

RELATIONSHIP BETWEEN DEMOGRAPHIC FACTORS AND LEARNING STYLES OF MANAGEMENT UNDERGRADUATES

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Abstract

The main objectives of this study are to identify learning style preferences and the relationship between demographic factors and learning styles among management undergraduates. The eight learning styles, that is, active, reflective, sensing, intuitive, visual, verbal, sequential, and global, as identified by Felder and Silverman (2002) were assessed to identify the learning style preferences of management undergraduates. Demographic variables, such as gender, ethnicity, entry qualification, field of study, type of institution and year of study, were tested to assess the relationships between these demographic factors and learning styles. The Index Learning Style (ILS) developed by Felder and Soloman (1991) was adapted and used as the survey instrument. Findings revealed that the dominant learning style preferences, in sequential order, are visual, sequential, reflective, sensing, global, active, intuitive, and verbal. Gender, ethnicity, entry qualifications, field of study, type of institution, and year of study were related to the learning styles of management undergraduates.

Keywords: learning styles, demographic factors, effective learning, multimedia

INTRODUCTION

Learning style is generally defined as a group of attributes and behaviours that determines an individual learners' preference in learning (Honey & Mumford, 1992). Claxton and Murrell (1996) elucidated that learning style is a concept that can be important in teaching practices at the intrinsic level and dealing with issues that can enable faculty and administrators to think more deeply regarding their roles and the organizational culture at a more extrinsic level.

According to Uhlik (2005), there are several aspects of learning styles, including cognitive, conceptualization, affect, and behaviour. These aspects can be simplified as seeing, thinking, feeling, and doing, respectively. In normal circumstances, individuals differ in their perspective towards things and the way they address situations, which is reflective of their learning style. In addition, Stacy (2004), with a focus on academics, suggested that in order to maximize the learning advantage of students, teachers must define the type of learners that they have in their classes, and customize the lesson to that particular learning style.

Various learning styles models have been developed by researchers. One of the earliest learning style models, The Myers-Briggs Type Indicator (MBTI), classified students learning preferences according to psychologist Carl Jung's theory of physiology. In this theory, the students as learners are classified as extraverts, sensors, thinkers, and judgers. The MBTI has been useful in contributing to our understanding of the role of individual differences in the learning process. Each score obtained from one of four dichotomous dimensions of the MBTI indicate a person's preferences for a particular quadrant. The sum total of the scores has focused on the relationship between psychological type and various aspects of the educational process (Charles, 1993). The MBTI is one of the pioneer models that focused on learning styles and this model initiated the development of various subsequent models.

Using the Experiential Learning Theory, Kolb (1976) classified learning styles into the following four types: concrete experience, abstract conceptualization, active experimentation, and reflective observation. The concrete experience and abstract conceptualization focuses on how students absorb information, whereas the active experimentation and reflective observation focuses on how students internalize the information that they received. The Kolb's learning model has initiated greater research in the information processing of individuals, as evidenced by the multiple intelligence model developed by Gardner (1983).

The multiple intelligence theory focuses on eight types of information that people process: linguistic, logical mathematical, spatial, bodily-kinaesthetic, musical, interpersonal, intrapersonal, and naturalist intelligences. Based on this theory, Armstrong (1994) proposed that teachers should be trained to present their lessons in a variety of ways by using music, cooperative learning, art activities, role-plays, multimedia, field trips, inner reflection, etc. This multi-variation approach in the learning process has become a strong foundation for the creation of the 4MAT system in learning by McCarthy (2002). According to McCarthy's 4MAT System (2002), an individual's learning preference is viewed as a solid foundation on the basis of which one can sequentially strengthen his/her other learning styles in an upward spiral of achievement, also referred to as a learning style multilingualism.

Of the various research performed on learning styles, the modern learning style model by Felder (1988) has been widely explored. The latest version of this learning style model by Felder and Silverman (2002) proposed the following four categories: active and reflective, sensing and intuitive, visual and verbal, and sequential and global, all of which are related to the information transfer processes of an individual.

In summary, numerous studies at various levels have been conducted in order to identify the learning styles of students toward effective learning, especially among engineering students. Studies conducted among undergraduate management students for evaluating their learning processes were more theory-based than those conducted for engineering or information technology students. There has been limited research on management students, except for studies targeting e-learning and distance learning programmes, which are more focused on the support of learning tools and electronic materials or online systems. Management undergraduates' classes tend to consist of students with various learning styles, and classes are conducted without considering the individual students' learning needs and learning style differences. The implication is that not all students are capable of receiving the information delivered to them in an effective manner in order to obtain a better academic performance. This is an issue that needs to be addressed.

For this study, respondents are undergraduate management students from various private and public higher learning institutions located at Klang Valley (an education hub) in Malaysia.

This study adopts Felder's (1988) Learning Style Model and the instrument used is an adaptation of the Index Learning Style (ILS) developed by Felder and Soloman (1991). The ILS has been tested and proven reliable in many studies.

Problem Statement

According to Lan (2008), an effective learning approach plays a significant role in an undergraduate's academic performance and the student's ability to modify his/her learning approach to cope with a new learning environment that greatly differs from that of a secondary school environment. This implies that demographic factors may influence or be associated with the learning styles during the learning process. In addition, Mulalic et al. (2009) postulated that there are significant differences in the auditory and kinaesthetic learning styles between male and female students.

The Management undergraduates from higher learning institutions at Klang Valley, Malaysia, have diverse demographic backgrounds, which include factors such as gender, ethnicity, entry qualification, fields of studies, type of learning institution, and year of study. Klang Valley has been chosen as the target location because of the existence and emergence of numerous public and private higher learning institutions and is known to be one of the most prominent hubs of educational industry in Malaysia. The higher learning institutions chosen for this particular study offer various types of management courses for multiethnic groups of students. Thus, this particular location is a reliable source that represents the actual learning environment of Malaysian students. The objective of our research is to determine if demographic differences among the students will result in learning style differences.

The courses conducted by the management faculties in these higher learning institutions are similar in terms of content delivery but the students' learning styles or preferences in absorbing the knowledge of the content may differ. As a result, this may lead to an incomplete learning environment for the students who are not noticed by their teachers. In addition, teachers may not be equipped with helping students to overcome the type of learning style that may be placing them at a disadvantage. Therefore, the main objective of this study is to identify this group of students' learning style preferences.

OBJECTIVES

The main objectives of this study are as follows:

- a. To identify the learning style preferences among management undergraduates at Klang Valley, Malaysia, and
- b. To assess the significant differences between demographic factors, such as gender, ethnicity, entry qualification, field of study, type of learning institution, year of study, and learning styles.

METHODOLOGY

There are approximately 90,000 undergraduate management students at Klang Valley, Malaysia, and these students are enrolled in various majors. Based on the Krejcie and Morgan's (1970) theory on sample size determination, a 95% confidence level with a confidence interval of four will require a minimum of 596 samples. Our study collected 703 reliable samples for

analysis from among a total of 1,000 questionnaires that were distributed. This represents a 70% response rate. Undergraduates were selected through simple random sampling.

The research instrument used was a modified ILS questionnaire developed by Felder and Soloman (1991). A hard copy of the questionnaire was distributed and respondents were required to complete and return them. Fifty-six questions of the questionnaire included independent variables. All eight learning styles (active, reflective, sensing, intuitive, visual, verbal, sequential, and global) were included, with six questions for each in a Likert-scale format.

The lecturers who taught management distributed the questionnaires to the students. The questionnaire reliability as an instrument for studying students' perception or behaviour was validated by Zywno (2003).

The respondents' learning style preferences were identified by totalling the learning style in each domain and the differences of the total with the domain was determined. Learning styles with the highest totals were identified as the preferred styles. The data was analyzed using the Statistical Package for Social Sciences (SPSS) software and the overall respondents' learning style was calculated in percentages and mean scores. Mean score differences between learning styles and demographic factors were analysed using the analysis of variance (ANOVA) and Tukey's post hoc test.

RESULTS

Out of 850 questionnaires returned by the respondents from various institutions, only 703 were considered acceptable for analysis. Of these, 330 respondents were men and 373 were women. A majority of the students were Malays (60.2%). The remainder included Chinese (30.2%), Indians (7.5%), and other racial groups (2.1%). Regarding the academic background of the students in the management programme, 42.0% were matriculation students, 35.1% had Higher School Certificates (HSC), 20.5% had a diploma, and 2.4% had various other qualifications.

For study majors, 23.2% were from Business Administration, 20.6% from Economics, 19.2% from Management, 17.5% from Marketing, 15.4% from Finance/Banking, 2.1% from Knowledge Management, and 2.0% from the other majors. Regarding the type of institution, 54.8% were from public institutions and 45.2% were from private institutions. In terms of year of study, 29.2% were first year students, 34.8% were from the second year, and 36.0% were from the third year.

The Most Dominant Learning Styles

Based on the cumulative learning style summary score means, Table 1 shows the rankings of the dominant learning styles. A higher score indicates a greater preference towards the respective learning style. The mean scores show that the most dominant learning style is visual (3.84), followed by sequential (3.73), reflective (3.71), sensing (3.68), global (3.66), active (3.64), intuitive (3.53), and verbal (3.42).

Table 1 Learning styles mean scores

Style	Visual	Sequential	Reflective	Sensing	Global	Active	Intuitive	Verbal
Mean	3.84	3.73	3.71	3.68	3.66	3.64	3.53	3.42

The one-way ANOVA procedure was used to test if the mean scores of the learning styles differed by demographic factors.

Learning Style According to Gender

The gender variables and the learning style variables were tested to determine the significant difference in the means by evaluating the following hypotheses:

Ho: There are no differences in learning styles between male and female students.

Ha: There are differences in learning styles between male and female students.

Table 2 shows the results of the one-way ANOVA test. There is a significant difference among the means of active, intuitive, and global learning style scores between male and female students with a probability value of $p < 0.05$. On an average, the learning style scores are higher for men than for women.

Table 2 Learning styles according to gender

Style	Gender	Mean	SE	F	p-value
Active	F	3.55	0.021	4.396	0.036
	M	3.77	0.023		
Reflective	F	3.70	0.019	0.115	0.735
	M	3.71	0.020		
Sensing	F	3.67	0.021	1.573	0.210
	M	3.71	0.023		
Intuitive	F	3.47	0.025	11.529	0.001
	M	3.69	0.026		
Visual	F	3.84	0.026	0.000	0.989
	M	3.84	0.027		
Verbal	F	3.43	0.027	0.715	0.398
	M	3.40	0.029		
Sequential	F	3.71	0.021	1.855	0.174
	M	3.75	0.023		
Global	F	3.53	0.022	4.484	0.035
	M	3.72	0.024		

Therefore, Ho is rejected. We conclude that there is a significant gender difference in the active, intuitive, and global learning styles. This result contrasts with a study by Rusnani and Rosseni (2006) in two urban secondary schools in Malaysia. According to them, the students' learning

mode orientation and learning styles were not significantly different across gender. However, our results suggest that there are implications of gender in the different learning styles.

Learning Styles According to Ethnic Group

The Tukey's post hoc test was used to test for significance differences in the mean scores for learning styles and ethnic groups using the following hypotheses:

Ho: There are no significant differences in terms of learning styles and ethnic groups.

Ha: There are significant differences in terms of learning styles and ethnic groups.

Table 3 shows the results of the Tukey's post hoc test. It shows the probability value of $p < 0.05$ for active, intuitive, and global learning styles between each pair of a student's ethnic group.

Table 3 Learning styles according to race

Style	Race	Mean	S	F	p-value
Active	C	3.50	0.39	11.418	< 0.001
	I	3.80	0.45		
	M	3.70	0.46		
	O	3.73	0.47		
Reflective	C	3.73	0.38	1.405	0.239
	I	3.75	0.41		
	M	3.69	0.36		
	O	3.83	0.36		
Sensing	C	3.65	0.41	2.999	0.300
	I	3.84	0.49		
	M	3.68	0.40		
	O	3.79	0.47		
Intuitive	C	3.42	0.43	11.55	<0.001
	I	3.86	0.57		
	M	3.53	0.46		
	O	3.65	0.70		
Visual	C	3.81	0.51	0.432	0.731
	I	3.86	0.61		
	M	3.85	0.48		
	O	3.93	0.42		
Verbal	C	3.39	0.52	0.705	0.549
	I	3.50	0.59		
	M	3.43	0.51		
	O	3.38	0.61		
Sequential	C	3.69	0.41	2.290	0.077
	I	3.84	0.55		
	M	3.73	0.39		

Global	O	3.85	0.36	6.455	0.001
	C	3.58	0.41		
	I	3.85	0.50		
	M	3.65	0.43		
	O	3.83	0.40		

The results show that the mean score for the active learning style among the Chinese is significantly lower than the mean scores of Indians and other races. For the intuitive learning styles, the mean score among Indians is significantly higher in comparison to the mean scores for the Chinese and Malays. The global learning style mean score among the Chinese is also significantly lower than the mean scores of the Indians and other races. Therefore, H_0 is rejected as there is a significant difference in the mean scores for the three learning styles and at least one pair of each student's ethnic group. This is in line with Dunn and Griggs' (1993) study on Mexican and Anglo-American students. The Mexican male students preferred tactile learning, whereas the female students from both ethnic groups preferred tactile learning.

Learning Styles and the Entry Qualifications

The Tukey's post hoc test was used to evaluate the following hypotheses:

H_0 : There is no significant difference between the learning styles and students' entry qualifications.

H_a : There is a significant difference between learning styles and students' entry qualifications.

Table 4 shows that at least one pair of academic qualifications has the probability value of $p < 0.05$ for active and sensing learning styles. Therefore, H_0 is rejected.

Table 4 Learning styles and entry qualifications

Style	Qualification	Mean	S	F	p-value
Active	HSC	3.52	0.40	3.890	0.009
	Diploma	3.78	0.41		
	Matriculation	3.63	0.41		
	Others	3.75	0.48		
Reflective	HSC	3.70	0.38	0.962	0.410
	Diploma	3.71	0.35		
	Matriculation	3.71	0.37		
	Others	3.85	0.22		
Sensing	HSC	3.57	0.42	3.072	0.027
	Diploma	3.78	0.38		
	Matriculation	3.55	0.40		
	Others	3.68	0.50		
Intuitive	HSC	3.51	0.49	1.430	0.233
	Diploma	3.60	0.44		
	Matriculation	3.50	0.48		

Visual	Others	3.56	0.49	1.036	0.376
	HSC	3.82	0.48		
	Diploma	3.91	0.50		
	Matriculation	3.83	0.52		
Verbal	Others	3.83	0.29	2.408	0.066
	HSC	3.45	0.50		
	Diploma	3.47	0.52		
	Matriculation	3.36	0.54		
Sequential	Others	3.54	0.29	0.400	0.753
	HSC	3.73	0.41		
	Diploma	3.76	0.37		
	Matriculation	3.72	0.42		
Global	Others	3.69	0.51	2.273	0.079
	HSC	3.65	0.43		
	Diploma	3.73	0.46		
	Matriculation	3.63	0.42		
	Others	3.78	0.39		

For the active learning style, the mean score for HSC students is significantly lower than the mean score for diploma students. For the sensing learning style, the mean score for diploma students is significantly higher than the mean score for matriculation students. Thus, we can conclude that there are significant differences in the mean scores between active and sensing learning styles, and at least one pair of academic qualification among HSC, diploma, and matriculation students.

Learning Styles and Field of Study

Analysis on the significant differences in mean scores was conducted with Tukey's post hoc test in order to evaluate the following hypotheses:

Ho: There are no differences between learning styles and field of study.

Ha: There are differences between learning styles and field of study.

Table 5 shows that at least one pair of field of studies has the probability value of $p < 0.05$ for the sensing learning style score. Therefore, Ho is rejected.

Table 5 Learning styles and field of study

Style	Field	Mean	S	F	p-value
Active	Management	3.67	0.37	1.753	0.106
	Finance/Banking	3.56	0.41		
	Bus. Admin	3.67	0.42		
	Economics	3.64	0.44		
	Know Mgt.	3.72	0.24		

	Marketing	3.61	0.44		
	Others	3.85	0.27		
Reflective	Management	3.65	0.36	0.923	0.478
	Finance/Banking	3.75	0.35		
	Bus. Admin	3.71	0.39		
	Economics	3.73	0.37		
	Know Mgt.	3.67	0.34		
	Marketing	3.72	0.40		
	Others	3.79	0.18		
Sensing	Management	3.67	0.39	2.144	0.047
	Finance/Banking	3.53	0.49		
	Bus. Admin	3.72	0.40		
	Economics	3.66	0.39		
	Know Mgt.	3.62	0.44		
	Marketing	3.77	0.38		
	Others	3.70	0.38		
Intuitive	Management	3.56	0.48	1.192	0.309
	Finance/Banking	3.42	0.51		
	Bus. Admin	3.51	0.49		
	Economics	3.52	0.49		
	Know Mgt.	3.49	0.36		
	Marketing	3.79	0.42		
	Others	3.57	0.42		
Visual	Management	3.90	0.50	1.437	0.198
	Finance/Banking	3.75	0.49		
	Bus. Admin	3.89	0.51		
	Economics	3.80	0.51		
	Know Mgt.	3.80	0.42		
	Marketing	3.85	0.47		
	Others	3.96	0.52		
Verbal	Management	3.46	0.50	2.102	0.051
	Finance/Banking	3.33	0.58		
	Bus. Admin	3.36	0.56		
	Economics	3.51	0.42		
	Know Mgt.	3.29	0.62		
	Marketing	3.45	0.49		
	Others	3.27	0.63		
Sequential	Management	3.77	0.41	1.087	0.368
	Finance/Banking	3.68	0.44		
	Bus. Admin	3.77	0.41		
	Economics	3.69	0.34		
	Know Mgt.	3.78	0.22		
	Marketing	3.74	0.47		

	Others	3.67	0.35		
Global	Management	3.70	0.43	0.922	0.478
	Finance/Banking	3.60	0.49		
	Bus. Admin	3.66	0.43		
	Economics	3.63	0.41		
	Know Mgt.	3.67	0.44		
	Marketing	3.71	0.39		
	Others	3.71	0.57		

For the sensing learning style, the mean score for Marketing students is significantly higher when compared to the mean score for Finance/Banking students. Thus, it can be concluded that there is a significant difference in the mean scores between the sensing learning style and at least one pair of field of study.

Learning Styles and Type of Learning Institution

The one-way ANOVA was used to evaluate the following hypotheses:

Ho: There are no differences between learning style and type of learning institution.

Ha: There are differences between learning style and type of learning institution.

In Table 6, the one-way ANOVA for the value $p < 0.05$ shows significant differences in the mean scores for active, intuitive, visual, verbal, and global learning styles between the students from the public and private higher learning institutions. Thus, Ho is rejected. The conclusion is that on an average, the scores for the students from public institutions are higher than those of the students from private institutions in the aforementioned five learning style scores. These results are in accordance with the findings from Stiles (2000), where the quality of the course design, use of appropriate tools, and content that enables learning are prime factors affecting success in the area of higher education.

Table 6: Learning styles and type of higher learning institutions

Style	Institution	Mean	S	F	p-value
Active	Public	3.75	0.42	11.650	0.001
	Private	3.55	0.40		
Reflective	Public	3.69	0.37	2.780	0.096
	Private	3.74	0.37		
Sensing	Public	3.71	0.35	3.560	0.060
	Private	3.65	0.44		
Intuitive	Public	3.76	0.48	8.143	0.004
	Private	3.56	0.46		
Visual	Public	3.88	0.49	5.696	0.017
	Private	3.68	0.50		
Verbal	Public	3.57	0.50	13.614	<0.001

Sequential	Private	3.32	0.55	2.188	0.139
	Public	3.75	0.39		
Global	Private	3.70	0.44	6.454	0.011
	Public	3.76	0.42		
	Private	3.51	0.45		

Learning Styles and the Year of Study

The Tukey's post hoc test was conducted to test and evaluate the following hypothesis,

Ho: There are no differences between learning styles and year of study.

Ha: There are differences between learning styles and year of study.

Table 7 shows the value $p < 0.05$ for sensing, visual, verbal, and global learning style scores with significant differences in mean scores for at least one pair of year of study. Once again, Ho is rejected.

Table 7 Learning styles and year of study

Style	Year of study	Mean	S	F	p-value
Active	1	3.58	0.38	1.738	0.158
	2	3.68	0.40		
	3	3.62	0.44		
Reflective	1	3.69	0.35	0.834	0.475
	2	3.74	0.36		
	3	3.69	0.38		
Sensing	1	3.63	0.46	3.393	0.018
	2	3.73	0.38		
	3	3.52	0.42		
Intuitive	1	3.44	0.46	2.542	0.055
	2	3.58	0.45		
	3	3.52	0.51		
Visual	1	3.61	0.49	3.631	0.013
	2	3.88	0.51		
	3	3.87	0.49		
Verbal	1	3.36	0.52	3.520	0.015
	2	3.48	0.50		
	3	3.25	0.54		
Sequential	1	3.71	0.47	1.144	0.331
	2	3.77	0.40		
	3	3.71	0.40		
Global	1	3.46	0.47	3.831	0.010
	2	3.70	0.42		
	3	3.69	0.43		

For the sensing learning style, second year students scored significantly higher mean scores than third year students. For the visual learning style, the mean score for first year students is significantly lower than those for the second and the third year students. For the verbal learning style, the mean score for the second year students is significantly higher than the mean score for the third year students. For the global learning style, the mean score for first year students is significantly lower than the mean scores for the second and the third year students. Thus, H_0 is rejected. These findings suggest that there are significant differences in the mean scores for sensing, visual, verbal, and global learning styles of at least one pair of year of study. This association between students' learning styles and performance, and their study year is congruent with the findings of Lan (2008).

Model of Demographic Factors and Learning Styles

The Model of Demographic Factors and Learning Styles in Figure 1 shows that there is a relationship between the demographic variables and different learning styles. For gender, learning styles among the male students are identified as active, intuitive, and global compared to the female students. Active and intuitive learners enjoy mobility and easy access to learning resources. Female students are less likely to favour active participation in group activities owing to eastern cultural influences. As compared to male students, female students are also slower at adapting to new learning resources for knowledge than male students. Male students are more likely to possess the attitude of looking at things as a whole before going into details. Malays, Indians, and other races are more active learners. Their preference for active learning may be owing to their inclination for discussion and hands-on learning. In addition, the Indians are also more likely to be intuitive and global learners because of their willingness to explore new resources and understand major concepts before delving into details. For entry qualifications to undergraduate management programmes, students holding diplomas are keenly active and sensing learners. This may be owing to their exposure to studies in higher learning institutions while pursuing their diplomas. Although a clear single factor that influences Marketing students did not exist, they are identified to be sensing learners. This may be because Marketing is a field where facts and figures are required to be learnt in a more orderly manner than Finance and Banking studies, which are more dependent on figures, statistics, and calculations. The type of learning institutions shows that students from public higher learning institutions are more active, sensing, intuitive, visual, verbal, and global learners than students from private higher learning institutions. This finding suggests that students from private institutions do not display specific preference for any learning style, whereas students from the public institutions prefer using a variety of learning styles. This may be because public institutions have been around longer, offer good teaching and learning resources, and have developed an effective learning environment. The year of study variable reveals that the second year students are more sensing, visual, verbal, and global learners, whereas the third year students prefer visual and global learning styles. This may be because second year students focus on content, presentation methods, and understanding concepts in preparation for the final year. In year three, visual learning receives greater importance because the main focus of learners is to understand the visual presentation that adds clarity to content, which thereby aids in the preparation for their final examination. In addition, the year three students also seem to be global learners as the ability to understand the overall ideas or concepts is essential for starting a step-by-step progress that is tailored to the teaching style adopted by their teachers. Hence, teachers expect the students to understand the content and concepts, and work at their own

pace to identify details and provide solutions or summary reports. In addition, in preparation for the final year, the students are expected to initiate their own research, based on a master idea.

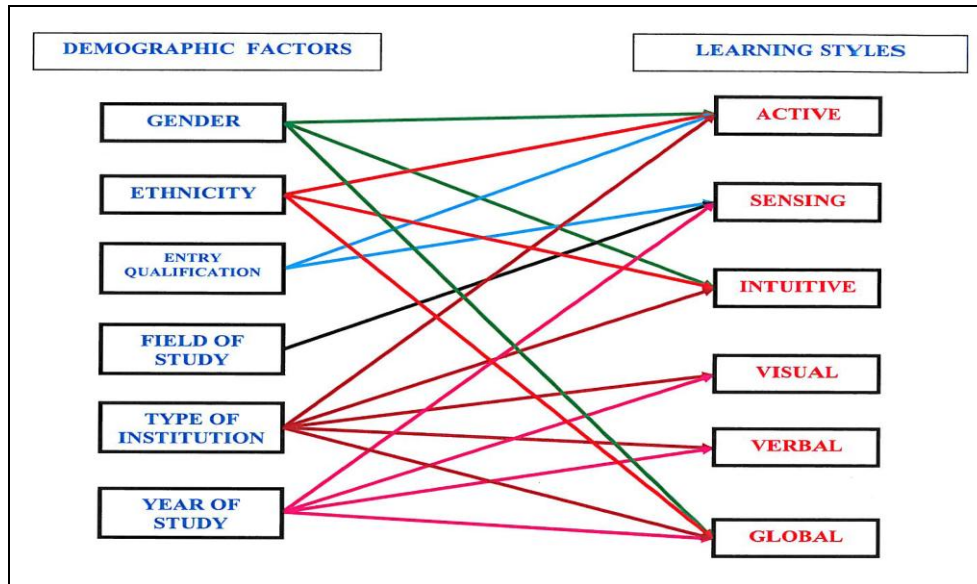


Figure 1 Model of demographic factors and learning styles

Source: Modelling Effective Multimedia Technology Based Learning for Management Undergraduates, 2010

IMPLICATIONS & DISCUSSION

Based on the main objectives and findings of this research, it is evident that there are different learning style preferences among the management undergraduates according to the learning style theory by Felder (1988). As identified in the dominant learning styles analysis, the majority of the Management students focus on visual learning, followed by sequential, reflective, sensing, global, active, intuitive, and verbal learning. This suggests that management undergraduates are more adroit toward visual learning, as it is the way to gain a clearer view of the subject matter. With sequential learning, there is an expectation and a common pattern among students to learn information in a step-by-step manner. As these learning styles begin at the primary level and are continually practiced in the Malaysian education system, it is likely that the students have become accustomed to them. This is in accordance with Felder and Siverman's (2002) theory that postulates a preference for visual presentations and a step-by-step learning manner.

The priority for reflective learning at the next level suggests that management students in Malaysia prefer a self-study mode as compared to active learning, which involves participation in group studies. The lower scores in the other learning styles such as sensing, global, active, intuitive, and verbal reflect other implications. Between sensing and intuitive learning styles, the students seem to prefer sensing in learning as compared to being intuitive. It appears that intuitive learning is not very popular. These management students do not seem to be ready for global learning even though they require exposure to global learning styles. Verbal learning is

also very popular as it has the lowest mean scores and students may reject this style owing to familiarity with a more traditional nature of learning.

Our findings on learning styles and demographic factors suggest several implications. The gender and learning style relationship shows that male students use more active, intuitive, and global learning styles than females. This amplifies the fact that the physical nature of male learning patterns gears them towards active, intuitive, and global learning, as also highlighted by Dunn and Griggs (1993).

In terms of ethnicity, Indians appear to be comparably more active, intuitive, and global in their learning styles. This may be owing to their learning tradition and culture. Like Indians, Malay undergraduates are more active learners than Chinese, because the former show preference towards group work, which is prevalent in their culture. The Chinese tend to use more balanced learning styles as compared to other ethnic groups.

The association between entry qualification and learning styles show that diploma holders prefer active and sensing learning. This suggests that the students furthering higher education with a diploma qualification are more interested in active and sensing learning as compared to non-diploma holders. This may be owing to the fact that these students were exposed to active learning patterns during their diploma studies. The sensing learning preferences may have been nurtured during their diploma years, which are more focused towards facts, data, and experimentations.

In terms of the field of study, the management undergraduates in Marketing are inclined towards sensing in learning. This may be owing to the fact that Marketing students are not required to calculate and solve mathematical problems, whereas Finance/Banking students do. Marketing students are required to learn content by understanding and memorizing.

This study compared the public and private higher learning institutions to identify the students learning style preferences. The results showed that as compared to students from private institutions, students from public higher learning institutions are more inclined toward active, intuitive, visual, verbal, and global learning style preferences. This suggests that the students from public institutions are more exposed to these learning styles. This may be owing to the facilities available as well as the teaching and learning approaches that have been practiced in these public higher learning institutions, which are tailored using the appropriate tools and contents for enabling effective learning, as highlighted by Stiles (2000).

In terms of year of study, second year students who have already been exposed to the learning styles practiced by the higher learning education institutions, are usually familiar with teaching methods involving multimedia presentations and other visual resources. In addition, the exposure to sensory learning during the first year also encourages them to be well-versed with this type of learning in the second year. Final year students are more focused on their final examinations and their emphasis is on facts and figures and overall understanding of the subject content. On the other hand, first year students, lacking exposure to the learning environment of higher learning institutions, need to adjust to a new learning environment. As such, they are slow at adapting to the various learning styles and do not display interest in any specific learning style. This is in accordance to the findings of Rusnani and Rosseni (2006), which shows the effect of the level of study on their learning styles.

CONCLUSION

Learning style preferences have been identified as one of the major contributing factors towards effective learning of a student. The current study focused on the learning styles of the management undergraduate at Klang Valley, Malaysia, and its significant relationship with the respondents' demographic factors, including gender, ethnic group, entry qualifications, field of study, type of learning institution, and year of study.

The results of the study show that there are significant differences between the variables studied and the learning styles of students, as advocated by Felder-Silverman's Model on the theory of learning style. The dominant learning styles that were identified in sequence are visual, sequential, reflective, sensing, global, active, intuitive, and verbal. This suggests that there are learning style differences among management undergraduates and should guide the teachers or lecturers and stakeholders of higher learning institutions to offer management programmes in suitable learning environments.

This study shows that there are significant differences in the mean scores of the various learning styles and demographic variables, such as gender, ethnic group, entry qualification, field of study, learning institution and year of study. These findings should be taken into consideration when teaching modules or subjects content delivery are prepared by teachers and when teaching and learning is conducted using multimedia programmes in a multimedia learning environment. Students also need to be aware of their learning preferences. In order to do this, students' learning styles need to be identified and tailored on the basis of their demographic differences. An appropriate teaching and learning environment can be created for effective learning on the basis of learning styles and demographic factors.

Based on the findings, a theoretical model will be proposed by incorporating the learning styles, demographic factors, and selected multimedia technology related aspects in the learning environment. This proposed model will be a guide for the management, teaching faculty, and multimedia programme developers to strategically plan a multimedia learning environment that will suit the learning styles of various students. This plan will hopefully result in an effective learning environment for management undergraduates.

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