Learning Preferences Transformation in Tertiary Education

Revathi Sagadavan, Shiney John

Abstract: The focus of the study is to have a better insight of preferred learning styles of younger generation collectively. Learning preferences of a learner varies due to many elements. Most of the institutions adopt "student centric" as a vow, but at times it become unrealistic with increased number of students. However, it is possible to identify the transformation in learning preferences of the students to cater teaching and learning process more effective. Index of Learning style (ILS) questionnaire is adopted to identify the learning preferences of the students. The data was collected on an online platform using convenience sampling method. This findings of the study suggested that Malaysian students prefer social media as a main platform to get guidance from the instructor. Furthermore, our students are more visual and sequential oriented learners. This study also emphasizes that learning preferences doesn't change over time but the mode of conduction is expected to change based on the digital world. This study will help academicians and policy makers to serve students better based on their learning preferences and it is expected to improve the teaching and learning process. The study is limited to Malaysian students, future studies can focus on different countries and on different generations.

Index Terms: Learning Preferences, Index of Learning Style (ILS) Student Centric, Visual Learners, Sequential Learners

I. INTRODUCTION

Learning is a two-way process. An effective learning process only take place if there exists a direct outcome on how students interpret and respond to their learning experiences (Ambrose et al, 2010, p.3). There are many aspects influencing a learners preferred style including cultural differences (Loh& Teo,2017). Every educational institution, especially at tertiary educational level take up continuous effort to improve the learning experiences of students, to make sure they face the real world with required knowledge and skills. Plenty of programs and seminars are being conducted to cater students' needs but still we fail to achieve the objective.

This struggle is more prominent as the group of students need to be handled gets bigger. Several learning style models has been proposed to fit the needs of learners and to avoid "one size- fits- all" teaching approach (Felder & Silverman, 1988; Kolb, 2014; Riding & Cheema, 1991). Lack of attention towards individual learning styles can lead to serious problems such as dissatisfaction of learners, dropout from courses and low success rate (Felder & Brent, 2005).

Many learning style models have been suggested in the area of teaching and learning but current studies shows that Felder & Silverman model (1988) is one of the most popular learning style (Akbulut&Cardak, 2012; Al- Azawei&Badii, 2014). Few recent research done on Index of learning style (ILS) which was proposed by Felder & Silverman has proven that the results are consistent and it can be adopted to diagnose learning styles (Ahmed Al- Azawei, 2015). Studies are also reported high correlations and shown statistical significance on the reliability and validity of the ILS instrument despite the sample size (Kaliska, 2012; Felder&Spurlin, 2005).

This research is conducted to have a better understanding on Malaysian tertiary education level students learning preferences by adopting the ILS research instrument. The research questions are,

1. What is the preferred learning style of current generation Malaysian students that pursue tertiary education?
2. What are the guidance channels preferred by Malaysian students?
3. What are the main factors influencing future direction of students?

By answering these objectives, it is believed that educational policy makers and academicians can understand the nature of learners collectively and cater their needs accordingly to have a better teaching and learning experience.

II. LITERATURE REVIEW

Learning styles is referred to as the preferred learning method used by an individual in the course of his or her study. Several researchers have studied on different features of learning styles and this has given rise to many learning style theories. Learning style gives us information on how student concentrate, and the method they use to process and obtain information, knowledge or experience (Jantan&Razali, 2004). It also refers to the best strategy or technique students prefer to use while learning (Lebar&Mansor, 2000).All these different approaches and procedures shows how studentsacquire and develop information. Even though there exists a number of Learning style theories, the most popular ones used are Kolb's Learning Styles Inventory

(LSI), Neil Fleming's VARK Model, Felder- Silverman's Index of Learning styles (ILS) and Myers- Briggs Type Indicator (MBTI).

A. Kolb's Learning Styles Inventory (LSI)

Kolb's experiential learning theory is one of the best known educational theories in higher education (Healey& Jenkins,2000). Kolb's fundamental idea is that learning take place in a cycle, and learner's do their best when their learning experience should follow every aspect of this cycle. (Kolb, 1984). The four stages that Kolb claims a student must satisfy in order for learning to happen are

1. Concrete Experience—actually doing the activity
2. Reflective Observation—reflecting on performance in the activity, considering successes and failures
3. Abstract Conceptualization—apply theory to the experience of doing the activity

Planning Active Experimentation—consider theory and reflection to guide planning for subsequent experiences. (Stice, 1987).

It is claimed that for the learning process to be effective, the cycle should touch all four stages (Smith, 2005).

B. Myers- Briggs Type Indicator (MBTI)

This model was directly adapted from Kolb's model and Jungian personality theory. Four dimensionsare used to assess learning styles based on Myer – Brigg questionnaire. (Myers & Briggs, 2009). The different characteristics based on MBTI indications are summarized in the following table (Kaliska, 2012).

Table 1: Characteristics with learning styles of MBTI

Characteristics	Learning style	Acronym
The attitude towards learning concern	Extraversion – Introversion	E-I
The perception process in learning are	Sensing – Intuition	S-N
The judgement process in learning are	Thinking – Feeling	T-F
The activity styles in the outer world are manifested through	Judgement – Perception	J-P

16 learning styles was formed by combining any of the four dimensions. This arrangement was constructed on evidences "each individual learning type perceives the outer world, makes judgment or is aimed at the inner world of thoughts and concepts or at outer world of people and things, and also the way he/she reacts to various situations" (Salter et. al, 2006).

C. VARK learning style model

VARK learning style model was modified by Fleming (2006) from VAK model. Neil Fleming's VARK model, or VARK learning styles, classifies learners according to their preference for visual learning (pictures, movies, diagrams), auditory learning (music, discussion, lectures), reading and writing (making lists, reading textbooks, taking notes), or kinesthetic learning (movement, experiments, hands-on activities). Classifying

students according to mode is needed as it helps to check the efficiency of each lesson to different VARK learning mode. (Drago and Wagner, 2004) added by saying that students have their preferred learning styles and it is the teachers' responsibility to successfully cater according to student's needs. Advantages of VARK model in the implementation of effective learning processhas been discussed in (Othman &Amiruddin, 2010)

D. Index of Learning Style (ILS)

Felder and Silverman introduced a learning style assessment instrument that was specifically designed for classroom use and was first applied in the context of engineering education. The Index of Learning Styles is a questionnaire with 44 questions where each questions with two choices (a/b). In this model learners are classified into four dichotomous dimensions (Felder &Spurlin, 2005). It has been categorized as sensory or intuitive, visual or verbal, active or reflective, sequential or global.

Table 2: Dimensions of ILS instrument (Felder&Spurlin, 2005)

Dimension	Classification	Definition
1	Sensing	Concrete thinker, practical, oriented toward facts and procedures
	Intuitive	Abstract thinker, innovative, oriented towards theories and underlying meaning.
2	Visual	Visual representations, pictures, diagrams, flowcharts
	Verbal	Written and spoken explanations.
3	Active	Trying out things and enjoy working in groups.
	Reflective	Thinking thing through and prefer to work alone or with one partner who is familiar.
4	Sequential	Linear thinking process, learn in small incremental steps.
	Global	Holistic thinking process and learn in large leaps.

ILS is widely being used till date to identify the learner's preferences in the educational background. Many research works have been done to argue on the validity and also reliability of the instrument in different scenarios. In most of the research done, the reliability as well as validity of the instrument is in the acceptable scale. For instance, test- retest reliability on ILS instrument reported in (Zywno, 2003; Cook &Smith ,2006;Hosford & Siders, 2010). (Van Zwanenberg, 2000; Zywno, 2003; Cook & Smith, 2006; Platsidou&Metallidou, 2009; Hosford &Siders ,2010) discussed about the instrument in terms of internal consistency. The validity of the instrument is supported by the works of (Zywno, 2003; Cook & Smith,2006; Van Zwanenberg, 2000;Platsidou&Metallidou ,2009).

III. METHODOLOGY/MATERIALS

This section discusses the methodology in terms of target audience, data collection process, research instrument that was used and brief introduction on analysis procedure.

A. Participants

The target audience of this study were Malaysian tertiary educational institution students whose age range is between 17- 25 years old. Both private and public universities, colleges and polytechnic students took part in this research.

B. Data collection

The ILS questionnaire is distributed to the students via email. We adopted a convenience sampling method where lecturers from different institutions are contacted to ease the data collection process. It took four weeks to complete the data collection from different tertiary educational institutions all over west Malaysia. In total of 433 feedbacks 384 valid samples were chosen.

C. Instrument

The ILS is a free questionnaire used to measure learning styles in accordance with Felder and Silverman model (Felder & Silverman, 1988). It consists of 44 forced choice questions with only two options each. Few additional questions on demographics was added to understand better about the learner's demographic profile and to understand the connection between different demographic profiles and the preferred learning style. The score for ILS in compare with the dichotomous category is dividedas:

Score scale 1-3: Fairly well balanced on the two dimension of that scale.

Score scale 5-7: moderate preference for one dimension of the scale. Learns better in the teaching environment which favors that environment.

Score 9-11: strong preference for one dimension of the scale. These leaners will face great difficulty when there is a mismatchin teaching environment.

Explanation on scores in detail can be found in (Felder &Spurlin, 2005) and explanation on characteristics on four dichotomous dimension can be found in (Kaliska,2012).

D. Analysis Procedures

Statistical analysis was conducted by using SPSS (Statistics Package for Social Science) version 22 for Windows 10. Several descriptive analyses were included such as frequency tabulation, cross tabulation, multiple response analysis.

IV. RESULTS AND FINDINGS

In this studya total of 384 valid samples were received. Demographical profile of respondents such as gender, ethnicity and type of tertiary learning institution they belong to is summarized in table 3.

Table 3: Demographics profile of respondents

Demographics	Classifications	Frequency	Percentage (%)
Gender	Male	167	43.5
	Female	217	56.5
Ethnicity	Malay	122	31.8
	Chinese	167	43.5
	Indian	82	21.4
	Others	13	3.4
Type of Learning Institution	University	195	50.8
	College	86	22.4
	Polytechnic	103	26.8

Besides demographics this study also intended to identify major parties involved in student's academic or future orientation. With the multiple option views, the parties involved in student's decision making process is summarized in the table 4.

Table 4: Future orientation influencers

	Responses,N	Percent	Percent of Cases
Institution	108	10.4%	28.1%
Teachers	114	11.0%	29.7%
Job market	104	10.0%	27.1%
Family	270	26.0%	70.3%
Independent Self	208	20.1%	54.2%
Friends	110	10.6%	28.6%
Media	48	4.6%	12.5%
Career Exhibition	65	6.3%	16.9%
Other	10	1.0%	2.6%
Total	1037	100.0%	270.1%

Table 4 clearly indicate that Malaysian students are still looking up to their familiesfor their future planning. 70.3% of thestudents mentioned that family plays a big role in their future plan decision which was followedby 54.2% who says they make their own decision. It is also an indication that career exhibitions or media are not greatly influencing student's future plans. The same study was breakdown based on ethnicity to identify, whether different cultural aspects influence Malaysian student's decision making process. The results show the same pattern with the most popular two choices being family and independent self. But the third choice changes for different ethnicity. For instance, Malays agree that institution (34.4%) plays a major role in the decision making process while Chinese are more influenced byfriends (31.1%) and Indians go with the teachers (37.8%) suggestions.

Our target audience of this study are also known as digital natives. In that note, this research also intended to know how these batch students would like to get their guidance from the instructor other than classroom time.

Table 5: Preferred guidance channel

	Responses,N	Percent	Percent of cases
Class time	257	29.2%	67.5%
Outside class (office)	175	19.9%	45.9%
During break time	118	13.4%	31.0%
Via email	99	11.2%	26.0%
Social media	232	26.3	60.9%
Total	881	100.0%	231.1%

Table 5 explains that besides class time students prefer to interact with the

instructors via social media (60.9%) and they are least likely to use email (26%) as a platform for communication. This is a proof that Malaysian students are more addicted towards social media networks. The preferences remain the same when the cross tabulation was conducted across ethnicity, gender as well as different learning institutions. This finding lead to the next result on the most popular social media among Malaysian students. Out of 12 different social media sites that listed, only three social media sites are commonly preferred by Malaysian tertiary students.
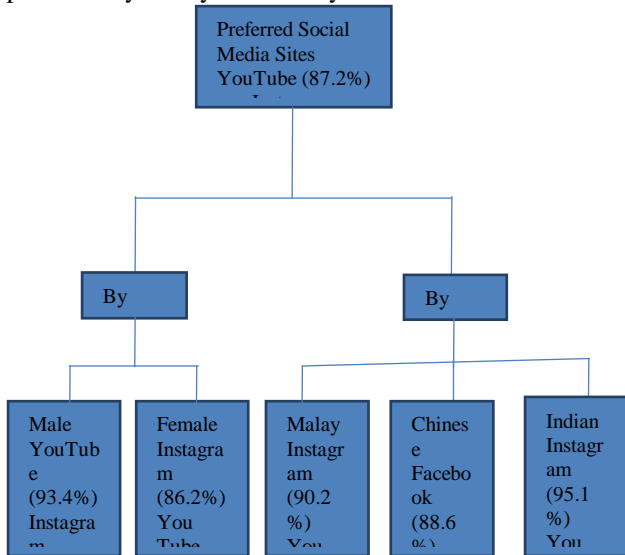

Fig4.4: Commonly preferred social websites

According to the figure 4.4, You tube, Instagram and Facebook are the three main social media being used. When the analysis was breakdown based on gender and ethnicity the three most preferred social media sites remains the same but in different order as shown in the chart above. Besides that, we also want to know how much accountability tertiary students take on their learning process. To identify that, a set of 4 questions with 5 Likert scale (1- strongly disagree to 5- strongly agree) were asked. The results are shown in the following table 6.

Table 6: Opinions on learning accountability

In my opinion,	Mean	Median	Mode	Std. Dev.
• Learning Is My Own Responsibility	4.14	4	5	1.07
• My Instructor Should Motivate Me In My Learning	3.72	4	4	0.97
• I Should Have High Level Of Trust In My Instructor	3.68	4	4	1.01
• I Can Depend On My Classmates / Friends For More Guidance	3.05	3	3	0.98

From the table 6 we can assure that these students are taking accountability on their own learning process as all the central tendency measures are on the strongly agreement side. They also agree that instructor's motivation and trust have a great impacton their learning process but not as strong as their independent self. Relying on friends is not in the preferred side and we conclude that current generation is not depending on their peers and is more self-centered to achieve their learning goal.

Next by using ILS questionnaire we could identify the learning preferences of tertiary level students in Malaysia. There were a total of 44 questions where every 11 questions will direct to identify students on their preferences over each 4 dimension. But the primary focus of this study is to know what is the major preferred learning style of the students and the category that they fall. This will ease the instructor's burden when they deal a big group of students. Table 6 summarize the preferences as a whole group of the tertiary students.

Table 7: Percentage of responses of different learning preferences

Dimension	Category	Percentage (%)
1	Activist	30.3
	Reflector	5.8
	No preference	64.1
2	Intuitive	11
	Sensing	26.9
	No preference	62.3
3	Verbal	3.1
	Visual	61.7
	No preference	35.2
4	Global	8.6
	Sequential	25
	No preference	66.4

Table 7, shows on the learning preferences of the respondents. When the preferences are mild over a category it is specified as no preferences as these students' adaptability over any of the two categories in that particular dimension is good. When the students fall under moderate or strong preferences, thescores are being summed up to get an insight on which category majority of students belong to in terms of learning process. As we look at the first dimension students are more to activist compare to reflectors. In the second dimension they fall in sensing category than intuitive. For the third dimension they strongly fall in visual learners compared to verbal learners and in fourth dimension they are on sequential side compared to global students. The explanations on the type of learners can be found in (Kaliska, 2012).

Even though, we categorized the students based on four dimensions, visual learners are sounds louder. More than 60% students fall under this category. These findings ensure that majority of the students will adopt visual learning style compared to the other learning preferences. As we further analyze based on visual learners, almost 88% of them are taking accountability on their own learning process. Beyond family influence, 57% of these learners decide on their future plan. These people still do fall in the category where they prefer social media as a mode to seek instructor guidance. This study can be further breakdown to know whether cultural differences and also gender gives an impact to the learning preferences.

V. CONCLUSION

In this study we presented the learning preferences of tertiary Malaysian students and also its connection with their demographics. To tackle this research, we adopt Felder & Silverman ILS research instrument as recent researches define that the instrument is valid and reliable. In total 384 responses from tertiary education institutions were collected and used in this analysis. From the study we can conclude visual learners are more prominent compared to other categories. Besides that, there is a transformation in the student's preferences to seek instructor guidance in whole. They prefer more informal approach which is social media compared to the email which is formal but least preferred. Despite gender or ethnicity, in all breakdowns only three preferred social media site is identified which are You Tube, Instagram and Facebook. This study is also gives an insight that students take learning process as their own responsibility. Surprisingly, family decision on their future planis still in consideration with high intensity.

This research is believed to provide the learner's requirement in terms of learning preferences. Catering to their need can help to improve the teaching and learning environment and better quality students can be produced. Educational policy makers can conduct such a survey before implementing any rule in educational system as the generation changes the transformations happens. Teachers or instructors need to be trained to deliver according to the students' preferences. Then the teachers can reconsider the teaching and learning styles, and then to prepare material accordingly so that no mismatch occurs in the delivery method and learner's learning method. Besides that, we have to look into social media application into curriculum as current generation prefer more informal way of learning. By accommodating these criteria, a better learning environment and experience can be established.

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Authors Profile

Revathi Sagadavan is currently working at INTI International University, Malaysia, as senior lecturer since year 2016. Graduated from University of Teknologi Malaysia with a PhD in Mathematics in year 2016. Currently teaching both undergraduate and postgraduate level students in the subjects of mathematics and statistics. Supervised and co-supervised students in MBA level and Professional MBA for their research and projects. Experienced in leading various employer projects from Malaysia. Completed a research grant with the project in teaching and learning scope from INTI International University. Research interest including multivariate statistics, statistical process control, data analytics, business analytics and teaching and learning process.

Ms. Shiney John is currently working in INTI International University, Malaysia as a senior lecturer since 1998. Graduated from University Malaya with a Masters (Mathematics Education), she has been teaching Mathematics and Statistics to degree and diploma students. She has 23 years of teaching experience in teaching University students and also has been a trainer for the new faculty for the past 11 years. Her researches are focused on the relations between teaching - learning and practices in higher education. Recently completed a research grant with a project on learning styles of university students from INTI International University. Engaged in many research collaboration activities.

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