Journal of Personalized Learning, *2*(1) 2016, 86-94.

STUDENT USAGE PATTERNS OF VLE-FROG

Rosemaliza Kamalludeen (Corresponding Author)
Kulliyyah of Education, International Islamic University Malaysia,
Gombak, Selangor, MALAYSIA
rosemaliza@iium.edu.my

Azwani Hassan
Kulliyyah of Education, International Islamic University Malaysia,
Gombak, Selangor, MALAYSIA

Nur Sakinah Ahmad Nasaruddin
Kulliyyah of Education, International Islamic University Malaysia,
Gombak, Selangor, MALAYSIA

ABSTRACT

Technology implementation of VLE-Frog as a learning management system (LMS) attempted to revolutionize the teaching and learning process of Malaysian school systems in accordance with 21st century demands. Despite the features and functions of VLE-Frog studied, there are very few studies done on VLE-Frog usage at secondary school level. Thus, there is a need to conduct a study on the factors that influence VLE-Frog usage among Malaysian secondary school students. The purpose of this study was to examine the factors that relate VLE-Frog usage among secondary school students. This study was conducted with the objectives to investigate VLE-Frog usage patterns among secondary school students in terms of their usage frequency and purposes as well as to explore students' perceptions towards usage of VLE-Frog among the teachers. A case study approach was adopted by distributing questionnaires to 60 Form Four and Five students in SMK Taman Melawati. The results show that VLE-Frog features influenced students' interest in using the platform and improved students' IT skills. The findings of this study is hoped to inform students, teachers, and school administrators in improving current practices to increase awareness and usage of VLE-Frog in secondary schools.

Keywords: VLE-Frog, LMS, features, usage pattern

INTRODUCTION

In line with 21st century learning trends, the Ministry of Education (MOE) Malaysia has launched a policy review of the education system in Malaysia, the new Malaysia Education Blueprint (2013-2025), that suggests 11 strategic and operational shifts required to transform the system and achieve the vision of 21st century education. Shift 7 of the blueprint aims to "Leverage ICT to scale up quality learning across Malaysia". One of the efforts in this shift is the implementation of Virtual Learning Environment Frog (VLE-Frog) platform as a learning management system (LMS) to compliment the teaching and learning process of Malaysian secondary schools that was introduced by the MOE in 2011.

LMS is a web-based software which allows learning to expand beyond the four walls of a classroom (Canul, 2011), joining forces with other institutions and societies to revitalize education (Bhasin, 2012). The infrastructure to support the implementation of VLE-Frog was provided by MOE via 1BestariNet for all 10,000 schools in 2013. The government aims to maximize the use of ICT for distance and self-paced learning via VLE-Frog to expand access to high-quality teaching regardless of the location or the student's skill level. A virtual learning environment like VLE-Frog provides a platform for individualized learning as it allows instructors and students to share instructional materials, make class announcements, submit and return course assignments, and communicate with each other through online platforms (Lonn & Teasley, 2009). For better or worse, learning management systems are becoming core technologies for instructors and institutions (Fuchs et al., 2004). It was supported by Squillante, Wise and Hartey (2014) who mentioned that online learning has become increasingly popular as education continues to change with technology.

To cite this document:
Kamalludeen, R., Hassan, A., & Ahmad Nasaruddin, N. S. (2016). Student usage patterns of VLE-Frog. *Journal of Personalized Learning*, *2*(1): 93-101.

Journal of Personalized Learning, 2(1) 2016, 86-94.

According to Wright et al. (2014), LMS is a comprehensive and integrated software that supports development, delivery, assessment and administration of courses in traditional face-to-face, blended or online learning environments. This is because, LMS is a software tool to support the delivery and management of learning which also handles all aspects of learning process to arouse students' interest (Nur' Aini, Omar & Chow, 2012). The software is an important tool in delivering lessons to students and catering to all levels of engagement. LMS is a software for delivering, tracking, and managing learning instruction. Furthermore, it enables an institution to develop electronic learning materials for teachers and students. LMS is able to provide academic institutions with mechanisms and tools to store, manage, and share its academic resources and knowledge. On top of that, it also supports distance learning education and supplements traditional ways of teaching. Thus, it is able to help students in organizing their learning resources.

The Frog Virtual Learning Environment (VLE-Frog)

"The Frog Virtual Learning Environment" (VLE-Frog) is a web-based learning system that replicates real world learning by integrating virtual equivalents of conventional concepts of education. Teachers can deliver lessons, assign tasks and conduct assessments virtually while students can submit homework and view their grades through this web-based learning system. This software also leverages on the availability of internet connectivity and makes learning more fun and appealing to students. As defined by Kumarawel, Yusop and Abdul Razak (2015), the main purpose of VLE Frog is to create a borderless learning environment and self-directed learning for students with the presence of internet connectivity. VLE Frog is a technology that enhances students' learning experience by leveraging the Internet and technology to improve teaching and learning process.

Bailey et al. (2013) suggested that with excellent internet access and sophisticated adaptive learning software systems and tools, it is now easier to integrate blended learning into our schools where teachers can become more productive. Besides that, student accomplishment can be accelerated to prepare our children for college and successful careers. The benefits of VLE-Frog include self-paced learning support, interactive communication, and high retention rate that allow students to learn anytime and anywhere provided that internet connectivity is present (Johawati binti Juhary, 2014). Students can rely on LMS to assist them in learning, both during and after formal classes. In addition, Abdul Rani, Suradi, and Yusoff (2014) claimed that internet connection contributes significantly in the usage of LMS.

However, the implementation of VLE-Frog has yet to meet the expectations of MOE. A research done by Tham and Tham (2011) showed that the usage of courseware through LMS in 50 pilot tested schools indicated that only one school (2%) has the highest usage of more than 100 hours while another two percent had an average of 25-50 hours. Tham and Tham also discovered that majority of 44 schools (88%) showed a very low usage between 0-24 hours and four schools (8%) showed zero usage or had not used LMS at all. This has created doubts regarding the acceptance of the innovation introduced by the MOE.

Many studies have been carried out on the functions and features of LMS in higher education. Dahlstrom, Brook and Bichsel (2014) found that the features and functions of LMS matter the most to users when they are using the systems. The findings suggest the importance of focusing on LMS features that support collaboration and student engagement for teaching and learning process. According to White and Larusson (2010), LMS is flexible because of its functions and tools that provide features to satisfy the needs of instructors as well as students. This shows that the features and functions of LMS play important roles in encouraging the usage of LMS.

On the other hand, there are very few studies done on the usage of LMS at secondary school level and if any, the studies are done regarding with the usage of VLE-Frog related to its functions and features in secondary schools. Thus, there is a need to conduct a study on the factors that influence the usage of VLE-Frog among Malaysian secondary school students.

Objectives

The objective of this research was to investigate VLE-Frog usage patterns among secondary school students of SMK Taman Melawati in terms of their usage frequency and purposes. The study also set out to explore students' perceptions towards usage of VLE-Frog among the teachers in SMK Taman Melawati. The findings from this study provided an overview of the implementation of VLE-Frog in a secondary school that has already incorporated the platform in its teaching and learning activities. This information is essential in exploring the possibilities of personalized education facilitation through a learning management system like VLE-Frog.

Journal of Personalized Learning, *2*(1) 2016, 86-94.

METHODOLOGY

Research Design

The quantitative research design was adopted for this study to explore the VLE-Frog usage patterns of students from SMK Taman Melawati, Kuala Lumpur. This descriptive study uses a self-constructed questionnaire as its instrument, adapted from a study entitled "Attitude towards the Use of Learning Management System among University Students: A Case Study" by Trayek (2014), to obtain information on the usage of LMS among students in SMK Taman Melawati. Purposive sampling technique was applied to get the sample from the defined population where the target group is the students who use VLE-Frog during learning process in their classroom.

Population And Sampling

The population of this study was Form Four and Form Five students in SMK Taman Melawati. The total number of Form 4 and 5 students at the school (aged between 16 to 17 years old) is 870 students. In this study, 60 students were chosen as the respondents. Purposive sampling method was employed in the study with the intention of determining a specific group that will be able to provide data and useful information for the study (Battaglia, 2011). As mentioned by Bhattacherjee (2012), purposive sampling allows researchers to specify the criteria in selecting the participants for the study. In this case, students who use LMS in their learning process were selected as the participants as the researcher was interested in investigating VLE-Frog usage patterns among students who actually use the system in their learning.

Instrument Development

The instrument of this study has four sections which comprise of items on demographic data, factors of VLE Frog usage, students' perceptions of VLE Frog usage by teachers and the purpose of VLE-Frog usage in SMK Taman Melawati. Five Likert-scale (strongly agree, agree, unsure, disagree, and strongly disagree) were used to determine the levels of respondents' agreement. The demographic data section was to obtain information on the respondents' gender, age and frequency of computer usage. This provided a descriptive information about the respondents. The second section of the instrument was on the factors of LMS usage among students. The third section investigated students' perceptions towards VLE-Frog usage by teachers and the last section was on the purpose of LMS usage by teachers.

Variables

There were four constructs measured in this descriptive study. Detailed explanations of the constructs and research questions involved in this study are represented in Table 1.

Table 1. Construct and Research Questions

NO	Construct	Research Question
1	VLE Frog usage	How frequent do students in SMK Taman Melawati use VLE-frog LMS?
2	Factors influence VLE-Frog usage	What are the technical features of VLE-Frog LMS that influence its usage among students in SMK Taman Melawati?
3	Students perceptions towards usage of VLE-Frog by teachers	What are students' perceptions towards the usage of VLE-Frog LMS by teachers?
4	Purposes of using VLE-Frog by students	What is the purpose of VLE-Frog used in learning process?

Journal of Personalized Learning, *2*(1) 2016, 86-94.

FINDINGS AND DISCUSSION

Demographic Background

A total of 60 participants from SMK Taman Melawati responded to the survey questionnaire. Table 2 showed that 60.0% (n=36) of the respondents using VLE-Frog in SMK Taman Melawati were male whereas 40.0% (n=24) of the respondents were female. There were 53.3% (n=32) of 16 years old students while 46.7% (n=28) were 17 years old students.

Table 2. Demographic information of 60 respondents

Variable		**Frequency**	**Percentage**
Gender	Male	36	60%
	Female	24	40%
Age	16 years old	32	53.3%
	17 years old	28	46.7%
Total		60	100%

Table 3 shows frequencies and percentages of respondents according to computer usage patterns. It was revealed that most students with the percentage of 93.3% (n=56) possessed a personal computer but not all of them have internet at home. Whereas, 93.3% (n=56) of them have internet access but not all have their own personal computer or laptop at home. Meanwhile, only 6.7% (n=4) do not have both. The data also showed that 53.3% (n=32) of students never went to cyber cafe followed by 31.7% (n=19) students who rarely visit the cyber cafe and only 1.7% (n=1) students reported that they went to cyber cafe to complete school homework.

Table 3. Computer usage pattern

Variable		Frequency	Percentage
Have PC/Laptop	Yes	56	93.3%
	No	4	3%
Have Internet access at home	Yes	56	93.3%
	No	4	3%
Go to cyber cafe	Never	32	53.3
	Rarely	19	31.7
	Sometimes	4	6.7
	Often	4	6.7
	Always	1	1.7
Total		60	100%

Next, the usage of LMS among the respondents is described in Table 4. From this table, it can be seen that 95.0% (n=57) of the students agreed that their teachers use VLE Frog during teaching and learning process and only 5% (n=3) disagreed.

Journal of Personalized Learning, *2*(1) 2016, 86-94.

Table 4. VLE Frog usage by teacher

Item		Frequency	Percentage
Teacher usage LMS in learning	Yes	57	95%
	No	3	5%
Total		60	100%

Table 5 below shows the purpose of using LMS VLE-Frog by most of the students was for Science subject with 53.3% (n=32) responses while only 33.3% (n=20) responses were for English subject.

Table 5. LMS usage by students

Item		Frequency	Percentage
LMS usage among students	English	32	53.3%
	Science	20	33. 3%
Total		60	100%

Usage Frequency Of VLE-FROG (Section A)

Table 6 shows the frequency distribution of VLE Frog usage among students. As shown in the results, 11.7% (n=7) of the students spent more than 2 hours per-day using the application while 33.3% (n=20) spent between 1 to 2 hours. Another 43.3% (n=26) spent less than 1 hour and 11.7% (n=7) never use VLE-Frog in their studies.

Table 6. Frequency of usage

		Frequency	Percentage
Valid	None	7	11.7
	less than 1 hour	26	43.3
	between 1 to 2 hours	20	33.3
	more than 2 hours	7	11.7
	Total	60	100.0

A study that is similar to this research was done by Nair, Patil, and Mertova (2012) who concluded that the usage frequency of LMS showed positive impact on students. The students felt that course activities have become more convenient. This study showed that the frequency usage of LMS has given positive effect on teaching and learning process. Overall, majority of SMK Taman Melawati students have had very good experience in using LMS.

Participant Perception of VLE-Frog Features

Participants agreed that VLE-Frog's features do stimulate their learning interest, easy to use, and technically simple. Only a small percentage (5%) disagree that VLE-Frog is not user-friendly. The detailed results can be found in Table 7.

Journal of Personalized Learning, *2*(1) 2016, 86-94.

Table 7. Participant perception of VLE-Frog Features

	Factors	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
1	The layout stimulates my interest	30	25	5	0	0
		50.0%	41.7%	8.3%	0	0
2	The application (VLE-Frog) is user friendly	10	21	26	3	0
		16.7%	35.0%	43.3%	5.0%	0
3	The features are effective to use	6	36	17	1	0
		10.0%	60.0%	28.3%	1.7%	0
4	The application is very interactive to use	7	35	18	0	0
		11.7%	58.3%	30.0%	0	0
5	The instruction is simple to understand	10	46	4	0	0
		16.7%	76.7%	6.7%	0	0
6	The layout is very colourful and eye-catching	7	52	1	0	0
		11.7%	86.7%	1.7%	0	0
7	The links between the pages are clear	4	50	6	0	0
		6.7%	83.3%	10.0%	0	0
8	The language used is easy to understand	6	53	1	0	0
		10.0%	88.3%	1.7%	0	0
9	The sequence of pages is clear	4	53	3	0	0
		6.7%	88.3%	5.0%	0	0
10	The links on the page is easy to understand	5	52	3	0	0
		8.3%	86.7%	5.0%	0	0
11	The navigation buttons are consistent with general web usage	5	51	4	0	0
		8.3%	85.0%	6.7%	0	0
12	The terminology is consistent with general web usage	6	50	4	0	0
		10.0%	83.3%	6.7%	0	0

The findings resonate with previous research in which Kearsley (2000) sketched out a collection of features that create effective online learning for students. It was found that 30% of students agreed that their teachers used VLE-Frog because this application is helpful in their learning process. This is in agreement with Lonn and Teasley (2009) who claimed that LMS allows students to share information and collaborate online, thus increase their ability to respond and get feedback from their teachers. Then, layout also contributed to preferable LMS usage among students with the percentage of 50% (n=30). This finding is similar with the finding of Pituch and Lee (2006) who observed that the strongest influences on LMS usage among students were the system characteristics and their perceived functionality. This was also supported by Parker, Bianchi, and Cheah (2008) who indicated that students preferred LMS tools and functions that help manage materials and information for learning process.

Student Perception Towards the Usage Of VLE-Frog by Teachers

Table 8 indicates students' perception towards the usage of VLE-Frog by teachers. All participants indicated that the teachers do use VLE-Frog in the classroom. In general, teachers do provide feedback through VLE-Frog and most students agreed that their results were uploaded on the platform. Majority of students with the percentage of 76.6% (n=46) agreed and 20% (n=12) strongly agreed that the teachers shared new information about the topics through VLE-Frog. However, 73.3% (n=44) of them were unsure and 1.7% (n=1) disagreed that there was a communication between their teachers and them through VLE-Frog. Only a few students with the percentage of 21.7% (n=13) agreed and 3.3% (n=2) strongly agreed that there was a communication with the teachers through VLE-Frog.

Journal of Personalized Learning, *2*(1) 2016, 86-94.

Table 8. Students Perceptions towards VLE-Frog in learning process

	Factors	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
1	My teachers use LMS in the classroom.	30.0% 18	70.0% 42	0 0	0 0	0 0
2	I get feedback from my teachers through LMS.	26.7% 16	71.7% 43	1.7% 1	0 0	0 0
3	My teacher uploads my results through LMS.	15.0% 9	80.0% 48	5.0% 3	0 0	0 0
4	I communicate with my teachers through LMS.	3.3% 2	21.7% 13	73.3% 44	1.7% 1	0 0
5	My teachers shares information about new topics through LMS	20.0% 12	76.7% 46	3.3% 2	0 0	0 0

Pertaining the students' perception towards VLE-Frog in learning process, Nasser, Cherif, and Romanowski (2011) mentioned that LMS usage among students was strongly correlated to teacher. When the teachers use LMS in their learning, students use it as well. Azmi et al. (2012) mentioned in their study that to measure the efficiency and importance of e-learning, users' perceptions is counted as an essential parameter of success and failure. Therefore, understanding users' perceptions of LMS will increase assurance towards its utilization.

Student Perception of VLE-Frog Usage

Table 9 describes the perception of students towards usage of VLE-Frog. 73.3% (n=44) of the students strongly agreed that they used the application to develop their interest in learning and develop their IT skill. 66.7% (n=40) claimed that they are able to save time and energy during learning processes. 80.0% (n=48) agreed that they use the application to explore the application itself while 81.7% (n=40) used VLE-Frog to learn better. 76.6% (n=46) claimed that they use it to submit their homework, 78.3% (n=47) agreed that it was used to inquire about the homework. Whereas, 73.3% (n=44) of the usage was to get feedback for their queries 83.3% (n=50) was to improve their homework outcome. 76.6% (n=46) of the students use VLE-Frog to submit their homework and 75.0% (n=45) of them use it to achieve their target. 76.6% (n=46) of the usage was to improve their homework outcome after receiving feedback while 83.3% (n=50) was to enjoy IT as a platform for learning.

Table 9. The usage of VLE-Frog in learning process

	Factors	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
1	Develop interest in learning	73.3% 44	20.0% 12	6.7% 4	0 0	0 0
2	Improve my IT skill	73.3% 44	20.0% 12	6.7% 4	0 0	0 0
3	Save my time and energy in learning process	66.7% 40	25.0% 15	8.3% 5	0 0	0 0
4	Arouse my interest to explore the LMS	16.7% 10	80.0% 48	3.3% 2	0 0	0 0
5	Learn better	13.3% 8	81.7% 40	5.0%	0 0	0 0
6	Submit the homework via LMS	13.3% 8	76.6% 46	10.0% 6	0 0	0 0
7	Inquire about the homework via	10.0%	78.3%	11.7%	0	0

Journal of Personalized Learning, *2*(1) 2016, 86-94.

	LMS	6	47	7	0	0
8	Arouse my interest to use LMS in	8.3%	88.3%	3.3%	0	0
	learning process	5	53	2	0	0
9	Get feedback for my queries	11.7%	73.3%	15.0%	0	0
		7	44	9	0	0
10	Provide feedback for improving	10.0%	83.3%	6.7%	0	0
	my homework via LMS	6	50	4	0	0
11	Submit my homework at anytime	15.0%	76.6%	8.3%	0	0
	and anywhere	9	46	5	0	0
12	Achieve my target	13.3%	75.0%	11.7%	0	0
		8	45	7	0	0
13	Improvise my homework after the	13.3%	76.6%	10.0%	0	0
	comment	8	46	6	0	0
14	Enjoy technology as a medium to	16.7%	83.3%	0	0	0
	learn	10	50	0	0	0

Based on the overall data, most students use VLE-Frog to facilitate their learning process and improve their achievement in involved subjects. Furthermore, most students also agreed that their IT skills were somewhat developed through the usage of VLE-Frog in their learning process. It was supported by Mirawati and Suminar (2013) in their study that students understand, have a high sense of contentment, and know the benefits of this learning method for them. It is undeniable that internet had given a lot of impact on students learning process.

Despite the positive effects of VLE-Frog found, there are several problems faced by the students when accessing the VLE-Frog at home. The first issue is due to unavailability of internet access as a result of parental control. The study revealed that 7 students (11.7%) have never used VLE-Frog before while a majority of students (43.3%) used VLE-Frog for less than an hour per day. As reported by Mirawati and Suminar (2013), students who do not like online learning are those who think that classroom learning (face to face) is the only effective way to learn.

CONCLUSION

The study explored VLE-Frog usage among students in SMK Taman Melawati. It was found that students do use VLE-Frog when the teachers use the system in teaching and learning. Besides that, the software features arouse students' interest in using the application which are user friendly and easy to handle. The software is not fully utilized by the teachers yet which may be due to incompetence in the software usage. The findings also showed that VLE-Frog can improve students' interest and IT skills.

To increase overall usage of VLE-Frog, it is recommended that teachers utilize the platform actively. School administrators can encourage this effort by incentive systems to teachers who have used the system and provide more exposure and training in usage of technology in classroom practices. Overall, from these findings, it is highly recommended that this application will be implemented to all subjects as part of instruction. Further research may be conducted in other schools to further understand the actual usage of VLE-Frog in school settings to figure out the best way to integrate technology in classrooms.

References

Abdul Rani, N. S., Suradi, Z., & Yusoff, N. H. (2014). An analysis of technology acceptance model, learning management system attributes, e-satisfaction, and e-retention. *International Review of Management and Business Research*, *3*(4), 1984-1996. Retrieved from http://www.irmbrjournal.com/papers/1420777229.pdf

Bailey, J., Ellis, S., Schneider, C., & Ark, T. V. (2013). Blended learning implementation guide. Retrieved from http://digitallearningnow.com/site/uploads/2013/02/DLNSmartSeries-BL-paper_2012-02-05a.pdf

Battaglia, M. A. (2008). Nonprobability sampling. *Encyclopedia of survey research methods.*

Bhasin. B., (2012). Integration of Information and Communication Technologies in Enhancing Teaching and Learning, Contemporary Educational Technology, 2012, 3(2), 130-140.

Journal of Personalized Learning, 2(1) 2016, 86-94.

Bhattacherjee, A. (2012). *Social Science Research: Principles, Methods, and Practices*. Retrieved from http://scholarcommons.usf.edu/oa_textbooks/3?utm_source=scholarcommons.usf.edu%2Foa_textbooks%2F3&utm_medium=PDF&utm_campaign=PDFCoverPages

Canul. Y. C., (2011). Michigan Merit Curriculum. Guidelines; ONLINE EXPERIENCE. Michigan State Board of Education.

Dahlstrom, E., Brooks, C., & Bichsel, J. (2014). *The current ecosystem of learning management systems in higher education: Student, faculty, and IT perspectives.* Research report. Louisville, CO: ECAR, September 2014. Available from http://www.educause.edu/ecar.

Fuchs, M., Muscogiuri, C., Niederee', C., & Hemmje, M., (2004). Digital libraries in knowledge management: An e-learning case study. *International Journal of Digital Library*, *4*(1), 31-35.

Jowati binti Juhary, (2014). Perceived Usefulness and Ease of Use of the LearningManagement System as a Learning Tool. *International Education Studies*, *7*(8), 23-34. ISSN 1913-9020 (Print); ISSN 1913-9039 (Online)

Kearsley, G. (2000). *Online education: Learning and teaching in cyberspace*. Belmont, CA: Wadsworth.

Kumarawel, N., Yusop, F. D., & Razak, R. A. (2015). Mobile learning for teaching and learning Science, Technology, Engineering and Mathematics (STEM): A review of literature. *International Congress on Economics, Social Sciences and Information Management (ICESSIM 2015), Bali, Indonesia*. DOI:10.1201/b19921-29

Lonn, S., & Teasley, S, D. (2009). Saving time or innovating practice: Investigating perceptions and uses of Learning Management Systems, Computers and Education; An International *Journal Homepage: www.elsevier.com/locate/compedul*

Mirawati, R., & Suminar, J. R. (2011). Student appreciation toward online learning management system: A study in Universitas Padjadjaran Indonesia. *GSTF Journal on Education*, *1*(2).

Mohamed Azmi, H., Zeehan, S. I., Fahad, S., Maryam, F., & Hisham, A. (2012). Assessment of students' perceptions towards e-learning management system (e-LMS) in a Malaysian pharmacy school: A descriptive study. *Malaysian Journal of Public Health Medicine 2012, 12*(1), 14-20.

Nair, C.S., Patil, A., & Mertova, P. (2012). *Enhancing learning and teaching through student feedback in engineering*. UK: Chandos Publishing

Nasser, R. Cherif, M. Romanowski, M. H. (2011). Factors that impact learning management system usage in Qatari schools. *The International Review of Research in Open and Distance Learning*. *12*(6).

Nur'Aini, Omar, & Chow (2012). E-learning management system for secondary school in Malaysia. *International Conference on the Challenge of Learning & Teaching in a Brave New World: Issues & Opportinuties in Borderless Education*

Parker, R. E., Bianchi, A., & Cheah, T. Y. (2008). Perceptions of instructional technology: Factors of influence and anticipated consequences. *Educational Technology & Society, 11*(2), 274-293.

Pituch, K. A., & Lee, Y. K. (2006). The influence of system characteristics on e-learning use. *Computers & Education, 47*, 222–244.

Squillante, J., Wise, L., & Hartey, T. (2014). Analyzing Blackboard: Using a learning management system from the student. Retrieved from *http://digitalcommons.lasalle.edu/mathcompcapstones*

Tham, K. O., & Tham, C. K. (2011). Blended learning – A focus study on Asia. *IJCSI International Journal of Computer Science Issues, 8*(2), 136-142. ISSN 1694-0814 (Online).

Trayek, F. A. A, & Syed Hassan, S. S. (2014). Attitude towards the use of learning management system among university students: A case study. *Turkish Online Journal of International Education, 14*(3), 91-103.

White, B., & Larusson, J. A. (2010). Strategic directives for learning management system planning. *Research bulletin 19.* Boulder, CO EDUCAUSE center for applied research. Retrieved from https://net.educause.edu/ir/library/pdf/ERB1019.pdf

Wright, L., Montgomerie, A., Reju, & Schmoller. (2014). Selecting a learning management system: advice from an academic perspective. *Educause Review*