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VARK-BASED BLENDED LEARNING SUPPORT SYSTEM: AN INTRODUCTION

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Abstract

Academicians faced with the challenge on how to foster an affective learning climate due to the students different background and learning styles. In relation to this, research has pointed out that a positive affective learning climate can be increased with the Blended Learning Strategy facilitated with VARK Learning Style Model. Therefore, in this study the objective is to prepare and develop students learning materials in blended learning environment. In order to achieve the objective, three sub-objectives is developed which are (i) develop a web-based system to evaluate students learning style based on VARK learning style, (ii) to develop online learning materials for selected subjects based on VARK learning style, and (iii) to develop a web-based system which integrate the recognised VARK learning styles and materials available. Two phases are identified for the research methodology; Phase 1) system development and subject material preparation. Phase 2) System testing and implementation/samples. The expected outcome for this project is a full functioned support system to assist the students in their learning process based on VARK learning style which is known as V-BLeSS and may be utilized for MOOC in the future.

Keywords: VARK, learning style, blended learning, Uniten.

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1. Introduction

The rapid development of technology and the industrial revolution of 4.0 has impacted numerous sector of the economy. This inclusive the education sector which currently demand for more advance and fit-to-go students in facing the unknown specialty and skills in the future (Ibrahim & Jaaffar, 2017). Tertiary education sector has to shift the teaching styles instead of more on instructor and content centred to more on students centred and skills development. However, in facing the millennial generation, a traditional method of teaching may not applicable to all. Ineffective teaching styles may distort the learning process and may result low performance by students in both academic and in facing real live (Briggs, 2019).

1.1. Learning styles

The term learning styles refers to individuals' characteristics and preferred ways of gathering, organising and thinking about information (Fleming, 2011). Visual learners prefer maps, charts, graphs, diagrams and pictures. Aural learners like to explain new ideas to others and discuss topics with other students and teachers. Learners with a read/write preference favour essays, reports, textbooks and manuals. Kinaesthetic learners prefer field trips, trial and error, and hands-on approaches. Some students enjoy a combination of visual, auditory, reading/ writing and kinaesthetic activities. Lujan and DiCarlo (2006) point out that most students have multimodal learning styles. Krätzig and Arbuthnott (2006) found that each individual uses a combination of different learning modalities to learn effectively. Each learner has a specific learning style or a set of preferences; therefore, lessons should be designed to best accommodate all learners (Zapalska & Dabb, 2002). Gender may be one of many factors that shape learners' perceptions of the usefulness of multimedia instruction. Wehrwein et al. (2007) found that males and females have different learning style preferences.

In order to create an affective learning environment it is crucial to understand the different learning styles of the students. A single evaluation may not reflect the actual achievement of students due to their different learning abilities towards single teaching style (Espinoza-Poves et al., 2019). This due to the different learning, which carries many definitions, and being well accepted as the most preferred ways for students to understand something (Ibrahim & Jaaffar, 2017). There are numbers of learning styles studied by researchers, and the prominent are six namely Kolb Experiential Learning Theory by Kolb, 1984, Gregorc Learning Style Model by Gregorc, 1979, Felder-Sirverman leraning/Teaching Style Model by Felder and Silverman (1988), Dunn and Dunn Learning Style Model by Dunn and Dunn (1978), The Revised Approaches to Studying Inventory by Entwistle et al. (1979) and The VARK Model by Fleming (2011; Hawk & Shah, 2007). This study will focus on VARK Model by Fleming (2011) as the base to categorize the students learning styles.

1.2. VARK Model Learning style

VARK is the acronym for visual (V), Auditory (A), Read and write (R) and Kinesthetic (K) was developed from the extention of earlier neuro-lingustic model (Eicher, 1987). Learning styles was defined by Fleming (2011) as "an individual's characteristics and preferred ways of gathering, organizing, and thinking about information. VARK is in the category of instructional preference

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because it deals with perceptual modes. It is focused on the different ways that we take in and give out information" (p.1). The models argues that individuals may have preference in anywhere to one type of styles until all the four. A student may relatively prefer one of the four type however may learn to function in the other modes (Hawk & Shah, 2007). Figure 01 presents the VARK model.

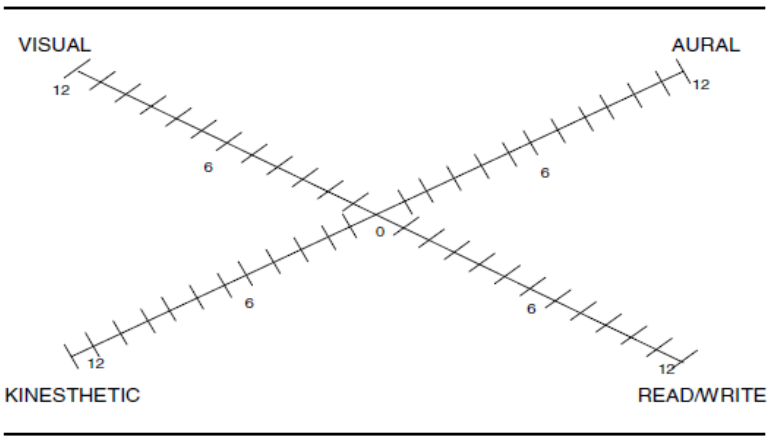

Figure 01. VARK Model (Adopted from Hawk & Shah, 2007)

The evaluation of individual learning based on the model is measured through 16 questions which requires the individual to choose the best answer suits their preferences. The scores between 13-48 will indicate the preference of one, two, three or all four of the learning channels. Learners which are categorize as visual will prefer learning style with more pictures, maps, charts, graphs and colours. Aural learners will learn the best by explaining to others, discuss a certain topics, listening to tape recorder, attending lecture and use of stories and jokes. On the other hand, the use of essay writing, reports, textbook, printed handout and manuals will best suits the read and write learners. However, the kinaesthetic learners will prefer to have trial and error, doing things, field trips, problem solving approaches and collection of samples.

2. Problem Statement

The Malaysia Education Blueprint 2013-2025, Malaysia places great importance on online learning and particularly blended learning as a way of widening higher education participation. Gen-Z of this era are active learners, prefer direct education and knowledge and adept with the Internet. Many researched focused on the benefits and advantages of blended learning (Azizan, 2010; Doiron & Asselin, 2011; Heidi & Neo, 2015). It cannot be denied that Gen-z are more to technologies, however, there are a few notable concerns as to the students might struggle in adapting to this initiative as they now must lead their own learning process (Vaughan, 2007). Other students might find it difficult to adjust to the online course structure (Tayebinik & Puteh, 2012) since every student have different learning styles (VARK) (Newton & Miah, 2017). How to foster an affective learning climate is one of the major challenges in implementing blended learning (Boelens et al., 2017).

Majority of educators in one of the private tertiary education institution are still in the introductory stage for implementing blended learning in class. The traditional method of using single approach in classes which is lecture and power point slide is still the main preferences. Based on unpublished survey result, the

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main reason for monotonous class are due lack skill for computer software and the limited time for class preparation especially if it is a new subject. As discussed earlier, it is important for the educator to develop different teaching materials and make them available online to the students so they will be able to select which materials will best suits them. This paper offers an introduction to VARK Model learning style by Fleming (2011) as a based to develop effective learning materials for class and detail down the steps and processes in developing an automated system which will calculate and advice the students the appropriate materials which may best suits their learning styles.

3. Purpose of the Study

The first objective of this study is to prepare and develop learning materials and activites for selected subjects based on VARK Model. Secondly, the study aims to develop a web-based system which integrate the recognized VARK learning styles and materials available. The system is targeted to advice and channel the user to the appropriate materials which best suit their learning styles. These objectives are to support the blended learning environment which currently perceived as a need to the type generation currently in the higher institution.

4. Research Methods

The study will comprises of two stages. The first stage is to prepare the appropriate class materials for the selected subjects based on the for type of learning styles in VARK model. The second stage is to develop a web-based system which will evaluate the learning style based on VARK Model and channel the result to the appropriate materials.

4.1. Material preparation based on VARK Model

There are four subjects recognized for the project. They are Islamic values in business environment, accounting information system, industrial relation and digital marketing. Each subject will choose four topics to be covered. During this stage, each topic for each subjects will have four learning materials or activities based on the suitability and appropriateness to the learning outcomes. Fleming (2011) has summarized number of suggestions on type of activity that can be carried for each of the learning style which are listed in Table 01.

During the preparation process, educators may utilize several types of tools both online and offline for the activities. Table 02 provide some example on the type of activities that may be implemented as a basis for material preparation.

Table 01. Suggested activities to accommodate VARK Learning Style

Visual	Aural	Read/write	Kinesthetic
Diagrams	Debates, Arguments	Books, texts	Real-Life examples
Graph	Discussions	Handouts	Examples
Colors	Conversation	Reading	Guest lecturers
ChartsWritten text	Audio tapes	Written Feedback	Demonstration

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Different fonts	Video+Audio	Note taking	Physical activity
Spatial arrangement	Seminars	Essays	Constructing
Design	Music	Multiple choice	Role play
	Drama	Bibliography	Working Model

(Adopted from Hawk & Shah, 2007 which was sourced from Fleming, 2011)

Table 02. Example of activities for each topic

Subject	Topic	Visual	Aural	Read/write	Kinesthetic
Islamic value in business environment	Maslahah Level	Diagrams with colors in explaining the Maslahah level	Discussions among group member on the topic/case given.	Books, texts and power point slides on the topic	Role-play in producing new products by imposing the important points
Accounting information system	System security	Mindmapping with colors on highlighted contents	Video with audio on clips of system security features and their application	Books, texts and power point slides on the topic	Role play as an organization management team in deciding what is the best control mechanism in a given scene

4.2. The development of VARK-based System

Based on Fleming (2011), the VARK learning style evaluation is based on 16 questions with 4 type of answer each which reflect each learning styles. The scores will indicate the user or participants learning style either be dominantly towards one of the styles, or it may consists of all four dimensions. Hence, these questions will be made available as the second page in the system following the introductory as the home. Once the user or participant or students answers all the questions, system will indicate the type of learning style they are and will automatically display the materials or activities which has been prepared earlier. User or students will only need to click the desired materials to retrieve them.

5. Findings

As this paper is a concept paper, the findings is merely the targeted outcome form the study. As mentioned earlier, the study planned to have 2-phases processes. Firstly, is to have a complete class activities and materials specifically for each learning styles for four subjects. As there will be four topics to be covered, hence it is targeted to have 16 complete materials at the end of the due date.

Once the system is developed and functioned, a pilot test will be carried out to a selected class and group of students. For learning style evaluation, it will be done based on early, middle and end of the semester to view nay changes on the students' styles. Each result will be recorded and will be matched with the suitable materials in the system.

6. Conclusion

The objective of this paper is to explain the plan in developing a comprehensive blended learning system which utilize VARK Model learning style as the basis in order to prepare and develop class activities

and materials. as blended learning and utilization of technology has shifted the teaching and learning style into more technological environment, the different learning styles may produce different result. Hence, by appreciating the students style as the basis for class activities and materials will assist the knowledge transfer process and the utilization of technology may provide better results in the future.

This study is limited as an introduction and the actual data and output is yet to generate. Hence, it may not suitable to be taken as an ultimate success until the actual system and result is generated. Apart of that, this study only utilize single learning style, which is VARK Model, as the basis of reference for student learning style. Future research may choose another learning style to produce a better insight and comparison with the result of this study later.

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