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The Social Interaction Learning Styles of Science and Social Science Students

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Abstract

Students have a variety of styles in the process of learning .One of the model of learning styles is the social aspect on how the students interact with their instructors and peers. This research employs the social interaction learning style theory by Grasha and Riechmann. The objectives of this study are to identify the social interaction learning style in relation to the students' age, gender, hometown and academic performance. The study also looks at the differences of learning style between different programs (science and social-science) taken by the students. The instrument, Grasha Riechmann Learning Style Survey (GRLSS) was distributed to 531 students. However, only 77% responded. Some of the findings support previous research, while others are inconsistent. Basically, the social interaction learning style adopted by different students in different programs differed in their independent learning style. With this result, instructors can design a better instructional pedagogy based on the students' learning style.

Keywords: Social interaction, Learning style, Demographic factors, Program, Achievement

1. Introduction

Learning is an interactive process that occurs in a specific environment. There are many variables that affect the teaching-learning process. Students' characteristics, instructors, the environment, classroom variables, and subjects taken can affect the long-term process of learning. An overall understanding on how students learn and where they are in the process, will help the instructors to meet the needs of new students. According to Entwistle (1991), the most influential factor that affects how the students learn is the students' perception of the learning environment rather than the context itself. Thus, learning problems frequently are not related to the difficulty of subject matter but more on how the students perceive the whole process of learning. As empirical evidence has shown that students' motivation and performance improve when the instruction is adapted to their learning styles, educators have to take responsibility to understand their students' diverse learning styles.

The social-interaction model is one of the learning style models discussed in Curry's Onion model (Curry, 1983). The model considers varies strategies adopt by individuals to suit their specific environment and social context. One of the theories in this model is Grasha and Riechmann learning style theory. Grasha Riechmann theory looks at the social and

affective perspective that deals with patterns of preferred styles for interacting with teachers and peers. Their theory revolves around three dimensions which are students attitudes toward learning, their view of teachers and/or peers and their reactions to classroom procedures (Grasha and Riechmann, 1974).

According to Grasha (1996), learning style is a personal quality that influences a student's ability to acquire information, to interact with peers and teachers and otherwise participate in learning experience (p 41). Grasha and Riechmann assessed the learning styles of college students on the different ways individuals approach the classroom environment (Keefe, 1979). As they look from the social and affective perspective that deals with patterns of preferred styles for interacting with teachers and peers, their styles are classified as social interaction scales (Grasha, 1984). They have identified three bi-polar dimensions which are Avoidant-Participant, Competitive- Collaborative, and Dependent-Independent.

Further studies, however indicate that the polar that consistently receive opposite scores is the Participant/Avoidant dimensions (Andrews, 1981; Richmann and Grasha, 1974). Their research also indicates that most individuals show some degree of preference for each of the categories. Research by O'Faithaigh (2000) found that there is a negative relationship between Participant and Avoidant, but no significant relationship between Dependent and Independent dimension. For Collaborative and Competitive, the finding indicates they are independent of each other.

Grasha suggests that each teaching style should coincide with students learning styles. Thus, he recommends using a variety of classroom activities in order to encourage flexibility, adaptability and lifelong learning. As learners have a variety of learning styles, instructors must use a variety of teaching methods so that students are exposed to familiar and unfamiliar ways of learning. Much empirical evidence shows that achievement can be improved if the students know how to monitor and manage their learning styles. (Matthews, 1991; Atkinson, 1998).

Educators have to understand the importance of learning style theories as the theories provide some guidance to improve the teaching and learning process. At the same time, through understanding the learners' style, it enables the educators to reduce the frustration in teaching. Moreover, it is important to understand the learning style as it helps the students to achieve better performance in their study. The reason for such situation is the educators are able to channel the right teaching repertoire towards students' style. To date, locally, only few studies were documented regarding the relationship of social interaction learning style towards students' academic achievement and the influence of individual factors in such style. Hence, this study was conducted to identify the students' learning styles in terms of their demographic factors, achievement and field of study in relation to the social interaction learning style.

2. Methodology

This is a descriptive study on the learning styles of students at a local campus in northern Malaysia. A set of questionnaires was administered to the students in their classrooms during the May –November 2003 semester. It took the whole semester as some of the final year students were on practical training at other institutions and they only returned to the campus in September and October 2003.

The sample was chosen based on stratified sampling methods. The researchers obtained the data on the students' full enrolment from the academic office. From the total number of full time students, the researchers chose 10% from each category, namely from each semester and each program. The total number of respondents for the sample is 531.

The instrument used in this study is the Grasha-Riechmann Student Learning Styles Scale (GRSLSS) as it offers a few advantages over the other learning style instruments. Some of its advantages as mentioned by Hruska-Riechmann and Grasha (1982) are:

a) it is designed specifically to be used with senior high school and college students.

b) it focuses on how students interact with the instructors, other students and with learning in general.

c) It promotes an optimal teaching/learning environment by helping the faculty design courses and develops sensitivity to the students' needs.

There are 60 questions with 6 subscales that represent the learning style dimension. The questions make use of the self-report inventory. In this study, the researchers attempt to assess the students' learning styles using the general class as the questionnaires can also be used to assess individual styles in a specific course (Rayner and Riding, 1997). There are three bi-polar which describe an individual typical approach to a learning situation. The three bi-polar dimensions are Avoidant-Participant, Competitive-Collaborative and Dependent-Independent. Andrews (1981) indicate that Participant and Avoidant most consistently have a negative relationship, Competitive and Collaborative dimensions appear to be independent of each other, while Independent and Dependent dimensions may have a low negative relationship. Learners appear to prefer all six dimensions to some degree.

Psychometric properties of the revised GRSSL indicate that the cronbach alpha for Avoidant, Collaborative and Participant is acceptable as 7 out of 9 values are above 0.7 while for Competitive is 0.74 (O'Fathaigh,2000). Studies by Bourhis and Stubbs (1991) indicate the reliability of GRSSL as follows: 0.5 Dependent, 0.68 Competitive, 0.55

Independent, 0.81 Avoidant, 0.77 Collaborative and 0.78 Participant. Curry (1983) reported that an average test-retest correlation of 0.80 across scales within the measures.

3. Results and discussion

A total of 407 (77%) students answered the questionnaires distributed. Based on the responses, 31.4% of the students were from 18-20 years age group, 31.43% were in the 21-23 years age group, 2.9% from the range 24-27 years, and only 0.2% was more than 27 years of age. In terms of gender, males made up 35.9% of the respondents whereas females 63.9%. While for field of study, out of 407 respondents, 52.6% were science students and the rest 45.9% were social science students. In terms of hometown, 43.0% of the respondents were from rural area while 49.9% were from urban area. Majority of the respondents 43.7% had their cumulative grade point average (CGPA) more than 3.0.

In order to achieve the objectives, the researchers used several tests such as cross-tab analysis and independent sample t-test.

Table 1 shows the cross tabulation analysis between age and each construct of learning style. Students in the range of 18 to 20 years of age have higher scores on the Avoidant (75.8%) and Independent (71.2%) learning styles.

In order to identify the relationship between age and students' interaction styles, a Chi-Square test was conducted. The result in Table 2 indicates that there is a significant relationship between the students' age and the Avoidant learning style (p= 0.001). Therefore, students' age appears to influence their learning style on Avoidant where the younger age group, mostly in the second semester, did not like to participate with students and teachers in the classroom and they were not interested and were overwhelmed by most classroom activities.

Cross tabulation analysis between gender and learning styles is indicated in Table 3. It is found that female students have higher scores in the Collaborative (62.8%), Participant (62.5%), Dependant (61.4%) and Competitive (61.4%) learning styles than male students. However, a Chi-Square Test shows that there is no significant association between gender and all the learning styles. Thus, gender does not influence the students' social interaction in the classroom.

Cross tabulation analysis between the respondents' hometown and learning styles is shown in Table 4.0. From the table, the respondents that came from urban area have higher scores in the Avoidant (58.1%) and Competitive (54.7%) learning styles than those from the rural area. However, the Chi-Square Test reveals that there is no association between students' hometown and their learning styles. Thus, the hometown of the students does not influence their learning styles (Table 5).

The result in Table 6.0 indicates that there is a significant ($p = 0.021$) relationship between the Collaborative learning style and the students' academic achievement. Thus, the Collaborative learning style appears to influence the academic achievement of the students.

In order to test on the significant differences between the social interaction of science and social science students and their academic achievement, an independent T-Test is conducted. The result shows there is a significant difference in Independent learning style ($p = 0.035$) between science and social science students (Table 7).

4. Conclusion

The study provides some inconsistent result as compared to the previous findings.

i) In the previous studies, when age is taken into consideration, young learners are found to prefer Avoidant and Competitive styles (O'Faithaigh, 2000; Elison and Moore, 1979) while older learners prefer Dependent and Participatory learning styles. However, the cross tabulation analysis shows students between the age of 18 to 20 years have higher scores on the Avoidant (75.8%) and Independent (71.2%) learning styles. The result of Chi-Square Test indicates that at a significant level of 0.05, there is a significant relationship only for Avoidant ($p = 0.001$).

ii) Previous studies by O'Faithaigh (2000) and Kraft (1976) show that males adopt more Independent and Competitive styles than females. Women normally would experience fear of failure and they depend on teachers. From the analysis, it is found that female students have higher scores in the Collaborative (62.8%), Participant (62.5%), Dependant (61.8%) and Competitive (61.4%) learning styles than male students. However, the Chi-Square Test shows there is no significant association between gender and social interaction in the classroom.

iii) Students that came from urban area appear to be more Avoidant (58.1%) and Competitive (54.7%) than those from the rural area. However, the Chi-Square Test shows that there is no significant association between hometown and social interaction.

iv) There is a significant difference in Independent learning style ($p = 0.035$) between science and social science students.

By understanding the social interaction of students in the classroom, educators are able to identify those who would require help. Thus, the educators can design an instructional pedagogy to meet the style preferences of students. In addition, the educators can implement several strategies to improve on the learning process that is being reflected in the

students' academic achievement. Besides, they can also assist the students to become effective learners. Thus, as a conclusion, the researchers suggest that educators vary the teaching style so that it touches on the different aspects of students preferences. This would help the students to enjoy learning and simultaneously, it encourages them to learn on the other aspects of learning styles as well. For example, the study found that social science students and science students differ in terms of Independent Style. Hence the educators should encourage more independent study and self-paced instruction and at the same time, they must not forget to use techniques that encourage participation such as discussion and cooperative learning in order to tackle the students Collaborative, Competitive and Participant styles.

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Table 1. Cross Tabulation Analysis Between Age And Social Interaction

Age	Independent	Dependent	Collaborative	Competitive	Participant	Avoidant
18-20 years	47 (71.2%)	111 (64.2%)	208 (63.8%)	243 (64.5%)	49 (68.1%)	25 (75.8%)
21-23 years	16 (24.2%)	56 (32.4%)	105 (32.2%)	122 (32.4%)	21 (29.2%)	7 (21.2%)
24-27 years	3 (4.5%)	6 (3.5%)	12 (3.7%)	11 (2.9%)	2 (2.8%)	1 (3.0%)
> 27 years			1 (0.3%)	1 (0.3%)		

Table 2. Chi-Square Test between Age and Social Interaction

Learning Styles			Age
Independent	Pearson Chi-Square	Value	11.505
		Significance	0.074
		N	392
Dependent	Pearson Chi-Square	Value	2.472
		Significance	0.872
		N	393
Collaborative	Pearson Chi-Square	Value	5.999
		Significance	0.423
		N	397
Competitive	Pearson Chi-Square	Value	2.847
		Significance	0.416
		N	395
Participant	Pearson Chi-Square	Value	2.448
		Significance	0.874
		N	388
Avoidant	Pearson Chi-Square	Value	24.051
		Significance	0.001
		N	317

Table 3. Cross Tabulation Analysis between Gender and Social Interaction

Gender	Independent	Dependent	Collaborative	Competitive	Participant	Avoidant
Male	32 (48.5%)	66 (38.2%)	121 (37.2%)	134 (35.6%)	27 (37.5%)	16 (50.0%)
Female	34 (51.5%)	107 (61.8%)	204 (62.8%)	242 (61.4%)	45 (62.5%)	16 (50.0%)

Table 4. Cross Tabulation Analysis between Hometown and Social Interaction

Hometown	Independent	Dependent	Collaborative	Competitive	Participant	Avoidant
Rural	30 (50.8%)	81 (49.1%)	142 (47.0%)	159 (45.3%)	34 (51.5%)	13 (41.9%)
Urban	29 (49.2)	84 (50.9%)	160 (53.0%)	192 (54.7%)	32 (48.5%)	18 (58.1%)

Table 5. Chi-Square Test between Hometown and Social Interaction

Learning Styles			Hometown
Independent	Pearson Chi-Square	Value	0.918
		Significance	0.632
		N	364
Dependent	Pearson Chi-Square	Value	4.800
		Significance	0.091
		N	366
Collaborative	Pearson Chi-Square	Value	0.337
		Significance	0.845
		N	369
Competitive	Pearson Chi-Square	Value	0.136
		Significance	0.712
		N	367
Participant	Pearson Chi-Square	Value	1.235
		Significance	0.539
		N	363
Avoidant	Pearson Chi-Square	Value	3.544
		Significance	0.17
		N	296

Table 6. Result of Chi-Square Test between Social Interaction and CGPA

Learning Styles			CGPA
Independent	Pearson Chi-Square	Value	3.211
		Significance	0.782
		N	390
Dependent	Pearson Chi-Square	Value	9.668
		Significance	0.139
		N	391
Collaborative	Pearson Chi-Square	Value	14.880
		Significance	0.021
		N	395
Competitive	Pearson Chi-Square	Value	3.879
		Significance	0.275
		N	393
Participant	Pearson Chi-Square	Value	11.175
		Significance	0.083
		N	386
Avoidant	Pearson Chi-Square	Value	11.371
		Significance	0.078
		N	316

Table 7. The Independent Samples Test of Science and Social Science Students on Independent Learning Style.

		INDEPENDENT	
		Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F	.203	
	Sig.	.652	
t-test for Equality of Means	t	2.111	2.108
	df	384	374.450
	Sig. (2-tailed)	.035	.036
	Mean Difference	.1102	.1102
	Std. Error Difference	.05223	.05228
	95% Confidence Interval of the Difference Lower	.00754	.00743
	Upper	.21293	.21304