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Using learning games for fourth-grade students to teach Vietnamese lessons and teachers' perspectives on learning games

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Abstract

Students can learn in a meaningful way through the use of educational games. When students apply their skills and information in order to progress through a game, a huge degree of engagement is generated among them in the classroom as a result both their capabilities and their learning increase. 153 children from primary schools in Vietnam participated in this research. The children were split into two groups: an experimental and a control group. Both groups participated in two sessions of word and sentence practice as well as spelling instruction. According to the findings of the study, the educational outcomes of the students are greatly improved when games are used in their classrooms. In addition, research has shown that some teachers are against the use of games in the classroom since it makes it more difficult to prepare educational materials. Some educators believe that playing educational games is a more effective method of instruction as it allows for greater flexibility during the learning process. This makes a contribution to the theoretical framework that is necessary to guide educators and instructors in the process of improving learning game programs for children in primary schools and other learners.

Keywords: Learning games, Learning outcome, Primary students, Teachers' perspective.

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Contents

Contribution of this paper to the literature

This study discovered that the use of games in the classroom enhances the learning of students studying Vietnamese. This contributes to the theoretical framework needed to guide educators and instructors in strengthening learning game programs for children studying Vietnamese in elementary school.

1. Introduction

Games typically appeal to numerous people across all age ranges have a number of positive effects on an individual's level of engagement and motivation, satisfy human needs and wants and provide solutions to widespread problems McGonigal (2011). Educational games require challenging tasks with the sensual pleasure of maximizing one's capabilities (Csikszentmihalyi & Schneider, 2000). Most games need competition and challenges in order to evoke an emotional response from participants and facilitate the achievement of different educational goals (Kapp, 2012). In addition, the use of games is a potential strategy for improving student performance as well as their levels of motivation and cognitive ability (Begosso et al., 2018).

According to Crisp (2014), learning through games will become more popular as a technique for luring and maintaining students in the next few years. Research conducted by the Federation of American Scientists found that video games provide an opportunity for the development of a powerful new educational tool. Video games may be played by anyone especially students. There is a challenge in the game that the player has to conquer in order to be successful or finish the game, the game does not have a central focus or a distinct aim for the player (Clark, Tanner-Smith, & Killingsworth, 2016). As a result, children may get more creative assisting them to overcome game challenges and seeing themselves as winners (De Freitas, 2006). In addition, technologies are useful for education (Hamari & Koivisto, 2014) and have the capability to affect how well students learn (Barzilai & Blau, 2014; Hamari & Koivisto, 2014; Hung, Sun, & Yu, 2015; Liu, Cheng, & Huang, 2011; Sabourin & Lester, 2013). Hence, educational games encourage students to engage in academic pursuits. In addition, the outcomes of learning for children especially in the area of mathematics may be improved by playing educational games (Hsu & Wang, 2018). Many teachers are being inspired to create innovative educational tools. When children are asked to solve problems that are relevant to the game, they show a higher level of creativity to solve problems that are related to learning in the classroom (Anderson & Barnett, 2013).

Several studies have indicated that students may benefit from the use of games, particularly in the areas of talent development, academic achievement and professional innovation (Csikszentmihalyi, 1997; Csikszentmihalyi, Rathunde, & Whalen, 1994; Tsai, Yu, & Hsiao, 2012). Bronfenbrenner (1979) theorized that students had a deeper level of engagement when confronted with cognitively challenging and laborious activities. According to the findings of the study, when teachers prepare their students with challenging tasks in the classroom, the students become more engaged in the classroom. It has been shown that challenging skills increase motivation as well as allow students to showcase more of their skills (Fullagar, Knight, & Sovern, 2013). Students are more likely to detect more connections, get more organically interested and as a result pay more attention when they are encouraged to participate in sophisticated problem solving rather than superficial subject exploration. According to Newmann, Wehlage, and Lamborn's (1992), "genuine curricula" promote higher order thinking skills and are seen as relevant. Authentic curricula are not very common in schools. There are some students who may think that being pushed to their limits is difficult and unpleasant. The majority of students say that they appreciate challenging work and are ready to put in a lot of effort just to do their assignments Newmann et al. (1992). This illustrates the use of game-based learning is good for supporting the skill development of students. Designers of educational games and teachers generally need to be able to develop games that are tailored to the needs of the students (Tsai et al., 2012). According to recent studies, traditional classroom education should include a significant amount of digital game-based learning in schools (Qian & Clark, 2016). It is necessary to investigate all components of the game (Huizenga, Admiraal, Akkerman, & Dam, 2009). It is essential to do an investigation into the efficiency of learning-based-game in the classroom (All, Castellar, & Van Looy, 2016). The use of mobile games in the classroom could encourage students to be more active while also encouraging them to have fun. The outcomes of the research indicate that students who learn through games acquire more knowledge than students who do not use games (Mahalakshmi & Sundararajan, 2013).

Many studies conducted in Indonesia came to the conclusion that playing educational games helps children learn (Muhson, 2010; Vitianingsih, 2016). According to the findings of the study, there are various advantages to educational games over conventional teaching techniques. Educational games help students enhance their creative thinking skills. (Vitianingsih, 2016).

The findings of research conducted along similar lines with Iranian kindergarten students were published in 2013. This study's objective is to evaluate several methods that may be used to assist students in the memorization of less frequent words. The students were split up into two groups: one acted as a control and got traditional education while the other group engaged in online language games as their method of teaching. Both groups were given the same time to complete their assignments. The findings revealed that the students in the experimental group exhibited significantly greater levels of interest and motivation in the subject matter that they were studying as compared to the students in the control group (Aslanabadi & Rasouli, 2013). Researchers explored how playing video games affects the linguistic development of Iranian children. To conduct the research, the researchers recruited a total of forty different students; each of them was chosen to take part in the project based on the scores that they achieved on the TOEFL. Both the control group and the experimental group consisted of 10 students and those students were randomly assigned to either the control group or the experimental group. The experimental group learned the same vocabulary as the control group by playing the video game "Runaway: Road Adventure," whereas the control group learned the language in the conventional setting of a classroom. According to the findings of several studies acquiring a new language through the medium of video games is a very efficient method (Vahdat & Behbahani, 2013). Shinha and Mido (2010) found that students who spoke English and played computer games had higher levels of mathematical ability than students who did not play games. It has been established in the vast experimental studies conducted on game-based learning that the use of digital games as a

learning medium increases both student engagement and their ability to learn (Cordova & Lepper, 1996; Hidi, 2000). Cassell and Ryokai (2001) believe that children benefit from having cognitive and linguistic development encouraged through play-based learning. The use of math games that are based on the ideas of addition and subtraction helps to improve the learning capacity of children with mental disabilities as well as their motivation to achieve academic success in arithmetic. Chilton (2007) conducted research to investigate the impact that computer animation has on the mathematical understanding and motivation of students. The results suggest that teaching strategies based on computer games (animations, games that teach equations and coordinate axes) increase learning motivation. Balat, Dağal, and Kanburoğlu (2015) found that computer-assisted education had a positive influence on children between the ages of 48 and 60 months and they concluded that the study's data support this conclusion. A review of the relevant research shows that the bulk of studies concentrate either on the recreational use of computer games or on the pathologies associated with computer game use (Partovi & Razavi, 2019).

Numerous authors from Vietnam have looked at the development and use of educational games through the lens of a variety of academic disciplines. Vu (1980) compiled a number of studies on a wide range of instructional games. The systems of games and learning games that have been detailed by the authors are largely focused on consolidating knowledge for a range of different domains, such as the construction of fundamental arithmetic symbols, acclimating to the surrounding environment and forging new skills. The writers have a special interest in the developmental importance of learning games which includes not only the learner's development but their general psychological functions. In spite of this, the development and use of educational games for the cognitive processes of students have not been thoroughly researched in any of these studies (Vu, 1980).

Recently, Nguyen (2000) published a book titled "Children's Games," in which he discussed the inclusion of intellectual games. Children who play this kind of game have been shown to have increased levels of intellectual engagement. In this book, the author presents a number of mental challenges suitable for children (Nguyen, 2000). A number of dissertations, theses and academics working in the field at the present time have also addressed the topic of the creation and use of educational games to stimulate the activity level of students. Despite this, each author examines the role of learning games in their own areas of research. Through the creation of and participation in educational games, the author offers a number of suggestions for the improvement of active learning among students (Hà, 2015). Several studies have demonstrated that students may benefit in multiple ways from playing educational games. Playing online games can enhance their level of motivation. Studies carried out in Vietnam have shown that there is no discernible difference in the teaching and learning process between making use of learning games and not making use of them. To evaluate the effectiveness of using learning games in Vietnamese classes, we conducted a comparative study at two primary schools using two different subject groups (one experimental and one control). In addition, a survey of teachers' viewpoints on the use of learning games in the classroom was carried out. The findings of this survey will provide the foundation for a more in-depth investigation into the effects of learning games.

2. Methods

2.1. Research Hypothesis

H_{01}: Students in experimental groups are not superior to students in the control group.

H_{02}: Teachers do not use learning-play in Tieng Viet lessons regularly.

2.2. Participants

Participants consisted of 153 students in grade 4 from two primary schools located in the province of Bac Ninh, Vietnam. These schools were Nam Son 2 primary school (with 72 students) and Vo Cuong 2 primary school (with 81 students). There were 50 teachers present. The information on the students was presented in Table 1 in a more in-depth way.

Table 1. Participant demographic.

Schools	Class	Groups	N	%
Vo Cuong 2 primary school	4B	Experience	40	49.38
	4C	Control	41	50.62
Nam Son 2 primary school	4A	Experience	37	51.39
	4B	Control	35	48.61
Total		Experience	77	50.32
		Control	76	49.68

2.3. Procedure

Participants provided informed permission in order to engage in an empirical study. The researcher outlined the objectives of the study and sought sociodemographic data; participants were allowed to discontinue participation at any time.

Each elementary school's two fourth-grade classrooms are divided into two groups (experimental group, controlled group). Following each experimental lesson, students in the experimental class and the control class completed the same exam in identical settings to assess the effectiveness of the experimental lessons. To assure dependability, we have developed a questionnaire to assess the proficiency of students in practice words and phrases and spelling. The survey exercise sheets are determined by the suggested content and measures for testing in practice. The goal of the exam using the combined practice sheet is to measure the student's knowledge mastery. On a 10-point scale, students' worksheets are graded based on the outcomes of their work. If the experimental class achieves higher test scores than the control group, learning games are suggested. The dissertation's findings may be used in the instruction of Vietnamese language skills in elementary schools. After analyzing the exam, we analyzed the instructors' degree of satisfaction with the use of learning games in Tieng Viet lessons.

2.4. Measures

The researcher prepares a number of lesson-plans or guides the experimental teacher to prepare the lesson plan using learning games and effective teaching methods. Then, the teacher organizes to teach according to these lesson plans in the experimental class. At the end of the experiment, the researcher cooperated with the experimental teacher to organize the test for the students in the experimental class and the control class. The evaluation of experimental results is carried out on the basis of comparing and contrasting the effectiveness of skill training lessons through practical illustrated lessons according to the content, form and process of performing the lessons.

2.5. Statistics

Social Sciences Statistics Program (SPSS) version 22.0 was used for data processing. Descriptive statistics were used to characterize participants and assess the efficacy of using learning-play for Tieng Viet lessons in primary school.

3. Results

Comparing the test results of students in the control class with those in the experimental class after a session on practicing words and phrases (Table 2), we see the following difference in the experimental class: The number of students who did not finish the course decreased by 5.3%, the percentage of students who completed the course decreased by 12%, the percentage of students who completed the course well increased by 9.8%, and the percentage of students who completed the course excellently increased by 7.0%.

Table 2. Results of a comparison between the use of educational games and conventional instruction in lessons on practicing words and phrases.

Schools	Groups	N	Result			
			Fail	Moderate	Good	Excellent
			n (%)	n (%)	n (%)	n (%)
Vo Cuong 2 primary school	Experience	40	0 (0.0)	6 (15.0)	23 (57.5)	11 (27.5)
	Control	41	0 (0.0)	12 (29.3)	20 (48.8)	9 (21.9)
Nam Son 2 primary school	Experience	37	2 (5.4)	7 (18.9)	20 (54.1)	8 (21.6)
	Control	35	6 (17.1)	10 (28.6)	15 (42.9)	4 (11.4)
Total	Experience	77	2 (2.6)	13 (16.9)	43 (55.9)	19 (24.7)
	Control	76	6 (7.9)	22 (28.9)	35 (46.1)	13 (17.6)

The scores of students at Vo Cuong 2 Primary School increased after the implementation of learning games. The percentage of students who completed the course with a passing grade declined by 14.3%, the percentage of students who completed the course with a passing grade rose by 8.7%, and the percentage of students who completed the course with an exceptional grade rose by 5.6%. Additionally, at Nam Son 2 Primary School, the percentage of students who did not complete the course decreased by 11.7%, the percentage of students who completed the course decreased by 9.7%, the percentage of students who completed the course well increased by 11.2%, and the percentage of students who completed the course exceptionally increased by 10.2%.

Comparing the test scores of students in the control class and the experimental class after a session on spelling (Table 3), the experimental class demonstrates the following difference: The percentage of students who completed the course decreased by 9.4%, the percentage of students who completed the course well increased by 10% and the percentage of students who completed the course exceptionally increased by 6%.

Table 3. Results of a comparison between the use of educational games and conventional instruction in a lesson on spelling.

Schools	Groups	N	Result			
			Fail	Moderate	Good	Excellent
			n (%)	n (%)	n (%)	n (%)
Vo Cuong 2 primary school	Experience	40	0 (0.0)	5 (12.5)	14 (35.0)	21 (52.5)
	Control	41	0 (0.0)	10 (24.4)	12 (29.3)	19 (46.3)
Nam Son 2 primary school	Experience	37	3 (8.1)	7 (18.9)	18 (48.6)	9 (24.3)
	Control	35	8 (22.9)	9 (25.7)	12 (34.3)	6 (17.1)
Total	Experience	77	3 (3.9)	12 (15.6)	32 (41.6)	30 (38.9)
	Control	76	8 (10.5)	19 (25.0)	24 (31.6)	25 (32.9)

In a lesson on spelling, there are no students with incomplete grades in both experimental and control classes at Vo Cuong 2 primary school. The proportion of students with an exceptional completion rate is rather high (52.5% in the experimental group and 46.3% in the control group). This is an extraordinary outcome.

In Nam Son Primary School 2, the proportion of students who did not complete was reduced (6.6%) while 6% completed excellently.

Students in the experimental class have a significant advantage when they complete the exercises because they have a strong understanding of the material. As a result, they make fewer errors and get better grades in the control class when writing. Thus, the null hypothesis (H_{01}) was rejected.

Our study investigated the opinions of teachers about using learning games in Tieng Viet lessons. The result showed that the majority of teachers may like using learning games (n=29, 58%). Teachers are flexible in their teaching (n=14, 28%) while using learning games. However, teachers must invest a lot of effort to prepare utensils (n=15, 30%). Teachers prepared pictures and other teaching materials for the learning games in the Tieng Viet lesson (n=16, 32%). In the process of using learning games for students, both advantages (n=20, 40%) and disadvantages (n=15, 30%) are teaching materials and teachers were concerned about organizational methods (n=17, 34%). Thus, the null hypothesis (H_{02}) was rejected. Table 4 shows more details.

Table 4. Teachers' perspectives on the use of learning games.

No	Questionnaire survey	Result	
		n	%
1	Do teachers like to use learning games in Tieng Viet lessons?		
	Adorable	3	6.0
	Like	12	24.0
	Normal	14	28.0
	Don't like	21	42.0
2	Why do teachers like using learning games?		
	Students are interested in teaching content.	12	24.0
	Teachers are flexible in their teaching.	14	28.0
	Do not have to invest much in knowledge and methods.	10	20.0
	The right amount of teaching time.	4	8.0
	Don't have to prepare much teaching materials.	10	20.0
3	Why do teachers not like using learning games?		
	Students are not interested in the game.	6	12.0
	Some articles can't use the game.	14	28.0
	I'm confused about how to organize the game.	8	16.0
	Must invest a lot of effort to prepare utensils.	15	30.0
	The amount of time is not enough to make the game,	7	14.0
4	To use learning games in Vietnamese class, which of the following tasks and contents have you prepared?		
	Make a study card	12	24.0
	Prepare pictures and other teaching materials.	16	32.0
	Divide groups when organizing games.	12	24.0
	Study materials about learning games are helpful when preparing lesson plans.	10	20.0
5	What advantages and disadvantages do you have in the process of using learning games for students?		
	Advantages:		
	About content	18	36.0
	About the method	3	6.0
	About how the organization works	6	12.0
	About teaching media	20	40.0
	Disadvantages:		
	About content	13	26.0
	About the method	12	24.0
	About how the organization works	10	20.0
	About teaching media	15	30.0
6	What are you most concerned about in the process of using learning games?		
	Organizational method	17	34.0
	Organizational process	14	28.0
	Game content	6	12.0
	Game system	13	26.0

4. Discussion

Our research applies an experimental approach to evaluate the efficacy of using learning games compared to more traditional methods of instruction. In addition, we conducted a survey with teachers to find out their perspectives on the use of games in the educational process, the process of preparation, the advantages and downsides and the challenges associated with implementation.

The data suggest that students who participate in the learning game are above average as compared to traditional methods of instruction. This is analogous to many other studies that indicate that learning games have a positive influence on the learning process (Csikszentmihalyi, 1997; Csikszentmihalyi et al., 1994; Muhson, 2010; Susanto & Meiryani, 2019; Vitianingsih, 2016). According to Tsai et al. (2012) , game-based learning may be beneficial in assisting students in the process of developing their skills. In addition, the implementation of mobile games in educational settings could encourage students to be active and cheerful while studying and acquiring knowledge encouraging a higher desire to learn. Students who learn through games acquire more knowledge than students who do not participate in such activities (Mahalakshmi & Sundararajan, 2013). Many teachers want to create innovative educational technology that will make it easier for students to study. When children play a game, they seem to have a greater capacity for creativity in the context of resolving obstacles connected to the game than they do when addressing issues linked to learning in the classroom (Anderson & Barnett, 2013). Game designers and educators are needed to have the ability to develop such games that are suitable for the needs of the students (Tsai et al., 2012).

In addition, the results of our research suggest that teachers do not enjoy playing educational games because the teaching equipment does not meet their requirements or because the process of preparing the equipment is time-consuming and laborious. On the other hand, learning games can be used in a number of different ways. There is a need for educators to have a more in-depth comprehension of the ways in which educational technologies and video games are founded on other learning theories (Dede, 2008). Providing learners with options, feedback and an adjustable teaching interface are identified as crucial educational components in the current study. All these components have the ability to impact learning in the present study (Kinzer et al., 2012). According to Turkay, Hoffman, Kinzer, Chantes, and Vicari (2014), having a background in these subjects would enable teachers to apply their own distinctive abilities and theoretical views to the game-based learning of these components. This is a vital component in incorporating any educational material including games into the teacher's repertoire, without it, teachers will be less likely to use the tools and will have a less positive experience with them. Their teaching contradicts the underlying philosophical foundations that guide them (Ertmer, 2005). In addition, teachers who value conceptual learning for its own sake will be disappointed with an educational game that prioritizes practice

over initial learning as will teachers who seek immediate feedback. Both of these groups will be unsatisfied with an instructional game that places more emphasis on practice than on initial learning. Moreover, class implementations that disregard interface considerations (such as the requirements of a motion interface, such as the Microsoft Kinect, Nintendo Wii, or Sony move) are likely to result in dissatisfaction with the incorporation of instructive games into the text.

5. Limitations

There are some limitations to this study. To begin, we limited this study to a sample that was representative of the Vietnamese community by recruiting participants for the research through convenience sampling. This kept the sample size small enough for us to be able to generalize the findings.

The results of the research could only be extrapolated to pertain to this specific set of individuals. Despite the fact that this constraint exists, it is still feasible to do more research by employing sample sizes that are both large and varied (for instance, elementary school and high school).

Second, as our study was carried out using a cross-sectional methodology, it is impossible to draw any conclusion on the cause-and-effect linkages. Because of this, prospective modeling may be used to study the degree to which there is a relationship between educational games and the many educational aspects that have an effect on them. The longitudinal design is the strategy that should be employed while doing research in the future to identify whether or not there is a relationship between the causes and the consequences of an event.

6. Conclusion

The experimental results of teaching show the positive effects of using learning games. In order for students to master the knowledge of subjects, teachers need to pay attention not only to the rational use of games in class but also to the application of effective teaching methods in each lesson. Along with providing knowledge, teachers also need to focus on forging corresponding skills.

Through our teaching experience, we are also clearly aware that in order to organize learning games with optimal effectiveness, teachers need to pay attention to the following issues:

The games used must not only match the needs for learning but also be convenient and appealing to the students. Therefore, given the same learning content, teachers must modify the form of play based on student characteristics. Organizing games frequently produces an enjoyable and relaxed environment which can easily lead to carelessness in manipulation. Teachers must carefully regulate play conditions to prevent mishaps.

Explain clearly the rules of the game. The game not only reflects the content when it is properly expressed. Therefore, teachers need to clearly explain the rules of the game so that students do not distort the learning content. Appease the aggressiveness of players. The organization of the game is for the purpose of learning not to compete for rankings or affirm talent. Teachers should emphasize this meaning so that students are not aggressive leading to conflicts and disagreements with each other. Focus on analyzing the meaning after implementing the game. Learning from the new game is the ultimate aim of the method. Therefore, teachers not only invest in the organization of the game but also prepare well for the meaningful analysis of the game. Teaching is not only to bring knowledge and skills but also to fulfill educational goals for students. Therefore, the way the game is organized must ensure culture; there should be no offensive or uncultured playing manipulations in the classroom or at school. Do not abuse these methods. Each teaching method has advantages and disadvantages. The use of methods must be suitable for learning content, object characteristics, teaching purposes, etc. The abuse of the game organization method will be boring even counterproductive.

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