

LEARNING STYLE PREFERENCES AMONG UNDERGRADUATES IN AN ENGLISH LANGUAGE COURSE CONDUCTED VIA ONLINE DISTANCE LEARNING (ODL)

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ABSTRACT

Knowledge about students' learning styles helps educators in planning and delivering effective teaching. This study looks at the learning style preferences among undergraduates in UiTM Melaka, Jasin Campus. Data was collected through a questionnaire on a sample of 104 semester three bachelor degree students in Computer Science and in Plantation and Agrotechnology. However, only 76 students answered the online questionnaire within the two weeks' time given (response rate =73.08). It was found that ASVS (active-sensing-visual-sequential) and RSVS (reflective-sensing-visual-sequential) are the top two most preferred learning styles among the respondents. Besides that, sensing, visual, and sequential styles were revealed as preferred styles among respondents regardless of their academic achievements. Overall, this study contributes empirical data regarding learning style preferences among undergraduates in local setting. Other implications are 1) educators must use diverse teaching methodologies that are able to cater to students' different learning style preferences, and 2) students must be aware of their learning style preferences to enable them learning and mastering knowledge faster yet in an enjoyable manner.

Keywords: Learning Styles Preferences, Undergraduates, Public University, Felder-Silverman Learning Style Index, ODL.

ABSTRAK

Pengetahuan tentang gaya pembelajaran pelajar membantu pendidik dalam merancang dan menyampaikan pengajaran yang berkesan. Kajian ini melihat kepada keutamaan gaya pembelajaran dalam kalangan mahasiswa di UiTM Melaka, Kampus Jasin. Data dikumpul melalui soal selidik ke atas sampel 104 pelajar ijazah sarjana muda semester tiga dalam bidang Sains Komputer, bidang Perladangan dan Agroteknologi. Walau bagaimanapun, hanya 76 pelajar menjawab soal selidik dalam talian dalam tempoh dua minggu yang diberikan (kadar respons =73.08). Didapati ASVS dan RSVS adalah dua gaya pembelajaran yang paling digemari dalam kalangan responden. Selain itu, gaya penderiaan, visual dan urutan didedahkan sebagai gaya pilihan dalam kalangan responden tanpa mengira pencapaian akademik mereka. Secara keseluruhannya, kajian ini menyumbang kepada data

empirikal mengenai keutamaan gaya pembelajaran dalam kalangan mahasiswa dalam persekitaran tempatan. Implikasi lain ialah 1) pendidik mesti menggunakan metodologi pengajaran yang pelbagai yang mampu memenuhi pilihan gaya pembelajaran pelajar yang berbeza, dan 2) pelajar mesti sedar tentang keutamaan gaya pembelajaran mereka untuk membolehkan mereka belajar dan menguasai pengetahuan dengan lebih cepat serta menyeronokkan.

Kata kunci: *Keutamaan Gaya Pembelajaran, Sarjana Muda, Universiti Awam, Indeks Gaya, Pembelajaran Felder-Silverman, ODL.*

INTRODUCTION

Learning is a process of acquiring information and experiences and transforms it into knowledge (Shuib & Azizan, 2015). Since every individual learn and process information differently, it is important for educators to identify the different learning styles to ensure learning does take place. Zacharis (2011) defined learning style as how learners perceive, understand, and conceptualise information, Al Harbi, Al Mutairi, Al Helih & Al Shehry (2017) identified learning style as how learners obtain knowledge and learning style preference as the preferred mode of obtaining knowledge. Learning style is flexible and adaptable to situations (Ku & Chang, 2011), since it is individualistic in nature, some may find it effective more than others (Al Harbi et.al 2017).

The worldwide pandemic has brought inevitable change in the education system around the world. What started as an inclusion of technology in education, had resulted in a total transformation to an online learning approach at all levels of education. Regardless of a handful of positive evidence reported, the sudden change still raised concerns from parents, students, and educators with regards to the quality and effectiveness of teaching and learning.

STATEMENT OF PROBLEM

Born in the digital age, it is assumed that learners nowadays would be able to manage virtual learning well, thus little concern has been discussed regarding whether the students really benefited from the teaching style in online learning in Malaysia. In general, effectiveness and success of online education is measured greatly by the results gained after every test or examination, disregarding what happens in the learning process. The question is whether it made them more knowledgeable and skillful; was it comprehension or memorization? Besides, are there any differences in terms of learning style preferences between male and female students when studying online?

Incorporating learning style in online learning is deemed important as it would be beneficial for learners and educators (Gu, Triche, Thompson & Cao, 2012). Due to the dependency on virtual communication, learner's participation in online activities became a great concern. Many educators struggle to ensure full participation and commitment from the students, which in turn effects quality learning. Huang & Huang (2012) discovered student's participation was influenced by their learning style, where sensory learners displayed a higher level of interaction and information access. This contributed to the significant correlation identified by Hsieh, Jang, Hwang & Chen (2011) that learners learning style and online learning activities reflected in improved academic achievement. Analysing learners' learning style allows teachers to not only adapt a more comprehensive teaching approach, but also reinforce the learning style of weak students resulting in improved competency (Mazlili & Adnan, 2019). Acknowledging the importance of learning style in online learning and its contribution to the development of teaching approach. This study aims to identify the learning style of bachelor degree students of UiTM Jasin taking an English language course conducted in an open and distance learning (ODL) semester by adopting the Felder-Silverman Model (FSLSM).

Research Questions

- RQ1: What is the students' preference in the four dimensions of Learning Style during ODL?
RQ2: What is the preferred learning style pattern based on academic achievement in English language course during ODL?
RQ3: What is the students' preference for each dimension in relation to gender and programme?
RQ4: What is the overall pattern of students' learning style in relation to gender and programme?

LITERATURE REVIEW

Types of Learning Styles

To date, learning style is regarded as great importance in educational research. Learning style is defined as the preferred method used to acquire, retrieve, and retain information (Abu Mansor & Ismail, 2012; Haider, Sinha & Chaudhary, 2010). The evolvement in education technology has changed learner's requirement and preferences depending on their learning environment (Shuib & Azizan, 2015). This supported the claim by Ku & Chang (2011) that found learning style to not only affect the traditional face-to-face teaching but has greater impact in online learning. Therefore, various learning style assessments have been conceptualised to identify the variety and determine the best approach to fit each style.

Among the common models of learning style is Kolb (1984, as cited in Bokhari & Zafar, 2019) which proposed a four-dimension learning style; accommodative, divergent, convergent, and assimilative. Flemming & Mills (1992) introduced VARK – that focused on student's sensory modality, as they found that learners associated their learning difficulties to the presentation of materials in the teaching and learning process. It divided learning style into four modes: visual, auditory, reading/writing, and kinesthetic. VARK has been widely used in studies of online learning (Gu, Triche, Thompson & Cao, 2012; Hamidon, 2015) that focuses on developing online courses and instructions. For example, visual learners prefer graphical presentations in the form of pictures, graphs, flow charts, whereas read/write learners prefer text-based materials such as PowerPoint slides, or articles. As for auditory learners, they learn best through lectures, tutorials, and group discussions, and learning by doing is much preferred for kinesthetic learners, which to them materials like videos, simulations and case studies benefits them the most. Through such identification, it is evident that different learning style responds to different stimulus and further determines the learning that takes place. Learning is the communication between students, teachers, and teaching resources; thus, the right teaching style would enhance learners learning experience (Jamali & Mohamad, 2017).

According to Carva (1999 as cited in Shuib & Azizan, 2015) the Felder-Silverman Learning Style Model (FSLSM) is the most suitable learning style model to be applied for online learning. Felder and Silverman believed, acquisition and comprehension of information differs from one person to another. Therefore, they formulated a model that categorised learning styles according to how one prefers to perceive or acquire information, preference in the presentation of information, preference to process the information and preference in processing information for comprehension. These questions derive the four dimensions of personality that are opposite in nature and reflects the whole learning process; sensing or intuitive (perception), visual or verbal (input), active or reflective (processing) and sequential or global (understanding). Analysing how learners perceive information, sensual learners prefer concrete facts, whereas intuitive learners prefer conceptual thinking and theories. With regards to input, visual learners are drawn to visual representation such as pictures and diagrams, information that can be seen; on the other hand, lectures and auditory approach would be preferred by verbal learners. Determining how learners process information, active learners process information better when it is hands-on approach and enjoy cooperative tasks, in contrast reflective learners prefer to work individually and a have the time to digest new information learnt. In terms of understanding information, learners are either sequential or

global. Sequential learners would be able to make meaning from the way the information is presented. For learners that require more time to comprehend and refer to other references and resources, they would be categorized as global learners. Felder and Solomon further developed a questionnaire The Index of Learning Style (ILS) in 1991 to measure the FSLSM dimension

Previous Studies Using Index of Learning Style Questionnaire by Felder and Silverman (1988) at International Setting.

As mentioned, Felder and Silverman Model has been applied in the attempt to identify learning styles across all educational levels. According to Leka & Kika (2018) due to the differences in learning style, it is difficult to distinguish, what more to design a lesson that is suitable for all. They employed the FSLSM model to identify the different learning styles of the masters' students of three different courses in the Faculty of Natural Science in Albania. The findings did not display significant differences in learning styles but indicated that majority of the students of different master courses were visual learners and they had a balance of active and passive learners. The slight difference justified the difficulty in determining the learning style of the students in the first place. This finding supported that of El-Hmoudova (2014) where a large number of students were categorized as active, sensing and visual learners, that preferred more concrete materials with visual representations. Ku & Chang (2011) explored the learning styles of college students in web-based learning, and found the most popular style was visual, sensing and verbal accordingly. The students responded better to a visualised presentation in class such as the use of graphics, diagrams, this clarifies how learning style is important as it affects students' attitude and comprehension in online learning (Ku & Chang, 2011).

Widaningrum & Ho (2015) further contributed to the statistics of sensory learning being the most prominent learning style. Though 96% of the students were visual learners, 31% also preferred verbal input, hence, they suggested that teaching methods should also cater to the less significant learning styles to ensure every student gain the same benefits. In addition, Gappi (2013) presented that learning style has a positive impact on academic achievement. Such findings contradicted Al Harbi et al. (2017) that found no significant correlation between learning style and GPA. However, Haider, Sinha & Chaudhary, (2010) summarized from their study that reflective learners performed better in end semester exams as they had more time to study and prepare, and active learners performed better in online quizzes.

Previous Studies of Learning Style among University Students in Malaysia

The disparity in the enrolment of male and female in public universities in Malaysia continue to attract researchers to explore the differences from various aspects. Studies on learning style and gender have displayed mixed results which triggered the uncertainty of its correlation. Unlike international studies by (Reza, Afsaneh & Reza, 2012; Ku & Chang, 2011; Konak, D'Allegro & Dickinson, 2011) that proved significant difference in learning styles between male and female learners, local studies found the opposite. According to (Ngatirin & Zainol, 2020; Shuib & Azizan, 2015; Abdul Ghani, 2015; Dahlan et. al, 2010) both genders clearly employed similar learning style. Kars (1999 as cited in Shuib & Azizan, 2015) view that student's preference of learning style is influenced by personal characteristics, ethnic and cultural background, the best justification for the geographical discrepancy. Reza, Afsaneh & Reza, (2012) also explained, previous experience, genetics and culture are influential factors in the differences in learning style.

RESEARCH METHODS

This descriptive research aims to investigate the students' preference of learning style among bachelor's degree students. To achieve the aim, this research employed quantitative research design because it gives

more accurate empirical data on their learning style preference as well as enable the research to check whether there are specific patterns of learning style preference in relation to gender and faculty.

The population of this study was semester three bachelor degree students in two courses: Computer Science, and Plantation and Agrotechnology, at Jasin campus, UiTM Melaka. The sampling technique adopted was convenience sampling. The sample consisted of 104 semester three bachelor degree students in Computer Science and in Plantation and Agrotechnology from four classes: two Bachelor in Computer Science classes and two Bachelor in Plantation and Agrotechnology classes. However, only 76 students answered the online questionnaire within the two weeks time given (response rate =73.08).

Another instrument was used to collect data in this study which is Index of Learning Style questionnaire by Felder and Silverman (1988). This questionnaire is chosen because of its high reliability based on past literature. It contains 42 items that provide two answer options. From the answers selected for the 42 items, the four preferred dimensions of learning style of an individual: processing (activist-reflector), perception (sensing-intuitive), input (visual-verbal), and comprehension (sequential-global), will be determined. Meanwhile, students' academic achievements in English language were obtained from their ELC501 grade which is the English language course taken by the students when the study was conducted. Students who scored A+ was classified as very good, A and A- were classified as good, B+ and B were classified as moderate, B- and C+ were classified as poor, and C was classified as very poor.

The questionnaire was distributed to the sample via Google Form. The students were given 2 weeks to answer the survey. 76 students answered the online questionnaire within the two weeks time given (response rate =73.08).

The collected data was later analysed using SPSS. All three research questions were answered via calculation of frequency and percentage. Frequency and percentage were used in the data analysis due to the dichotomous nature of the questionnaire.

FINDINGS AND DISCUSSION

RQ1: What is the students' preference in the four dimensions of Learning Style during ODL?

Table 4.1: Overall distribution in learning styles dimensions among the students

Dimension	Preferred style	Frequency	Percent (%)
Procession	Active	37	48.68 %
	Reflective	39	51.32 %
	Total	76	100%
Perception	Sensing	48	63.16 %
	Intuitive	28	36.84 %
	Total	76	100%
Input	Visual	68	89.48 %
	Verbal	8	10.52 %
	Total	76	100%
Comprehension	Sequential	46	60.53 %
	Global	30	39.47 %
	Total	76	100%

Felder and Silverman's (1988) Index of Learning Style consist of four dimensions. The first dimension is processing. It was found that more respondents are reflective learners (51.32%) compared to active learners (48.68%). This finding contradicts El-Hmoudova's (2014) finding in which university students were found preferring active style compared to reflective style. It is possible that due to the

limited physical activities that can be conducted during teaching and learning process in ODL setting, the students unconsciously leaned toward reflective style.

The second dimension is perception. It was found that more respondents are sensing learners (63.16%) compared to intuitive learners (36.84%). Similar findings were also found by El-Hmoudova (2014) and Ku & Chang (2011). ELC501, the English language course taken by the students when the study was conducted, contains various reading materials that heavily emphasise on accuracy of facts. After learning the course, the students may have become more inclined to sensing style.

The third dimension is input. It was found that majority of the respondents are visual learners (89.48%) compared to verbal learners (10.52%). This finding is supported by similar finding of previous studies done on local students whereby visual style was noticeably preferred compared to verbal style (see Ngatirin & Zainol, 2020; Shuib & Azizan, 2015). Tiredness of sitting and listening to lectures for long hours during ODL perhaps contributes to students' preference of information displayed in visual form.

The fourth dimension is comprehension. It was found that more respondents are sequential learners (60.53%) compared to global learners (39.47%). The respondents in the study were studying in Bachelor of Plantation and Agrotechnology and Bachelor of Computer Science; the nature of these courses is routine-based. The nature of the course involved a lot of steps and procedures, thus, it is possible that their inclination towards sequential is related to their study programmes.

RQ2: What is the preferred learning style pattern based on academic achievement in English language course during ODL?

Table 4.2: Distribution of learning style dimensions according to academic achievement in English language course

Dimension	Style	C1	C2	C3	C4	C5	Total
Procession	Active	3 (3.95%)	10 (13.15%)	14 (18.43%)	10 (13.15%)	0	37 (48.68%)
	Reflective	3 (3.95%)	6 (7.89%)	13 (17.11%)	17 (22.37%)	0	39 (51.32%)
Perception	Sensing	3 (3.95%)	10 (13.15%)	15 (19.74%)	20 (26.32%)	0	48 (63.16%)
	Intuitive	3 (3.95%)	6 (7.89%)	12 (15.79%)	7 (9.21%)	0	28 (36.84%)
Input	Visual	6 (7.89%)	16 (21.06%)	27 (35.53%)	19 (25%)	0	68 (89.48%)
	Verbal	0	0	0	8 (10.52%)	0	8 (10.52%)
Comprehension	Sequential	5 (6.58%)	10 (13.15%)	14 (18.43%)	17 (22.37%)	0	46 (60.53%)
	Global	1 (1.32%)	6 (7.89%)	13 (17.11%)	10 (13.15%)	0	30 (39.47%)

C1: Very Poor, C2: Poor, C3: Moderate, C4: Good, C5: Very good

Students with good academic achievement in English language subject were found to prefer reflective style (22.37%) over active style (13.15%) for procession dimension, sensing style (26.32%) over intuitive style (9.21%) for perception dimension, visual style (25%) over verbal style (10.52%) for input dimension, and sequential style (22.37%) over global style (13.15%) for comprehension dimension.

Meanwhile, students with very poor and poor academic achievement were found preferring active style (17.1%) over reflective style (11.84%) for procession dimension, sensing style (17.1%) over intuitive style (11.84%) for perception dimension, visual style (28.95%) over verbal style (0%) for input dimension, and sequential style (19.73%) over global style (9.21%) for comprehension dimension.

Based on these findings, sensing, visual and sequential styles are more preferred compared to other styles by students regardless of academic achievement. As sensing students are more comfortable with facts, memorisation and repetition of information, lecturers need to repeat the lesson or instructions until the students understand them clearly before proceeding with next lesson or instruction. Aside from that, the lecturers need to provide lots of visual aids in structured sequence to these students to cater their visual and sequential styles.

RQ3: What is the students' preference for each dimension in relation to gender and programme?

Processing dimension

Table 4.3: Pattern of degree of preferred learning style for processing dimension according to gender

Degree of preferred learning style (processing dimension)		Total (both genders)		Gender	
				Male	Female
		Frequency	%	Frequency	Frequency
Active	Mild Active	21	27.63	10	11
	Moderate Active	15	19.74	8	7
	Strong Active	1	1.31	0	1
		37	48.68	18 (23.68 %)	19 (25%)
Reflective	Mild Reflective	31	40.79	7	24
	Moderate Reflective	8	10.53	4	4
	Strong Reflective	0	0	0	0
		39	51.32	11 (14.47%)	28 (36.84%)
TOTAL		76	100	29	47

It was found that female respondents are more inclined to reflective style, whereas male respondents are more inclined to active style. Out of 39 (51.32%) respondents who were found preferring reflective style, 31 (40.79%) respondents are mild reflective, whereas the remaining 8 (10.53%) respondents are moderate reflective. Meanwhile, out of 37 (48.68%) respondents who were found preferring active style, most of them are mild active (27.63%), 15 (19.74%) respondents are moderate active and only 1 (1.31%) respondent is strong active.

Table 4.4: Pattern of degree of preferred learning style for processing dimension according to programme

Degree of preferred learning style (processing dimension)		Total (both programmes)		Programme	
				AT	CS
		Frequency	%	Frequency	Frequency
Active	Mild Active	21	27.63	4	17
	Moderate Active	15	19.74	4	11
	Strong Active	1	1.31	1	0
		37	48.68	9 (11.84%)	28 (36.84%)
Reflective	Mild Reflective	31	40.79	5	26
	Moderate Reflective	8	10.53	5	3
	Strong Reflective	0	0	0	0
		39	51.32	10 (13.16%)	29 (38.16%)
TOTAL		76	100	19	57

There is a slight preference in reflective style over active style among students of Bachelor in Computer Science and Bachelor of Plantation and Agrotechnology. 29 students (38.16 %) of Bachelor in Computer Science prefer reflective style compared to the other 28 students (36.84%) who prefer active

style. Meanwhile, 10 students (13.16%) of Bachelor in Plantation and Agrotechnology prefer reflective style compared to the other 9 students (11.84%) who prefer active style.

Perception dimension

Table 4.5: Pattern of degree of preferred learning style for perception dimension according to gender

Degree of preferred learning style (perception dimension)		Total (both genders)		Gender	
		Frequency	%	Male	Female
				Frequency	Frequency
Sensing	Mild Sensing	26	34.2	15	11
	Moderate Sensing	14	18.4	6	8
	Strong Sensing	8	10.53	0	8
		48	63.16	21 (27.63%)	27 (35.53%)
Intuitive	Mild Intuitive	18	23.70	3	15
	Moderate Intuitive	10	13.2	5	5
	Strong Intuitive	0	0	0	0
		28	36.84	8 (10.53%)	20 (26.31)
TOTAL		76	100	29	47

Both male and female students in the study were found preferring sensing over intuitive style for perception dimension. Out of 48 (63.16%) respondents who prefer sensing style, 26 (34.2%) respondents are mild sensing, 14 (18.4%) respondents are moderate sensing, and 8 (10.53%) respondents are strong sensing. Meanwhile, out of 28 (36.84%) respondents who prefer intuitive style, most of them are mild intuitive (23.70%) and the remaining 10 (13.20%) respondents are moderate intuitive.

Table 4.6: Pattern of degree of preferred learning style for perception dimension according to programme

Degree of preferred learning style (perception dimension)		Total (both programmes)		Programme	
		Frequency	%	AT	CS
				Frequency	Frequency
Sensing	Mild Sensing	26	34.21	6	20
	Moderate Sensing	14	18.42	5	9
	Strong Sensing	8	10.53	2	6
		48	63.16	13 (17.11 %)	35 (46.05%)
Intuitive	Mild Intuitive	18	23.68	4	14
	Moderate Intuitive	10	13.16	2	8
	Strong Intuitive	0	0	0	0
		28	36.84	6 (7.89%)	22 (28.95%)
TOTAL		76	100	19	57

Both students of Bachelor in Computer Science and Bachelor of Plantation and Agrotechnology were found preferring sensing over intuitive style for perception dimension. 35 students (46.05%) of Bachelor in Computer Science prefer sensing style compared to the other 22 students (28.95%) who prefer intuitive style. Meanwhile, 13 students (17.11%) of Bachelor in Plantation and Agrotechnology prefer sensing style compared to the other 6 students (7.89%) who prefer intuitive style.

Input dimension

Table 4.7: Pattern of degree of preferred learning style for input dimension according to gender

Degree of preferred learning style (input dimension)		Total (both genders)		Gender	
		Frequency	%	Male	Female
				Frequency	Frequency
Visual	Mild Visual	12	15.79	3	9
	Moderate Visual	27	35.53	11	16
	Strong Visual	29	38.16	13	16
		68	89.48	27 (35.53%)	41 (53.95%)
Verbal	Mild Verbal	4	5.26	2	2
	Moderate Verbal	4	5.26	0	4
	Strong Verbal	0	0	0	0
		8	10.52	2 (2.63%)	6 (7.89%)
TOTAL		76	100	29	47

Majority of the respondents regardless of male and female in the study prefer visual over verbal style for input dimension. Out of 68 (89.48%) respondents who prefer visual style, most of them are strong visual, 27 respondents are moderate visual, and 12 respondents are mild visual. Meanwhile, out of 8 (10.52%) respondents who prefer verbal style, 4 (5.26%) respondents are mild verbal and the other 4 (5.26%) are moderate verbal.

Table 4.8: Pattern of degree of preferred learning style for input dimension according to programme

Degree of preferred learning style (input dimension)		Total (both programmes)		Programme	
		Frequency	%	AT	CS
				Frequency	Frequency
Visual	Mild Visual	12	15.79	4	8
	Moderate Visual	27	35.53	9	18
	Strong Visual	29	38.16	6	23
		68	89.48	19 (25%)	49 (64.48%)
Verbal	Mild Verbal	4	5.26	0	4
	Moderate Verbal	4	5.26	0	4
	Strong Verbal	0	0	0	0
		8	10.52	0	8 (10.52%)
TOTAL		76	100	19	57

Visual style is more preferred over verbal style among students of Bachelor in Computer Science and Bachelor in Plantation and Agrotechnology. 49 students (64.48%) of Bachelor in Computer Science prefer visual style compared to the other 8 students (10.52%) who prefer verbal style. Meanwhile, all 19 students (25%) of Bachelor in Plantation and Agrotechnology prefer visual style compared to verbal style.

Comprehension dimension

Table 4.9: Pattern of degree of preferred learning style for input dimension according to gender

Degree of preferred learning style (comprehension dimension)		Total (both genders)		Gender	
		Frequency	%	Male	Female
				Frequency	Frequency
Sequential	Mild Sequential	29	38.16	9	20
	Moderate Sequential	13	17.11	4	9
	Strong Sequential	4	5.26	1	3
		46	60.53	14 (18.42%)	32 (42.11 %)
Global	Mild Global	22	28.95	12	10
	Moderate Global	7	9.21	3	4
	Strong Global	1	1.31	0	1
		30	39.47	15 (19.73%)	15 (19.73%)
TOTAL		76	100	29	47

It was found that female respondents are more inclined to sequential style, whereas male respondents are more inclined to global style. Out of 46 (60.53%) respondents who prefer sequential style, most of them (38.16%) are mild sequential, 13 (17.11%) respondents are moderate sequential, and 4 (5.26%) respondents are strong sequential. Meanwhile, out of 30 (39.47%) respondents who prefer global style, most of them are mild global (28.95%), 7 (9.21%) respondents are moderate global, and 1 (1.31%) respondent is strong global.

Table 4.10: Pattern of degree of preferred learning style for comprehension dimension according to programme

Degree of preferred learning style (comprehension dimension)		Total (both programmes)		Programme	
		Frequency	%	AT	CS
				Frequency	Frequency
Sequential	Mild Sequential	29	38.16	7	22
	Moderate Sequential	13	17.11	5	8
	Strong Sequential	4	5.26	0	4
		46	60.53	12 (15.79%)	34 (44.74%)
Global	Mild Global	22	28.95	5	17
	Moderate Global	7	9.21	2	5
	Strong Global	1	1.31	0	1
		30	39.47	7 (9.21%)	23 (30.26%)
TOTAL		76	100	19	57

Sequential style is more preferred over global style among students of Bachelor in Computer Science and Bachelor in Plantation and Agrotechnology. 34 students (44.74%) of Bachelor in Computer Science prefer sequential style compared to the other 23 students (30.26%) who prefer global style. Meanwhile, 12 students (15.79%) of Bachelor in Plantation and Agrotechnology prefer sequential style compared to the other 7 students (9.21%) who prefer global style.

Overall findings in research question 3 are in line with Ngatirin and Zainol, (2020) as well as Shuib and Azizan’s (2015) studies in tertiary education in Malaysia that found students generally employ a balanced learning style based on the FLSM model. Malaysian tertiary students are inclined towards visual, sensing and active learning style, which prefers more visual representation of facts in their classes and the ability to conduct group discussions and activities. The fact that visual is the dominant learning style preferred, explains why students tend to lose focus and get disengaged during lengthy lectures

(Ngatirin & Zainol, 2020). Thus, lecturers’ teaching styles must be aligned with students’ learning style as students’ inability to fully relate to education content impacts their learning effectiveness.

RQ4: What is the overall pattern of students’ learning style in relation to gender and programme?

Table 4.11: Overall pattern of students’ learning style in relation to gender and programme

Learning style code	Frequency	%	Frequency (Gender)		Frequency (Programme)	
			Male	Female	AT	CS
AIVG Active-Intuitive-Visual-Global	7	9.2	Male 2	Female 5	AT CS	2 5
AIVS Active-Intuitive-Visual-Sequential	5	6.6	Male 0	Female 5	AT CS	1 4
ASVeS Active-Sensing-Verbal-Sequential	4	5.3	Male 0	Female 4	AT CS	0 4
ASVG Active-Sensing-Visual-Global	6	7.9	Male 4	Female 2	AT CS	2 4
ASVS Active-Sensing-Visual-Sequential	16	21.1	Male 10	Female 6	AT CS	5 11
RIVeS Reflective-Intuitive-Verbal-Sequential	2	2.6	Male 0	Female 2	AT CS	0 2
RIVG Reflective-Intuitive-Visual-Global	5	6.6	Male 2	Female 3	AT CS	1 4
RIVS Reflective-Intuitive-Visual-Sequential	6	7.9	Male 2	Female 4	AT CS	1 5
RSVG Reflective-Sensing-Visual-Global	10	13.2	Male 6	Female 4	AT CS	2 8
RSVS Reflective-Sensing-Visual-Sequential	15	19.7	Male 3	Female 12	AT CS	5 10
TOTAL	76	100.0	Male 29	Female 47	AT CS	19 57

Respondents in this study who are semester three student in Bachelor of Computer Science and Bachelor of Plantation and Agrotechnology programmes at UiTM Melaka Jasin Campus, were found having varied combination of learning styles. The learning style combination with the highest number among respondents is ASVS (Active-Sensing-Visual-Sequential) with 16 (21.1%) students. Out of 16 students, 10 are male while 6 are female and 5 of them are Bachelor in Plantation and Agrotechnology students and 11 students are Bachelor in Computer Science students. These findings are in congruent with previous findings by Che Kob, Kannapiran & Abdullah (2018) findings in which majority of the students employed the same learning style; active, sensing, visual sequential (ASVS) regardless of the courses.

Meanwhile, the learning style combination that is least preferred by the respondents are RIVeS (Reflective, Intuitive, Verbal and Sequential). The two RIVeS students (2.6%) are female and are studying in Bachelor in Computer Science programme.

CONCLUSION AND RECOMMENDATION

To conclude, learning styles are important to be identified among the students to facilitate an effective teaching and learning process. By being aware of their preferred learning styles, students can adopt and utilise learning approaches that match their learning styles while studying. This will eventually help them in learning and acquiring knowledge faster compared to before. One crucial finding in this study that the educators should take note is, most of the students prefer visual (89.47%) over verbal

(10.53%) for input. Thus, educators need to increase the numbers of visual aids used when teaching and delivering the lessons. Combination of educators' verbal explanation together with the existence of visual aids will definitely increase the students' interest and comprehension while learning in the classroom.

As for recommendations, future research can employ mixed-method and use bigger samples in order to gain in-depth analysis of the issue. Besides that, future research might also study learning style with other related variables such as attention span, CGPA, and learning strategies for a more detailed insight about students' learning styles.

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