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Article

Game-Based Learning and Academic Performance of Basic 5 Pupils in Private Primary Schools in Obio/Akpor

Nkasiobi C. Wordu[1], Atim Aniete Atabang[2]

1. Department of Educational Technology, Ignatius Ajuru University of Education, Port Harcourt, Rivers State, Nigeria
2. Department of Science Education, Akwa Ibom State University, Akwa Ibom State, Nigeria

* Correspondence: nkasiobi6@gmail.com

Abstract: This study is on the gamification teaching strategy or the use of games for teaching and its effect on the teaching of elementary school pupils. One question and one hypothesis guided the study. The design adopted for the study was the Pretest-posttest quasi experimental involving an experimental group and a control group. The population of the study was 200 basic 5 pupils in 131 private schools in Obio/Akpor Local Government Area in Port Harcourt, Nigeria and a sample size of 20 pupils in intact classes. Descriptive statistical tools of mean, standard deviation and percentage were used to answer the research questions while the Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 significant level. It was found that the students exposed to game learning strategy obtained the highest mean scores followed by the students taught with the play-way learning strategy and there is a significant difference in the academic performance of Basic 5 pupils taught using Game-based teaching strategy and those taught using the Play-way teaching. It was recommended among others that the Ministry of education and other stakeholders should organize conferences, seminars and workshops for teachers and educators.

Keywords: Game-Based Strategy, Play-Way Teaching Method, Scrabble

1. Introduction

Game is one of the suitable ways to help the students learn more effectively. Besides that, game allows students to work more cooperatively, and allow the students to have fun. Games can be classified according to various features they contain. Game elements such as the age range the game appeals to (infant age games, early childhood games, children's games, youth games, adult games), the development area it develops (cognitive games, physical games, language games, social games, games based on self-care skills), the feature of the place where it is played (indoor games, outdoor games) allow them to be divided into their types. Thanks to the trans - disciplinary method, games can take place between different genres at the same time according to a variety of characteristics. For instance, imitation play can be classified as social games and free games as well as childhood games. In this regard, games can be classified with different angles.

Byrne (2017) stated that game may be defined as a form of play governed by certain rules of convention. In other word, games are meant to be enjoyed, wherever they are played. A game is an activity or sport usually involving skill, knowledge, or chance in which you follow fixed rules and try to win against an opponent or to solve a puzzle. Nearpod (2014) noted that games are known to play a key role in the lives of not only

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humans but also all living things. Games, which are beneficial for different purposes for people of all ages, have fundamental contributions to the education and development of individuals. In this sense, games had to be integrated in curricula not only as an entertainment tool but also as an educational tool (Mul, 2015). Game has a significant place in terms of educational science and it is a real educational tool. However, some societies that attach importance to formal education do not consider it as a productive activity and therefore do not include it in their education systems (Freitas, 2018).

Game-based learning model consists of input, process and output parts. Instructional contents and game characteristics constitute the input while the game cycle is the process part, and learning outcomes is the output. The instructional contents and game characteristics in the input are blurred in the process of the game cycle. According to Deterding, (2016), Game cycle is all the activities and communications over the duration of a game. The game cycle begins with the action of the player. Feedback is presented to the individual within the game cycle as a result of the player's action. In this way, the individual begins to discover the structure of the game and adapt to this structure. Arcagok, (2021), posit that based on the game cycle, the individual must carry out the inquiry process in order to reach the outputs.

Children are encouraged to learn through exploration and play during their early years of development. Hedegaard, (2020), agrees that opportunities to learn in this manner drastically change as children mature. Experiences that allow children to explore and play to learn will develop creative and critical thinking which is essential to their academic success.

Byrne (2017) provides some reasons for using games in language teaching as follows:

a. Games are used to reinforce grammar and vocabulary and promote multiple skill learning.
b. Game can be used to change the phase of the lesson and so maintain the learners' motivation.
c. Game can be used to punctuate long formal teaching units and review students' energy before returning to more formal learning.
d. Game can give hidden practice of specific language point without students being aware of this.
e. Game can encourage students' participation and can remove the feeling of being intimidated by formal classroom situation.

Types of Game

Games usually use variety of technique which is important in language teaching. The simplest games are sorting, ordering, or arranging games. These are usually played in pairs or small groups.

According to, Aral, S. (2016, types of games are:

1. Matching games are based on a different principle, but they also involve a transfer or information. These involve matching corresponding pairs of card or picture, and maybe played as a whole class activity.
2. Guessing games are familiar variant of games. The player with the information deliberately withholds it, while others guess what it might be.
3. Search games are another variant, involving the whole class. In these games, everyone in the class has one piece of information. Players must all or a large amount of the information available to fill in a chart or picture or to solve a problem.
4. Exchanging games are based on the "barter" principle. Players have certain article, cards or ideas which they wish to exchange for others. The aim of the game is to make an exchange which is satisfactory to both sides.
5. Labeling games involve matching labels to items in a picture.

6. Role-play games players are given the name and some which characteristics of a fictional character.
7. Board games and card games are familiar game types, where the aim is to be the first round a board, or to collect the most cards, or to get rid of the cards first, or to build up a story. The cards and squares on the board are used as stimulus to provoke a communication exchange.

Scrabble is a board game. It uses squares on the board games and also the aim of the scrabble game is to provoke communication exchange amongst the players and it is played by two or more people (or team). (HealthyChildren.org 2023),

Education World (2022), suggested that there are many advantages of using games in the classroom. Thus, if a teacher chooses to use game in teaching, there are essential things that need to be done to make the games run well in the class. These are some steps that need to be remembered in using a game for instruction, they are:

1. Choosing a good time to show the games in teaching.
2. Mastering and understanding well the games materials that will be taught.
3. Focusing to achievements while doing the games.
4. Giving spirit and motivation to the games.
5. Giving reward to winner.
6. Ending the games while the students feel anxious. (Shorxametov & Isroilova, 2022).

Functions of Games

Holmes, et al (2013). Stated some functions of games, as follows:

1. Using games is a good way to increase exposure to vocabulary which enhances students' vocabulary acquisition.
2. Games can maintain students' motivation in vocabulary learning because they are amusing and interesting faster and better.
3. Games can provide student with intensive and meaningful practice of language like the scrabble board game.

Scrabble Game Board

Hajar, (2013). Emphasized that scrabble is a proprietary board game, which involves the building of words for point scores, for two or more players (or team). Scrabble is a fun way to improve the student's vocabulary, reading, and overall grammar skills. Scrabble is a board game in which players try to make words from letters printed on small plastic blocks and connect them to words that have already been placed on the board. It is a board game for two or more players (or team) to make word from letters printed for

point scores. A good scrabble game can help students in spelling words and thus make it easy for them to write well. According to Manley (2015), Scrabble game was an inspired blending of anagrams and crossword puzzles which was added a more competitive edge by devising a point numbering system for the letters based on how frequently they are used in forming words. Scrabble game consists of tiles and these tiles have alphabets and scores in them, the tiles are:

Letter	Score of Tiles	Letter	Score of Tiles
A	1	O	1
B	3	P	3
C	3	Q	10
D	2	R	1
E	1	S	1
F	4	T	1
G	2	U	1
H	4	V	4
I	1	W	4
J	8	X	8
K	5	Y	4
L	1	Z	10
M	3		
N	1		

Procedure for Playing Scrabble Game to Teach Vocabulary

These are some rules and steps in playing the Scrabble game:

a. The first player combines two or more of his or her letters to form a word and place it on the board to read either across or down one letter on the center square. Diagonal words are not allowed.

b. completes the turn by counting and announcing the score for that turn. Then draw as many new letters, always keep seven letters on the rack, as long as there are enough tiles left in the bag.

c. A player passes to the second player, and each in turn, adds one or more letters to those already played to form new words.

d. New words may be formed by:

   1. Adding one or more letters to a word or letters already on the board.
   2. Placing a word at right angles to a word already on the board. The new word must use one of the letters already on the board or must add letters to it.
   3. Placing a complete word parallel to a word already played so that adjacent letters also form complete words.
   4. No tile may be shifted or replaced after it has been played and scored.
   5. Blanks: the two blank tiles may be used as any letters. When playing a blank, you must state which letter it represents, it remains that letter for the rest of the game.
   6. You may use a turn to exchange all, some, or none of the letters.
   7. Any play may be challenged before the next players start a turn.
   8. The game ends when all letters have been drawn and one player uses his or her last letter; or when possible, plays have been made.

The advantages of scrabble game are:

a. Scrabble help to improve the language: This is most obvious and very well-known benefit of playing scrabble. The scrabble can help one to improve the language in the following two ways.
    1. Helping to improve a wide range of skills, including vocabulary, spelling, dictionary skills.
    2. Cooperative learning.
    3. Conflict resolution and
    4. Creative problem solving.

Thus, based on advantages described above, scrabble game can be used as a very good technique for teaching vocabulary. (YorkshirePudd.co.uk 2023).

Aim and Objective of the Study

The aim of the study is to investigate Game-based learning and Academic performance of Basic 5 private school pupils in English Language in Obio/Akpor Local Government Area of Rivers State. Specifically, the study sought to:

1. Examine the effect of Game-based learning on the academic Performance of Basic 5 pupils in English Language in private schools in Obio/Akpor Local Government Area of Rivers State.

Research Question

The following research question guided the study.

1. What are the effects of Game-based learning on the academic Performance of Basic 5 private school pupils in Obio/Akpor Local Government Area of Rivers State?

Hypothesis

The following research hypotheses were formulated to guide the study.

1. There is no significant difference in the academic performance of Basic 5 pupils taught using Game-based teaching strategy and those taught using the Play-way teaching method in the private schools in Obio/Akpor Local Government Area.

2. Materials and Methods

Research Design

The design adopted for this study was the Pretest-posttest quasi experimental involving an experimental group and a control group.

The design of the research will be described as follows:

O_1	X	O_2
O_3	-	O_4

O1: Pretest experimental group

O2: Posttest experimental group

O3: Pretest control group

O4: Posttest control group

X1: Treatment

X2: Non-treatment

Population of the Study

The population of this study was 200 basic 5 pupils in 131 private schools in Obio/Akpor Local Government Area (Rivers State Ministry of Education, 2023).

Sample and Sampling Techniques

The researcher used the Random Sampling Technique to select 2 schools from 131 private primary schools in Obio/Akpor Local Government Area. 2 intact classes were purposively chosen from each of the 2 schools. Class A had 10 pupils and Class B had 10 pupils, making the sample size 20 pupils.

Instrument for Data Collection

The researcher developed the instrument used for data collection named Game-Based Learning Vocabulary Test (GBLVT) which contained 10 vocabulary achievement test questions.

Method of Data Collection

Before the commencement of the treatment, the researcher trained two research assistants. Their roles were to assist the researcher to handle the lessons in the experimental group using scrabble board game. A day was marked for the training which involved practical explanation of how scrabble board game is played and the rules of the scrabble game. The research assistants were also introduced to the types of activities expected from the pupils during the lesson.

3. Results

Research Question One: What are the effects of Game-based learning on the academic Performance of Basic 5 private school pupils in Obio/Akpor Local Government Area of Rivers State?

Table 1: Gain scores of students' achievement based on the instructional strategies

Group	Strategy	N	Pre-test		Post test		Mean gain score
			Mean	SD	Mean	SD	
Experiment	Game-based learning	10	13.30	0.53	35.31	6.36	22.0
Control Group	Play-way method	10	19.87	10.76	25.27	4.21	5.4

Results in Table 1 showed that the mean gain scores of students exposed to Game-Based learning strategy were 22.0 mean gains, while those taught with play-way method had mean gain score of 4.21. It could therefore be deduced that the students exposed to game learning strategy obtained the highest mean gain achievement followed by the students taught with the play-way learning strategy.

Hypotheses Testing

Hypothesis One: There is no significant difference in the academic performance of Basic 5 pupils taught using Game-based teaching strategy and those taught using the Play-way teaching method in the private schools in Obio/Akpor Local Government Area.

Table 2: Summary of ANCOVA of students mean scores based on instructional strategy

Dependent Variable: POSTTEST

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	511.334[a]	2	255.667	8.432	.003
Intercept	2660.543	1	2660.543	87.741	.000
PRETEST	7.326	1	7.326	.242	.629

GROUP	464.616	1	464.616	15.322	.001
Error	515.484	17	30.323		
Total	19376.500	20			
Corrected Total	1026.818	19			

a. R Squared = .498 (Adjusted R Squared = .439)

The results in Table 2 showed that the calculated F-value for the group is 15.322 at degrees of freedom 1 and 17. This is significant at 0.00 probability level which is less than 0.05 probability level (F=15.322, df = 1/17, P<0.05). Hypothesis three was rejected. This means that there is a significant difference in the academic performance of Basic 5 pupils taught using Game-based teaching strategy and those taught using the Play-way teaching method in the private schools in Obio/Akpor Local Government Area.

4. Discussion

The result deduced that the students exposed to game-based learning strategy obtained the highest mean gain achievement than the students taught with the play-way learning strategy. This agrees with Holmes, et el (2013) emphasis that Games can maintain students' motivation in vocabulary learning because they are amusing, interesting, faster and better when learning. There is also a significant mean score difference between the students taught using game learning strategy performance and those taught using play-way strategy. This result corroborates with Adeoye & Ayodele (2021) that game-based learning improves students' study habit more than the self-regulated learning method, and even more over the control group where no specific learning method was adopted. It is observed that the use of game-based learning and self-regulated learning can bring about serious improvement in students' learning behavior. Teachers should be encouraged to vary their methods of teaching in line with the needs of the students to achieve the set goals.

Summary

Game-based learning and Academic performance of Basic 5 private school pupils in English Language in Obio/Akpor Local Government Area of Rivers State. Quasi-experimental- design involving pretest and posttest was adopted for the work. The population was 200 basic 5 pupils in 131 private schools in Obio/Akpor Local Government Area (Rivers State Ministry of Education, 2023). Random Sampling Technique was used to select 2 schools from 131 private primary schools in Obio/Akpor Local Government Area. 2 intact classes were purposively chosen from each school. Class A had 10 pupils and Class B had 10 pupils, making the sample size 20 pupils.

Game-Based Learning Vocabulary Test (GBLVT) which contained 10 vocabulary achievement test questions. Two research questions and two null hypotheses guided the study. Descriptive statistical tools of mean, standard deviation and percentage were used to answer the research questions while the Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 alpha levels.

Findings established that game-based learning strategy consistently produced the highest levels of achievement gain. There is no significant mean score difference between the achievement of male students taught using game-based and those taught with play-way learning in Obio/Apor Local Government Area in Rivers State.

5. Conclusion

The use of game-based learning strategy was highly potent in promoting meaningful understanding and enhancing achievements. These served as scaffolding technique or template that provided well-structured cognitive frameworks that encouraged deep level meaningful understanding. The game-based learning therefore enabled the students to actively relate new information to prior knowledge which resulted in meaningful learning.

Based on the findings of the study, the following recommendations are made:

1. English teachers and educators should adopt game-based learning strategy as purposeful and efficient instructional strategies and resources in teaching.
2. Ministry of education and other stakeholders should organize conferences, seminars and workshops for teachers and educators.
3. Curriculum planners and education administrators should prepare and make the strategy available to schools and colleges to improve the process and product of learning.

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