Grade Point Average (GPA is used. This refers to the average of grades in all academic courses taken in a given trimester. The participants being new students of the university have just spent one trimester; therefore quantifying their academic performance will purely be through their Grade Point Average in the preceding trimester. The numerical grades of the students have corresponding description as indicated in the AMAIUB student handbook (2012)

Table: 1. Frequency Distribution of Participants' GPA

PA Equivalence	Frequency	Percent
Very Good	7	5.3
Good	83	63.4
Fair	33	25.2
Failed	8	6.1
Total	**131**	**100**

Table shows the frequency distribution and percentage of the participants Grade Point Average for the first Trimester. As gleaned in the table 63.4% of the participants have good GPA, 5.3% have very good GPA while 6% of them have failed.

Statistical Analysis

Analyses of data were done with the aid of the SPSS 17.0. Statistical treatment integrated the computation of mean, average, and percentage. One way ANOVA was utilized to establish whether differences in preferred style and participants profile variables exist. Pearson Product Moment correlation coefficients were calculated between learning style and GPA.

RESULTS AND DISCUSSION

Student Learning Style Preference

Results showed that majority of the participants were fairly well balanced on these two dimensions However, 47 of them or 35% of the total number of the participants have moderate preference for the active dimension. This was an indication that students have leaning to retain information when they relate it with practical rather than spending time to think. These learners tend prefer doing something active rather than just listen in the class. Felder (1993). This results confirmed the study of Almuran J. (2008) that most Bahraini students specially IT and education students are active learners.

The distribution of students' scores in the sensing/intuitive dimension results demonstrated that 91 of the participants or 69% of them have fairly well balanced preference to any of the two dimensions. However, results have hat the 27 or 21% of them have moderate preference to the intuitive dimension as shown in their scores in 5b and 7b, these score range are towards the intuitive dimension. Students were deemed to have the inclination to be more imaginative rather than memorizing details of what they learn. Intuitive learner according to Felder (1996), they learn more through discovering possibilities rather than following an unambiguous method. There were 8 or 6.4% of the total respondents who are

moderately considered sensing learners, while 5 or 3.6% have very strong preference for the sensing dimension. Result is a good indication that although there are intuitive learners in the group the majority of them are fairly well balanced in both dimensions. Felder (1993) bear out that to be effective learner one need to be able to be sensing and intuitive

As regards visual and verbal dimensions, the participants' scores revealed in the figure that 112 of the respondents or 85% of the total number of participants have well balanced preference for both dimensions, 7 or 5.3% have moderate preference for visual dimension whereas 12 or 9 % have strong preference to visual learning. Visual learners are those who easily learn when information is presented visually. Similar to the results of the study of Alumran (2008), Bahraini students preferred visual learning style although it is not positively related to the students' academic achievement. Result posited that exerted effort on the teachers to organize lessons into visual presentations is a rally round to the benefit of the learners.

The Sequential/Global Dimension, 111 or 84.7% clustered in 1-3 scales which revealed that the participants have well balanced preference for both dimensions. A small part of the total population has moderate preference for the sequential learning as indicated by the mean scores in 5a and 7b they comprise 9.9% of the total respondents. Results further indicated that the participants are open to both potential of learning in sequential or in randomly manner. These learners may tend to learn following consistent stepwise procedures as well as rapidly setting things jointly as they learn to crack complex problem.

preferences for both dimensions therefore; they will not find difficulty learning in an environment where teachers utilize graphics as well as written and spoken words to inculcate information to them. Findings revealed that students have well balanced preferences for both sequential and global dimensions they may be exposed both to step by step method of learning perception as well as assent to find their own unique method of solving multifaceted problems in the classroom.

Variances in the Learning Style Preferences

Analysis of the variances in the learning style preferences of the students along with the demographic profiles of the participants is presented in the subsequent parts.

Table 2. One-way Anova Results Variance in Learning Style Preferences for Age

		Sum of Squares	df	Mean Square	F	Sig.
Active/Reflective	Between Groups	.057	1	.057	.204	.652
	Within Groups	35.950	128	.281		
	Total	36.008	129			
Sensing/Intuitive	Between Groups	.117	1	.117	.653	.421
	Within Groups	22.960	128	.179		
	Total	23.077	129			
Visual/Verbal	Between Groups	.651	1	.651	1.747	.189
	Within Groups	47.726	128	.373		
	Total	48.377	129			
Sequential/Global	Between Groups	.171	1	.171	.621	.432
	Within Groups	35.252	128	.275		
	Total	35.423	129			

Table 2 shows the analysis of one-way anova between students' learning style preferences and age. Results showed that there was no significant effect of age on the learning style preference at $p < .05$ level for the following conditions $F(1, 128) = .204$, $p = .652$. for Active/Reflective; $F(1, 128) = .653$, $p = .421$. for Sensing /Intuitive; $F(1, 128) = 1.747$, $p = .189$. for Visual/Verbal and $F(1, 128) = .621$, $p = .432$. for Sequential/Global.

Table3.One-way Anova Results Variance in Learning Style Preferences forAcademic Programme

		Sum of Squares	df	Mean Square	F	Sig.
Active/Reflective	Between Groups	.032	2	.016	.056	.946
	Within Groups	35.976	127	.283		
	Total	36.008	129			
Sensing/Intuitive	Between Groups	.351	2	.176	.981	.378
	Within Groups	22.726	127	.179		
	Total	23.077	129			
Visual/Verbal	Between Groups	.382	2	.191	.506	.604
	Within Groups	47.995	127	.378		
	Total	48.377	129			
Sequential/Global	Between Groups	1.835	2	.918	3.469	.340
	Within Groups	33.588	127	.264		
	Total	35.423	129			

Table 3 shows the analysis of one-way anova between students' learning style preferences and academic program. Results showed that there was no significant effect of academic program on the learning style preference at p *< .05 level for the following conditions F* (2, 127) =.056*, p* =.946 for Active/Reflective; *F* (2, 127) =.981*, p* = .370. for Sensing /Intuitive; *F* (2, 127) =.506*, p* = .604. for Visual/Verbal and *F* (2, 127) =3.469*, p* =.340, for Sequential/Global dimension.

Table 4. One-way Anova Results Variance in Learning Style Preferences for Gender

		Sum of Squares	df	Mean Square	F	Sig.
Active/Reflective	Between Groups	.050	1	.050	.178	.674
	Within Groups	35.958	128	.281		
	Total	36.008	129			
Sensing/Intuitive	Between Groups	.457	1	.457	2.585	.110
	Within Groups	22.620	128	.177		
	Total	23.077	129			
Visual/Verbal	Between Groups	.037	1	.037	.097	.756
	Within Groups	48.340	128	.378		
	Total	48.377	129			
Sequential/Global	Between Groups	.122	1	.122	.443	.507
	Within Groups	35.301	128	.276		
	Total	35.423	129			

Table 4 illustrates the analysis of one-way anova between learning students' style preferences and gender. Results showed that there was no significant effect of Gender on the learning style preference at p *< .05 level for the following conditions F* (1, 128) =.178*, p* =.674 for Active/Reflective; *F* (2, 128) =2.585*, p* = .110. for Sensing /Intuitive; *F* (1, 128) =.097*, p* = .756 for Visual/Verbal and *F* (1, 128) =.443*, p* =.507, for Sequential/Global.

Table 5.Correlation table of Learning Style Preference and Academic Achievement of students

		Academic Achievement	Active/Reflective	Sensing /Intuitive	Visual/Verbal	Sequential/Global
Academic Achievement	**Pearson Correlation**	**1**	**-.056**	**-.006**	**.008**	**.119**
	Sig. (2-tailed)		**.527**	**.950**	**.931**	**.174**
	N	**131**	**131**	**131**	**131**	**131**
Active/Reflective	**Pearson Correlation**	**-.056**	**1**	**.223***	**.130**	**.298****
	Sig. (2-tailed)	**.527**		**.011**	**.138**	**.001**
	N	**131**	**131**	**131**	**131**	**131**
Sensing /Intuitive	**Pearson Correlation**	**-.006**	**.223***	**1**	**-.008**	**.217***
	Sig. (2-tailed)	**.950**	**.011**		**.932**	**.013**
	N	**131**	**131**	**131**	**131**	**131**
Visual/Verbal	**Pearson Correlation**	**.008**	**.130**	**-.008**	**1**	**-.035**
	Sig. (2-tailed)	**.931**	**.138**	**.932**		**.688**
	N	**131**	**131**	**131**	**131**	**131**
Sequential/Global	**Pearson Correlation**	**.119**	**.298****	**.217***	**-.035**	**1**
	Sig. (2-tailed)	**.174**	**.001**	**.013**	**.688**	
	N	**131**	**131**	**131**	**131**	**131**

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

Table 5 illustrates the Pearson product-moment correlation coefficient computation to assess the relationship between the learning style preferences and the academic achievement of the students .There was a negative correlation between academic achievement and active and Reflective dimensions with r = -0.056, n = 131, p = .527 and the sensing and intuitive dimensions with r = -0.006, n = 131, p = .950. On the other hand there was positive correlation between academic achievement and visual and verbal dimensions with r = -0.008, n = 131, p = .931 and the sequential and global dimensions with r = -0.119, n = 131, p = .174. Based on the result, there was no statistical significant correlation between the academic achievement and the learning style preferences of the students

CONCLUSION AND RECOMMENDATION

The research has shown that the students were in general fairly well-balanced learners in terms of the dimensions used in the questionnaire. There were no significant differences between learning Style preferences and the profile variables of the students. There was no significant correlation between the academic achievement and the learning style preferences of the participants. While it was established that the learning styles preferences of the students were not correlated to the academic achievement of students, large scale studies are recommended to further the investigate on the influence of the learning styles on the teaching- learning progression.

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HOW TO CITE THIS ARTICLE
Lorna L. Gappi, (2013).Relationships between Learning Style Preferences and Academic Performance of Students. *Inter. J. Educat. Res.Technol.*, Vol 4 [2] : 70- 76