EFFECTS OF USING VIRTUAL LEARNING ENVIRONMENT IN TEACHING AND LEARNING MALAY LANGUAGE

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ABSTRACT

A study was conducted to identify the effects of using a virtual learning environment compared to using a typical conventional classroom environment in improving the moderate achievement of children for Malay grammar. A quasi-experimental design involved 56 Year Five children, divided into one control group (28 children) and one treatment group (28 children). The study also focused on the effects of the environment on the children's interest based on their experiences. Questionnaire instrument was used, and quantitative analyses were conducted using pre-test and post-test and. The t-test results showed that there were significant differences between the control group and the treatment group. In conclusion, the virtual learning environment has significant effects on the achievement and interest of the children when compared to the other group that learned in a typical conventional classroom environment.

KEYWORDS

Virtual Learning Environment, Malay Grammar, Children, Achievement, Interest.

1. INTRODUCTION

In this digital era, children are more attracted towards computer-related teaching materials and learning sources and currently observed as one of the most important methods to increase children's understanding, as well as school performance and productivity [1]- [4]. Moreover, computer technology could deliver correct information through a fast and an attractive manner, thus creating a fun learning environment [5],[6]. Likewise, the process of teaching and learning also has gone beyond the physical space of a classroom. It is now becoming more global. In Malaysia, the Ministry of Education (MOE) has been proactive in formulating new changes in the education system and has been following current technology quite closely. In this era of globalization and digital, these developments have urged the nation to transform the way of conducting the teaching and learning.

As a result, a virtual learning environment (VLE) i.e. a platform for blended learning, namely as Frog VLE, is introduced to support Malaysia to establish a model of excellence in internet-enabled learning especially among children. This transformation is a part of the National Education Blueprint 2013-2025 that comes with eleven shifts, including the seventh shift i.e. leveraging ICT to scale up quality learning across Malaysia [7]. The Frog VLE is a huge web-

based learning system that duplicates a model of education world by integrating the conventional learning into virtual environment [8], [9]. It adopt constructive learning theory where learning process is carry out when children communicates which each other either in the real class or in the virtual class. This social interaction leads to high-level of thinking. In addition, based on the constructivism theory, Frog VLE gives children the opportunity to build knowledge through scaffolding techniques or teacher's guidance periodically. This process might educate the children to become fully responsible for their self-learning. Moreover, the Frog VLE is designed to enable teachers and children to interact, to collaborate and to access varies content networks according to their respective learning capabilities [10]. With the Frog VLE, teachers may produce and share learning materials and sources at anytime and anywhere. Therefore, children should not rely anymore on text books, and learning should not be limited in the classrooms only [11] [12].

The use of ICT in teaching and learning Malay language can be perceived as good effort to give a good impact towards addressing some learning issues. According to [13], Malay language has commonly perceived as a dull subject in schools. A monotonous pedagogy has always been associated to the low achievements of children in Malay language subject. As an issue, it has actually urged Malay language teachers to start varying their teaching techniques to catch their children' interest. Although there are a few research showing that Malay language teachers are not seriously being asked to give attentions in varying their teaching techniques and the correct use of printed media such as textbooks to assist them in effective teaching and learning method [14], the process of disseminating knowledge is always become more attractive and interesting whenever a teacher can successfully integrates ICT in a teaching and learning process [15] [16].

In addition, integrating teaching materials from textbooks with ICT-based teaching method such as VLE frog can be helpful for Malay language teachers to improve their teaching and learning process. Furthermore, such practices also can become beneficial for them in facing current challenges and limitations in teaching and learning Malay language in today situations [17] [18]. According to [19], the teaching and learning of Malay language, have already received huge impacts from the technology. Recently, a research reported that the secondary school children have high interest during the teaching and learning due to use of Frog VLE in Malay Language class [20].

Therefore, our study aims to identify the effects of using Frog VLE as the virtual learning environment during teaching and learning Malay grammar. The focus of research is on Malay grammar topic among Year Five primary children with moderate achievements.

2. METHODOLOGY

The methodology that was used in this study is briefly described in this section.

2.1. RESEARCH DESIGN

The study was designed as a quantitative quasi-experimental research. It involved two different groups, one control group and one treatment group (*see Figure 1*). To ensure that both groups had initially similar moderate achievements, a t-test was priory used to test the mean of pre-test for both groups. Hence, both groups must take a pre-test first. Then, the control group followed a typical, conventional teaching environment, while the treatment group was exposed to a virtual learning environment using the Frog VLE. Teacher used the VLE as a platform for the children to watch a selection of videos and presentation slides. Once the teaching and learning process for

both groups completed, both groups took a post-test. The pre-test and post-test scores for both groups were then recorded, analyzed and compared. A t-test was used to test the scores against hypothesis.
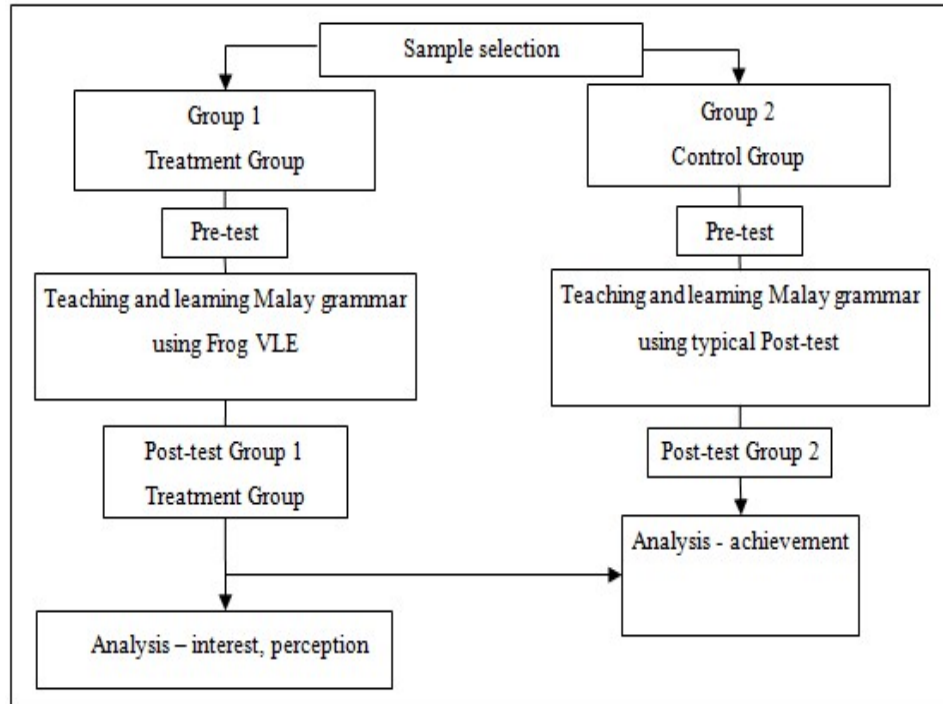

Figure 1.Comparison designed between the control group and the treatment group.

2.2. SAMPLE DESIGN

Year Five children in the chosen school were divided into four classes. Two of the classes were of children with moderate academic achievements. Children from these two classes were our candidates to form the treatment group and the control group. Although this was a quasi-experimental study, it is important to ensure that both groups were having similar cognitive ability or similar prior academic achievement. We conducted a sampling procedure using the pre-test marks. By using this procedure, we did not take the whole classes as our sample.

Children that scored the pre-test between 15 to 20 marks were not considered in this study. Hence, from total 81 children, only 56 children were left to be further considered. For these remaining 56 children, we sorted their pre-test marks from high to low score. For a systematic sampling purpose, we selected the sample according to numbers of 1 to 56. Children with even numbers were taken into the control group, while children with odd numbers were taken into the treatment group. It is important to note that we have compared the pre-test results between both classes and found no significant difference between them.

Once the sampling process had completed, we finally formed the two groups, the control group and the treatment group with 28 children in each group with the help of their teachers. The placements of sample in the class were randomized. Then only the groups ready to follow the teaching and learning process; the control group followed the teaching and learning process in a conventional classroom environment and the treatment group followed the Frog VLE. At the end

of the process, both groups took their post-test. Data collected were then recorded and analyzed using SPSS latest version.

2.3. RESEARCH INSTRUMENT

We developed three instruments as research tools for collecting data. The main instruments were the pre-test and post-test questions. Other than that, we also have a questionnaire to get further related data.

i) Pre-test: the pre-test questions were built based on the Malay language content syllabus for Year Five, particularly focusing on the Malay grammar topic. The test contained 20 questions: 10 objective questions and 10 fill-in-the-blank questions based on some pictures given. All questions must be answered within 40 minutes. All question items were about testing the children's understanding and their ability in using Malay grammar. These items were created based on Standard Curriculum Performance Document (DSKP).

ii) Post-test: the post-test for both groups were conducted after the teaching and learning sessions ended. The post-test questions were similar, but the numbering was totally changed. Again, the questions were built based on the Standard Curriculum Performance Document (DSKP) for Malay language content syllabus, Year Five, particularly focusing on the Malay grammar topic.

iii) Questionnaire: this instrument was only given to the treatment group at the end of study. The 28 children were given 20 minutes to answer the questionnaire. All items in the questionnaire were all about their interest and perception based on their experiences with the Frog VLE. The participants were required to indicate the level of their agreements along a 5-point Likert's type scale using the following anchors: 1 Strongly Disagree, 2 Disagree, 3 Don't Know, 4 Agree, 5 Strongly Agree.

2.4. RESEARCH PROCEDURE

A pilot study was carried out to test the reliability and validity of the questionnaire, the pre-test and the post-test questions. For the pilot study, we chose 10 children from Year Five. Note that these 10 children were not among our selected sample. Each instrument has recorded Cronbach's alpha values more than 0.70. Therefore, these three instruments were considered as reliable for our study. All three of them were also thoroughly checked by a subject expert from the selected primary school to confirm their validity.

3. RESULT AND DISCUSSION

DEMOGRAPHICS OF PARTICIPANTS

Descriptive analysis showed the whole sample study was 56 children divided into 32 female and 24 male children as shown in Table 1. There were 28 children in each group (the treatment and the control groups). Each group can be further divided into 16 females and 12 males. All participants were Year Five children from one primary school at Batang Kali, Selangor.

Table 1. Subject Gender Analysis of Treatment Group and Control Group Study.

Demographic	Category	Treatment Group	Control Group	Total
Gender	Male	12	12	24
	Female	16	16	32
	TOTAL	28	28	56

SIMILAR MODERATE ACHIEVEMENTS (INITIALLY) BETWEEN THE TREATMENT AND CONTROL GROUPS

To ensure that any significance improvement can be relates to the effects of using certain environment and not because of other factors, participants from both treatment and control groups must have similar moderate achievements to each other. Basically, pre-test scores in both groups only ranged from five to nine points out of 20 points (see Table 2). Based on these pre-test scores, we conducted the t-test for the first null hypothesis. We used significant alpha value at .05 to reject a null hypothesis. So, any p-value higher than the significant alpha means that there no significance difference occurs.

HO_1 : There is no significant difference in the pre-test for Malay grammar between the treatment group and the control group

Table 2. Pre-test and post-test scores for Malay grammar for both treatment and control groups' participants (sorted from highest to lowest of pre-test scores).

	Treatment Group				Control Group		
ID	Gender	Pre-test Score	**Post-test Score**	ID	Gender	**Pre-test Score**	**Post-test Score**
EX7	M	9	19	EX5	M	9	15
EX1	M	9	18	DL4	M	9	14
EX19	F	9	18	DL25	F	9	13
DL3	F	9	17	EX27	F	9	13
DL24	F	9	16	EX15	F	9	12
DL15	M	9	15	DL16	M	9	11
EX28	F	8	18	DL2	F	8	13
DL21	F	8	17	DL26	F	8	13
DL8	F	8	17	EX13	F	8	13
EX10	M	8	17	EX21	F	8	13
EX25	F	8	17	DL19	F	8	12
DL5	F	8	15	DL7	M	8	12
EX20	F	8	15	EX26	F	8	12
DL17	M	8	14	EX3	M	8	12
DL14	M	7	17	DL12	M	8	11

ID	Gender	Pre-test Score	Post-test Score	ID	Gender	Pre-test Score	Post-test Score
DL23	F	7	17	DL20	F	7	14
DL1	M	7	16	DL13	M	7	13
EX14	F	7	16	EX22	F	7	13
DL9	F	7	15	EX24	F	7	13
EX18	F	7	15	EX17	F	7	12
EX23	F	7	15	EX8	M	7	12
EX4	M	7	15	DL6	M	7	11

DL27	F	6	15	DL28	F	6	12
EX9	M	6	14	EX6	M	6	12
DL18	F	6	13	DL10	M	6	10
EX12	M	6	13	DL22	F	6	10
DL11	M	5	15	EX11	M	6	10
EX2	M	5	12	EX16	F	5	10

Table 3 shows the results of the t-test. With a p-value of .731, there was no significant difference in the pre-test scores for both treatment and control groups (M_{diff} = .07, p > .05). Thus, we accepted the first null hypothesis. It means participants of both groups had similar moderate achievement at the beginning of the study.

Table 3. T-test results on the pre-test scores between the treatment group and the control group.

Group	Mean	Standard deviation	t-Value	*p*-Value
Treatment	7.43	1.20	-.348	.731
Control	7.50	1.14		

ACHIEVEMENT IMPROVEMENT WITHIN THE TREATMENT GROUP

From table 2, we can observe some improvements made by participants in the treatment group. After using Frog VLE as their virtual learning environment, their post-test scores were increased from ranging five to nine point to ranging 15 to 19 points out of 20 questions. We conducted a paired t-test to test the pre-test and post-test scores against the following null hypothesis:

HO$_2$: There is no significant difference between pre-test and post-test scores for Malay grammar in the treatment group

The results were shown in Table 4. The test results showed that the p-value was .000 (M_{diff} = 8.32, p <0.05). Therefore, we have to reject the second null hypothesis. We conclude that virtual learning environment affects the participants' achievement positively.

Table 4. T-test results between pre-test and post-test in the treatment group.

Group	Mean	Standard deviation	t-Value	*p*-Value
Pre-test	7.43	1.20	-36.13	.000
Post-test	15.75	1.68		

ACHIEVEMENT IMPROVEMENT WITHIN THE CONTROL GROUP

Table 2 also presented the pre-test and post-test scores for the control group. The pre-test scores ranged from five to nine points and the post-test scores has increased and become a range of 10 to 15 points out of 20 points. Basically, that was an improvement. We conducted another paired t-test to test between the pre-test and post-test scores against the following hypothesis:

HO$_3$: There is no significant difference between pre-test and post-test scores for Malay grammar in the control group

The results shown in Table 5 depicted another p-value of .000 (M_{diff} = 4.68, p <0.05). Therefore, we also have to reject the third null hypothesis. We conclude with a typical and conventional learning environment also affects the participants' achievement positively.

Table 5. T-test results between pre-test and post-test in the control group.

Group	Mean	Standard deviation	t-Value	*p*-Value
Pre-test	7.50	1.14	-22.03	.000
Post-test	12.18	1.28		

DIFFERENCES IN THE ACHIEVEMENT BETWEEN TREATMENT AND CONTROL GROUPS BASED ON THE POST-TEST SCORE

HO$_4$: There is no significant difference in the achievement for Malay grammar between the treatment group and the control group.

Table 6. T-Test results on the post-test scores between the treatment group and the control group.

Group	Mean	Standard deviation	t-Value	*p*-Value
Treatment	15.75	1.69	16.18	.000
Control	12.18	1.27		

The final null hypothesis was formulated to observe the achievement between the treatment group and the control group. Based on the results in Table 6 above, another p-value of .000 was recorded (M_{diff} = 3.57, p<.05). The final null hypothesis was also rejected. Therefore, the post-test scores recorded by the treatment group was more significant than post-test scores in the control group. As similar to the result in Table 4, we conclude that although both treatment and control groups recorded significant achievements, the achievement in the treatment group was more significant compared to the achievement in the control group.

THE EFFECTS OF USING FROG VLE ON CHILDREN'S INTEREST

Table 7 shows the mean of Likert items' scores collected through the questionnaire. Note that the questionnaire was only given to the participants in the treatment group (n=28). With a mean value of 4.71, generally the participants might have given high scores of 4 (Agree) to 5 (Strongly Agree) in overall. Table 8 presented the findings' detail. As expected, the participants have strong interest with Frog VLE.

Table 7. Mean value of the Likert scores for items related to interest.

Item Category	Mean	Standard Deviation
Interest	4.71	.198

Table 8. Frequency, percentage scores and mean values of each item related to interest.

No	Item on Interest	Strongly Disagree	Disagree	Do not know	Agree	Very Agree	Mean	Level
1.	I prefer to learn Malay grammar using Frog VLE instead of using textbooks.	-	-	-	9 32.1%	19 67.9%	4.68	High

2.	Learning grammar using Frog VLE provide more challenging and interesting activities than textbooks.	-	-	-	11 39.3%	17 60.7%	4.61	High
3.	I can easily learn Malay grammar by using Frog VLE.	-	-	-	11 39.3%	17 60.7%	4.61	High
4.	I prefer to learn Malay grammar using Frog VLE with teachers as facilitators.	-	-	-	6 21.4%	22 78.6%	4.79	High
5.	Content delivery is attracting me.	-	-	-	6 21.4%	22 78.6%	4.79	High
6.	I will recommend to my friends to use Frog VLE to learn Malay grammar.	-	-	-	11 39.3%	17 60.7%	4.61	High
7.	I am interested to continue learning Bahasa Malaysia topics using this application	-	-	-	6 21.4%	22 78.6%	4.79	High
8.	I love and enjoy learning Bahasa Malaysia topics using Frog VLE.	-	-	-	9 32.1%	19 67.9%	4.68	High
9.	Quizzes and exercises in Frog VLE are highly interactive.	-	-	-	6 21.4%	22 78.6%	4.79	High
10	I was able to focus entirely on app content because of easy-to-search displays.	-	-	-	5 17.9%	23 82.1%	4.82	High

THE EFFECTS OF USING FROG VLE ON CHILDREN'S PERCEPTION TOWARDS VLE

Table 9 shows the mean of Likert items' scores collected through the questionnaire on the participants' perception towards the VLE. With a mean value of 4.35, generally the participants might have also given many high scores of 4 (Agree) to 5 (Strongly Agree) in overall.

Table 9. Mean value of the Likert scores for items related to perception.

Item Category	Mean	Standard Deviation
Perception	4.35	.170

Table 10. Frequency, percentage scores and mean values of each item related to perception towards VLE.

No	Item on Perception	Strongly Disagree	Disagree	Do not know	Agree	Very Agree	Mean	Level
1.	Frog VLE is suitable for learning	-	-	-	8 28.6%	20 71.4%	4.71	High
2.	Topics found in Frog VLE are well organized	-	-	11 39.3%	13 46.4%	4 14.3%	3.75	Medium High
3.	The information contained in Frog VLE is easy to find and understand	-	-	10 35.7%	9 32.1%	9 32.1%	3.96	Medium High
4.	VLE Frog makes it easy for children to understand the topics taught	-	-	-	14 50.0%	14 50.0%	4.50	High
5.	Frog VLE can be used as a children-centered learning material	-	-	10 35.7%	8 28.6%	10 35.7%	4.00	High
6.	Frog VLE helps me learn the Bahasa Malaysia topic easily and quickly	-	-	-	11 40.7%	16 59.3%	4.59	High
7.	I am more concerned with the facts taught by using Frog VLE.	-	-	-	17 60.7%	11 39.3%	4.39	High
8.	Frog VLE is very useful to improve the effectiveness of children in learning	-	-	-	15 53.6%	13 46.4%	4.46	High
9.	Frog VLE helps me understand a topic easily and quickly	-	-	-	21 75.0%	7 25.0%	4.25	High
10	Learning Bahasa Malaysia becomes more interesting when using this application	-	-	-	-	28 100%	5.00	Very High

Table 10 presented the findings in more detail. From the table, we observed that some participants had responded with "do not know" when they came across with questions about "well-organized topic in the Frog VLE", "easy to find and understand information" and "can be used as a children-centered learning material". The first and second questions were subjected to their own experience with the VLE but the third questions, most probably, need to be down-graded or removed when children were involved as the participants in the study. Most

importantly, all of the participants have found the VLE as interesting to be used when learning Malay grammar and they have good perceptions towards the VLE.

4. DISCUSSION, CONCLUSION AND FUTURE WORK

4.1. DISCUSSION

A study conducted by researchers [21] about the use of Frog VLE in cooperative learning for Chemistry subjects, shows the finding that there is a significant difference between the effects of using Frog VLE in cooperative learning on achievement and interest children. Similar to this study, the mean result for post-test in control group and treatment group shows a significant difference at 3.57 point.

Moreover, another researcher, [22] studied on children achievement and attitudes towards traditional learning, mixed learning of blended learning and VLE learning at university level. The study shows that mixed learning and VLE provided space for children to actively engage. The Frog VLE was in fact fulfilling the similar result as the analysis of the children interest in the Frog VLE is 4.71.

In this study, the results show that Frog VLE as a PdPc's tool for fifth year Malay grammar provide significant positive impact on children achievement compared to the conventional method such as textbooks and whiteboards. Moreover, Frog VLE also increased children interest to the learning of Malay grammar.

Analysis result from T-test in previous section proved that hypothesis is accepted and answered the research question where PdPc based on Frog VLE can increase children's achievement in Malay grammar for Malay Language subject. Even though both group that is control group and treatment group show the increase achievement for post-test, but the treatment group show the higher achievement result. This proved that the use of Frog VLE as a intermediaries tool successfully help to increase children's achievement and in the same time can be used as an integrated material in PdPc. In Frog VLE's website, teacher can upload the video, song, picture, assignment tasks or exercises in the form of Microsoft Word and Power Point, and also quiz questions. Besides that, Frog VLE also provide chat rooms and forum pages for children to interact.

This study has successfully answered the research hypothesis:

i)   There is an improvement in achievement for children who follows the process teaching and learning with assisted by Frog VLE.

ii)   Interest analysis also indicate that children are interested in learning Malay Language subjects using Frog VLE.

Based on the findings, it shows that the use of Frog VLE as a material or PdPc's tool for Malay grammar has been left an impression on children and the PdPc process that uses the Frog VLE as intermediary tool can improve the achievement of Malay grammar subjects.

4.2. CONCLUSION AND FUTURE WORK

The use of Frog VLE in education is not a loss, but it can help to improve the performance and achievement of children's' learning. To apply Frog VLE consistently in both school and out-of-

school time, internet access needs to be present and this is a constraint and challenge faced by this study. Hence, this study is said to be important because:

i)   Frog VLE as a teaching aid in the PdPc process for subtopic Malay grammar (5 years children) is able to improve and increase the achievement in the Malay language subject.

ii) Frog VLE is able to change the perceptions of children about Malay language subjects that are considered to be a boring subject to a fun subject.

iii) Frog VLE is an intermediary medium in helping children especially children who are in moderate and weak in interest of Malay language subjects.

There is a study that leads to the problem of using Frog VLE as an intermediary tool in the PdPc process. The study by [23] discussed the issues and constraints faced by teachers in school such as limited internet access, inadequate time, syllabus and many teacher workloads. However, a study conducted by [24] on the improvement of teacher professionalism in the use of Frog VLE found that teachers who mastered the use of Frog VLE would be easier in handling the PdPc process.

This study showed that the Frog VLE is an interesting and useful technology to be used during the teaching and learning of Malay grammar for Year Five primary children with moderate academic achievements compared to using conventional classroom environment. In this study, the data was collected systematically before the data was statistically tested using t-tests. When tested against the hypothesis, it was proven that the use of Frog VLE has helped in improving the children's learning especially in Malay grammar for Year Five. Although both the control group and the treatment groups had shown inclines in the post-test scores, it is clearly observed that the treatment groups had shown more significant improvement compared to the control group. Hence, the use of Frog VLE in teaching and learning should be encouraged. Moreover, the use of Frog VLE as a different learning environment which given more exposure of multimedia and other educational technology has definitely increased the children's interest to learn Malay grammar and promote good perceptions towards current technology.

With Frog VLE, teachers may create many new things, find materials and sources, and share many things. For example, teachers may upload videos, songs, photos, give task or assignment using Microsoft Word, Microsoft Power Point Presentation, or give quizzes through sites, or make use of chatroom and forum pages to encourage children interactions. Despite the many advantages offered by the Frog VLE, the use of Frog VLE has not being maximized. More efforts are needed to encourage teachers to make full use of this Frog VLE for their teaching and learning and get full benefits of the virtual learning environment. It is hoped that Malay language teachers can now start to accommodate with the technology changes and face the challenges with positive attitudes for brighter future of our children and our education world.

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