



Research paper

The effect of Diversity in the methods of Presentation and classroom environment on the Virtual Learning Environment

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ABSTRACT

Public Universities in Malaysia offer many programs to their students and use e-learning or VLE as their platform, mostly enrolling distance learning students. The study explores the relationship between the influence of Diversity in the methods of presentation and classroom environment on virtual learning. This study is a quantitative type of research that seeks to explain relationships among variables. The study will use statistical analysis such as PLS-SEM. This study looks at variables at a specific point in the data collection process. The findings of these studies indicated that the communication environment towards the virtual learning environment has a significant positive relationship. However, Diversity in presentation methods in the virtual learning environment is insignificant. This study provides insights into the virtual learning environment, particularly in the Malaysian context, discusses implications for Diversity in the presentation and classroom environment methods, and offers recommendations for future research.

1. INTRODUCTION

In the past decades, the traditional learning model is typically characterized as didactic instruction in which information is presented to students with little consideration of how that information is used. Lord (1997) indicated that, in traditional learning, the instructor is the sole information giver, undertaking lectures for a large group of students, and the students sitting in the classroom are passive recipients of the information (Lord, 1997). Therefore, education design and the concept evolved when technology made changes to the paradigm of learning in modern education to increase the effectiveness of teaching and learning by establishing new models of e-learning or Virtual Learning Environment (VLE), which are generally used in higher education arena (Adams et al., 2018; Md Ajis et al., 2017). These models have changed the face of learning and played an essential role in providing a good opportunity to learn anywhere and anytime (Gordon, 2014). Besides, the application of the VLE system is said to be the game-changer in correcting mistakes and weaknesses of traditional learning methods, as it is a technology that enhances the student's learning experience that many universities implemented using a set of teaching and learning tools such as computers and the internet in the process of learning. Technology has become the tool used to remove geographical barriers; everyone can learn anytime and anywhere without a lecturer. Education at a distance became easy in virtual worlds. The distance education experience is quite valuable, but still moves far behind the face-to-face classroom experience getting the small number of class communities, display almost without effort in face-to-face classroom environments refers to the difference in the quality of experience (Ahmed et al., 2012)

2. LITERATURE REVIEW

The literature review on the virtual learning environment, the underlying theory used in the study, and predictors of the virtual learning environment. Finally, hypotheses are presented to exhibit the relationships between variables in this study. The theoretical framework of the study then follows this.

2.1. Underpinning theory

Based on the literature review, Action-based Learning Assessment proposes a new approach to assessing learners based on their actions in virtual training environments to achieve a predefined goal or solve a problem. Using this assessment method provides the opportunity for learners to learn from their mistakes and repeat the assessment until they master it without the waste of financial and human resources. It also enables educators to assess more effectively and efficiently a higher number of accessible learners in less time. Furthermore, educators are free to create new problems, add different solutions, extend the taxonomy, and redefine their actions due to

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their needs, which offers greater flexibility. Therefore, the study incorporates the Action-Based Learning theory (Fardinpour et al., 2013), which is applicable in explaining the study's theoretical framework.

2.2. The virtual learning environment

VLEs refer to the components in which learners and teachers participate in "online" interactions, including online learning (O' Leary & Ramsden, 2002). A virtual learning environment (VLE) is defined as the delivery of a web-based communication medium, which enables students to access different learning tools, such as program information, course content, teacher assistance, discussion boards, document sharing systems, and learning resources at their (Awang et al., 2018; Md Ajis et al., 2017).

2.3. Diversity in the methods of presentation

The information age and faster lifestyles have encouraged changes in traditional educational approaches, which had become unsuitable due to extensive curriculums. Lecturers do not find enough time to explain all the materials, solve case studies on the blackboard, and teach students skills such as oral and written Communication, critical and creative thinking, group work, and usage of new learning technologies (Lukman & Krajnc, 2012). The development of information and communication technologies (ICTs) has added a new dimension to the learning process and made virtual learning a significant learning option. Virtual learning presents an alternative for students and helps them find a balance between private life, career, and further education. It is one of the most dynamic and enriching forms of learning (Paik & Lee & McMahon, 2004), reducing dependency on space and time (Chhetri et al., 2004).

On the other hand, it offers both individual learning experiences and opportunities to work together (Reagans et al., 2005). Many systems have been developed that use a three-dimensional space to present information to the user. These include immersive virtual reality systems and desktop 3D applications (Bowman & Hodges & Allison & Wineman, 1999). Thus, the Diversity in the method of presentation within a virtual environment is enhanced by using different tools such as audio and videotapes, CD-ROMs, and internet-based support. For this Diversity in methods, this study predicted that:

H1: Diversity in the method of presentation will have a positive effect on the virtual learning environment.

2.4. Classroom environment

Instructors are principal actors in any environment (Piccoli et al., 2001). Previous research in technology-intensive learning environments has highlighted several instructors' characteristics related to effective learning in such environments. Webster and Hackley (1997) found that an instructor's positive attitude toward technology, the instructor's interactive teaching style, and the instructor's control over the technology are related to many attitudinal measures of learning effectiveness. These results, obtained in the context of videoconferencing distance education, suggest that an instructor's behavior conveys cues that shape students' evaluation of the experience. Similarly, Cavanaugh et al. (2000) reported that the instructor's self-efficacy contributes to learning effectiveness (Cavanaugh et al., 2000). In this context, Hackley (1997) argued that the instructor's positive attitude is related to learning effectiveness. Therefore, in the virtual learning environment, participant interaction and electronic Communication can play an important role in fostering effective learning by enabling students to evaluate their progress and instructional needs. This is because instructor behavior, as surfaces through attitudes and actions, can influence students' reactions to the learning environment. To do so, it is predicted that:

H4: Classroom environment (CE) will positively affect the virtual learning environment.

2.5. The theoretical framework of the study

Based on the literature review, it is hypothesized that independent variables, which are interactive teaching methods, Diversity in the methods of presentation (ITM), and classroom environment (CE), influence the dependent variable, the virtual learning environment. However, the theoretical framework depicts the relationships between independent and dependent variables.

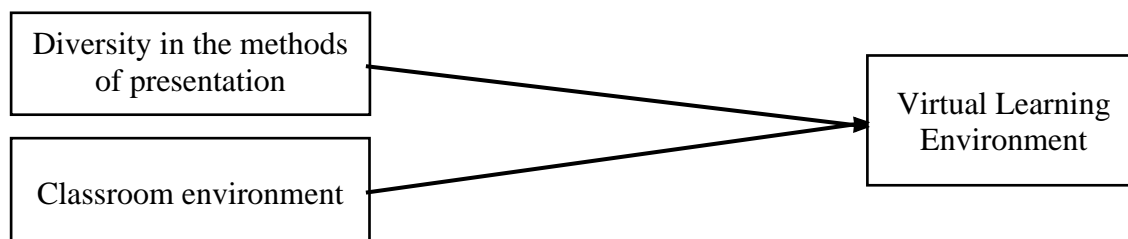


Figure 1. Theoretical framework

3. METHODOLOGY

3.1. Data Collection

This study focuses on looking at variables at a specific point at one time in the data collection process. The target population of this study refers to undergraduate students at *Universiti Utara Malaysia* (UUM), the School of business management, and *Prince of Songkla University* (PSU). The unit of analysis is the individual students. Data collection was conducted through a self-administered questionnaire. In this technique, the researcher distributes the questionnaires to the respondents through an Online Survey where Google Form was created (Gmail) and submitted via WhatsApp to the selected groups of students. Based on this, the process started with contacting the selected students through their phones and explaining the study's objectives. Respondents then completed and returned their responses through the researcher's email address (Gmail).

Meanwhile, the respondents of this study were Undergraduate Students from various fields of study to provide their feedback and perception concerning the virtual learning environment in a five-point Likert scale survey. Therefore, the convenience sampling technique (Etikan et al., 2016) is used in the current study. A total of 262 students from various fields of study were selected from public higher education institutions in Kedah (UUM), Malaysia (170), and Prince of Songkla University, Thailand (92).

4. RESULT

4.1. Demographic profile of the respondents

This section is concerned with the description of the demographic profile of the respondents. The demographic characteristics examined in this study contain gender, semester completed, checking the portal site, and class format (see Table 1). The respondents of this study were students enrolled in different fields in UUM, Malaysia, and PSU, Thailand. One hundred sixty-eight respondents (64.6%) were Malaysian students, while 92 respondents (35.4%) were Thai students. 25% of respondents were males, while 75% were females.

Table 1. Demographic characteristics of the respondents(n=260)

		Frequency	Percent
Nationality	Malaysia	168	64.6
	Thailand	92	35.4
Gender	Male	50	25
	Female	210	75
	Total	260	100

In Table 2, most respondents had completed the third semester in Thailand (38%), followed by the second semester (16.3%), and fifth semester (16.3%), the seventh semester (12%), the fourth semester (6.5%), first semester (4.3%), sixth and ninth semester (3.3%). While in Malaysia, most respondents had completed the second semester (36.3%), followed by the third semester (28%), first semester (9.5%), eighth semester (6.5%), sixth semester (5.4%), fourth and seventh semester (4.2%), fifth semester 3.6%), ninth semester (1.8%), and tenth semester (0.6%).

Table 2. Distribution of Thai and Malaysian respondents by Semesters completed (n=260)

Thailand		Frequency	Percent
Semesters	1	4	4.3
	2	15	16.3
	3	35	38
	4	6	6.5
	5	15	16.3
	6	3	3.3
	7	11	12
	9	3	3.3

Table 2 (Continued). Distribution of Thai and Malaysian respondents by Semesters completed (n=260)

Malaysia		Frequency	Percent
Semesters	1	16	9.5
	2	61	36.3
	3	47	28
	4	7	4.2
	5	6	3.6
	6	9	5.4
	7	7	4.2
	8	11	6.5
	9	3	1.8
	10	1	0.6
Total		168	100

In Malaysia, checking portal sites ranged from Once a Day (39.3%), Never (22.6%), Rarely (13.1%), Occasionally (8.9%), Not Applicable (8.3%), and Frequently (7.7%). While in Thailand, checking portal sites ranged from Never (45.7%), Occasionally (26.1%), Rarely (23.9%), Not Applicable (3.3%), and Frequently (1.1%), as depicted in Table 3.

Table 3. Distribution of Thai and Malaysian respondents by Class Format (n=260)

Thailand		Frequency	Percent
Class Format	Meeting regularly in a classroom setting	57	62
	Completing coursework online	1	1.1
	A combination of all	34	37
Malaysia		Frequency	Percent
Class Format	Meeting regularly in a classroom setting	53	31.5
	Completing coursework online	44	26.2
	A combination of all	71	42.3
	Total	168	100

4.2. Models' evaluations

This study used PLS structural equation modeling (SEM). Before testing the hypotheses, the first step in the PLS analysis is to assess the measurement model (Hermawan & Haryanto, 2022).

4.2.1. Measurement model

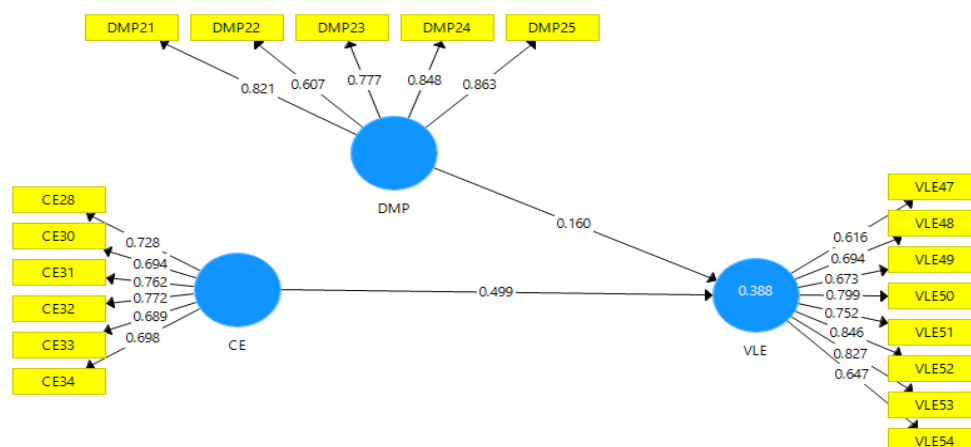


Figure 2. Measurement model

4.2.1.1. Convergent validity

As indicated in Table 4, all the indicators were loaded on their respective constructs from a lower bound of 0.607 to an upper bound of 0.863. Additionally, all the indicators loaded more highly on their respective constructs than others.

Table 4. Convergent validity

Constructs	Items	Loadings	Cronbach's Alpha	rho_A	Composite Reliability	(AVE)
VLE	VLE47	0.616	0.877	0.883	0.903	0.542
	VLE48	0.694				
	VLE49	0.673				
	VLE50	0.799				
	VLE51	0.752				
	VLE52	0.846				
	VLE53	0.827				
EC	CE28	0.728	0.820	0.823	0.869	0.525
	CE30	0.694				
	CE31	0.762				
	CE32	0.772				
	CE33	0.689				
	CE34	0.698				
DMP	DMP21	0.821	0.852	0.889	0.890	0.622
	DMP22	0.607				
	DMP23	0.777				
	DMP24	0.848				
	DMP25	0.863				

4.2.1.2. Discriminant validity

In measuring the discriminant validity, the square root of the AVE for each variable is utilized (Fornell & Larcker, 1981). The squared AVE should be greater than the squared correlation estimates to provide good discriminant validity evidence (Haryanto & Farih, 2022; Hair et al., 2006).

Table 5. Fornell and Larcker

Construct	CE	DMP	VLE
CE	0.725		
DMP	0.709	0.789	
VLE	0.612	0.514	0.736

Table 6. Discriminant validity (HTMT criterion)

	CE	DMP	VLE
CE			
DMP	0.856		
VLE	0.703	0.549	

Tables 5 and 6 show the outcomes of the discriminant validity evaluation of the variables used in this study. Along the diagonal, the table presents square roots of AVE for all the constructs indicating higher square roots of AVE for VLE (0.703) and lower for DMP (0.549). However, all the square roots of AVE for the constructs are bigger than the off-diagonal elements or coefficients in the corresponding columns and rows. Hence, Table 4.6, and Table 6, established the evidence of discriminant validity.

4.2.1.3. Prediction relevance of the model

The ability of the proposed model to predict the endogenous constructs is based on the assessment of the Coefficient of determination (R^2), cross-validated redundancy (Q^2), and path coefficients. Which is to facilitate the assessment of the model's quality.

Table 7. Predictive relevance (Q^2)

Construct	SSO	SSE	$Q^2 (=1-SSE/SSO)$
VLE	736.000	591.244	0.197

4.2.1.4. Variance explained (R^2)

The (R^2) value was assessed based on Cohen's (2013) suggestion, where 0.26 is considered substantial, 0.13 moderate, and 0.02 weak. From this, the obtained (R^2) value of 0.19 is considered substantial. This indicates that all four constructs of Effective Communication explain 38.8% of the variance in the Virtual Learning Environment,

Table 8. Variance explained in the endogenous latent variable

Construct	R Square	R Square Adjusted
VLE	0.388	0.374

4.2.1.5. Effect Size of virtual learning Environment

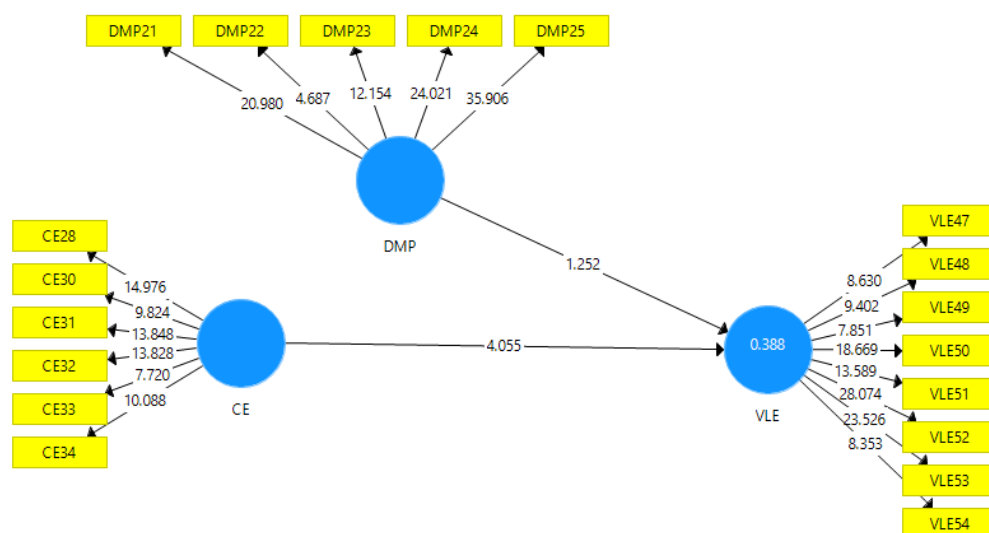
Cohen (2013) has provided baseline values or measures for the effect size as follows a): 0.02=small, b); 0.15=medium, c); 0.35=high. The effect size of the Virtual Learning Environment was observed with the exogenous variables from the model (Diversity in the Method of Presentation and Classroom environment). The effect size of the Virtual Learning Environment and the two constructs is presented in Table 9.

Table 9. The effect size of the virtual learning environment and the interaction constructs

Constructs	Effect Size	F^2
CE	0.203	medium
DMP	0.021	Small

4.3. Structural model

After assessing the validity of the measurement model, this section introduces the results of the structural model and tests of hypotheses for the study.

**Figure 3.** Structural model

4.4. Testing hypothesis

The results in Table 4.11 also reveal that the relationship between effective Communication and the virtual learning environment is supported at a 0.01 level of significance ($\beta = 0.144$, $t = 7.914$, $p = 0.000$).

Table 10. Hypothesis testing

Relationships	Std. Beta	Std. Error	t-values	p-values	Decision
CE -> VLE	0.499	0.123	4.056	0.000	Significant
DMP -> VLE	0.160	0.128	1.252	0.105	Non-Significant

5. CONCLUSION

The tested hypotheses have provided evidence in assessing the relationship between communication environment (CE). This study assesses the relationship between the communication environment (CE) and the virtual learning environment (VLE). This study's participants are undergraduate students selected from Universiti Utara Malaysia (UUM). This study was analyzed using the Partial Least Squares (Smart PLS3) software. From this, the hypotheses representing the constructs' relationships based on the research framework, represented by virtual learning environment (VLE) as the dependent variable, and independent variables that contained communication environment (CE).

In explaining the significant result of the communication environment in the virtual learning environment, the majority of participants from UUM agree that online learning positively impacts communication between instructors and students and that interacting with their teachers has become harder as well. This indicates that instructors' behaviors, as surfaced through attitudes and actions, can influence students' reactions to the learning environment. Therefore, several affective factors related to student engagement include attitude, personality, motivation, effort, and self-confidence.

This study found that the Diversity in the method of presentation within a virtual environment is not enhanced by using different tools such as audio and videotapes, CD-ROMs, and internet-based support. A mixture of independent study and scheduled tutor-assisted sessions is not supported to comprise the generic format of the learning platforms. Moreover, advanced instructional support is provided by the Learning Centres (LCs) via a dedicated integrated satellite network that includes a host of VSATs.

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