Modification of Ghanaian traditional *abatoɔ* game to improve the quality of basic education

Research article

This article is published in Nairobi, Kenya by Royallite Global in the:

Research Journal in Advanced Humanities, Issue 4, Volume 1, 2020

Article Information
Submitted: 8th July 2020
Accepted: 15th September 2020
Published: 20th September 2020
Conflict of Interest: No conflict of interest was reported by the authors
Funding: None

ISSN: 2708-5945 (Print)
ISSN: 2708-5953 (Online)

To read the paper online, please scan this QR code

Victor Boateng-Nimoh[1], William Kwabena Nantwi [2]

[1]Department of Vocational Education, St. Louis College of Education, Kumasi, Ghana
[2] PhD Candidate, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
Correspondence: williamnantwi28@gmail.com
ORCID ID:

Abstract

The study focused on using the traditional abatoɔ game as a pedagogical tool for teaching contents in different subject areas and to find out how it motivates learners to learn. The study adopted a qualitative research approach with action and descriptive research methods. It was underpinned by the 'Game-Based Learning' (GBL) theory. Artistic techniques such as drawing, painting, printing, and computer Graphics were employed to modify the Ghanaian traditional *abatoɔ* game to improve the quality of teaching and learning. The modified *abatoɔ* game was tested at M.A. Bediako Adventist Preparatory school, Amakom - Kumasi Ghana with a population of five hundred and eighty-seven (587) pupils. Out of this, purposive and convenience sampling techniques were used to select Forty (40) Basic one pupils, thirty-six (36) basic four pupils and thirty-nine (39) basic six pupils as sample for the study. Observation, tests, feedback cards, and opinionnaire were used to collect data for the study. The study revealed the possibility to modify traditional games into educational games with integration of different learning contents. The study concluded that, learning contents integrated into game reinforce learners' understanding of learning concepts, motivate learners to learn and prepare in advance for studies. The modified *Abatoɔ* game also have the potential of reducing the workload on teachers as different learning contents can be taught with a single game.

Keywords: *b*asic education, educational games, game-based learning, hopscotch, traditional abatoƆ game

How to Cite:
Boateng-Nimoh, V., & Nantwi, W. K. (2020). Modification of Ghanaian traditional abatoɔ game to improve the quality of basic education. *Research Journal in Advanced Humanities* , *1*(4). Retrieved from https://royalliteglobal.com/advanced-humanities/article/view/266

Public Interest Statement

Most Ghanaian traditional games are disappearing or had already disappeared. Traditional games such as Pilolo, Aso, Pempena, Kwaakwaa, and AbatoↃ which were played in the past are no more patronized by children in Ghanaian (Infoboxdaily, 2014). Owing to this, there is therefore the need to repackage and revitalize them for Educational usage. The study is underpinned by the Game-Based learning (GBL) theory which aims at achieving learning outcomes through the use of games (Garris et al., 2002).

Introduction

The theoretical under pinning of this study is a Game-Base Learning theory which allows for the merging of sound pedagogy with entertainment and engagement. To effectively use games to support formal education, Van Eck (2006) indicated that educators have adopted three approaches for integrating games into the learning process:

1. Teachers develop games to be used to deliver learning content.
2. Students also build games to gain learning experiences.
3. Educators integrate Commercial Off-The-Shelf (COTS) games into the curriculum.

The Researchers, therefore, employed the Educators Build Games to teach learning Content approach for this study. According to Watters & Carolyn (2005), learning games differ from entertainment games mainly by purpose. That is, there is a shift from playing the game for social and personal entertainment goals to achieving Educational Goals. Ideas can be tapped from Entertainment games to develop Educational games with the qualities of substantial and clear educational challenges.

El-Shamy (2001) added that games are wonderful tools for engaging learners and reinforcing learning. Dewey (2009) indicated that games are good learning tools which can be used at all levels of learning objectives using Bloom's Taxonomy thus, Knowledge (finding out), Comprehension (understanding), Application (making use of the knowledge), Analysis Questions (taking apart the known), Synthesis (putting things together in a different way) and Evaluation (judging outcomes). Educational games are nothing more than questions that require the student to be engaged and try to answer. Educational games have been imitations of traditional games with learning variations such question answering interjected into it. For effective use of educational games to support teaching and learning, Dewey, suggested these five ways of implementing educational games in the classroom.

1. There should be limitations in the use of games in the learning process as overused of games can affect the learning outcomes.
2. Games should be used as a means of achieving educational goals and not for playing or enjoyment.
3. Games should be adopted as a teaching tool together with appropriate teaching and learning methodologies.
4. Educational games should be used at the beginning of a lesson to measure existing knowledge and build learners' interest in the teaching and learning process.
5. Games must be used during a learning period to ensure reinforcement learning, application of knowledge and skills, discovery and recall of facts.

Dewey concluded that, for learning games to be operative, they must be linked to the school to attain educational success. They must also teach learners how to create psychosocial value for themselves to fit into society. Above all, educational games must be enjoyable, engaging, simplistic, meaningful and educative.

Keith & Kevin (1997) hinted that, true education should aim at developing an all-round personality of a child; meaning education should result in the mental, moral and physical development of a child. They added that, the present system of education lays too much emphasis on the mental development and pays only lip sympathy to moral development and completely neglects physical development. The wisdom in the adage "All work and no play make Jack a dull boy" is long forgotten in schools which turns millions of educated people totally dull and undeveloped. "To learn is to think"; therefore, there is the need to exercise our limbs and our organs, which are the instrument of our intelligence (Tinning & Hunter, 2008). From the discussions so far, there is, therefore, the need to equip teachers with additional teaching strategy that will ensure the development of all-round personalities of a learner and total engagement of learners as well as addressing the learning differences of students. The study accordingly, looked at the modification of the Ghanaian version of *Abatoɔ* game with learning content interjected into it, as a teaching and learning tool to support formal education. The study pivots on the following research questions:

1. How can the traditional version of *Abatoɔ* game be modified into an educational game for primary school pupils?
2. How can the modified traditional *Abatoɔ* game be used to support Education in Ghana?

Literature Review

Theoretical framework

The study was underpinned by Game-Base Learning Theory. Game-Based Learning (GBL) was first developed by Mahlo in 1974 and Deleplace in 1979 in European countries such as Germany and France. Game-Based Learning became popular among the English-speaking countries through Bunker and Thorpe who suggested the Teaching Games for Understanding (TGfU) programme should be part of the physical education programme to develop students' interest and consciousness in games (Kinnerk et al., 2018). Game-Based Learning (GBL) has been suggested by many scholars as an alternative way of contextualizing learning within game-like activities (Light, 2015). It is difficult to define the term Game-based learning, however, Perrotta (2013) referred to Game-based learning as the use of games to back teaching and learning. Perrotta added that game-based learning is designed to balance subject matter with gameplay. In other words, Game-Based Learning is the integration of games whether analogue or digital into teaching a particular subject matter. Here, the principal idea for Game-Based Learning is to get students to play with already made games to achieve a learning objective. It is an organized play that provides education and pleasure (Prensky, 2001). Game-Based Learning (GBL) is a type of gameplay that is governed by learning outcomes. (Garris, Ahlers, & Driskell, 2002), It lays much emphasis on learning outcomes produced through the gameplay (Shaffer et al 2005). In the view of Isbister and Schaffer (2008), game-based learning creators are concerned with the quality of the learning

objective which is superior. Gee (2014) added that learning outcomes from Game-Base Learning encompass skills such as critical thinking, problem-solving, collaboration, effective communication, and motivation; persistence, learning to learn, competition, collective intelligence, participation, storytelling, analysis and leadership skills.

Mead (2011) has also noted that GBL stemmed from traditional non-interactive methods of teaching such as the use of chalkboards, textbooks, and lecturing. Therefore, GBL serves as a vehicle by which students can discover facts, make informed decisions, solve problems, and increase the longer retention rate of the course material than those that employ traditional methods of lesson delivery. Gee hinted that most people consider game-based learning different from the normal classroom learning processes because of its uniqueness and that it should be considered as a theory of learning. Klopfer, Groff & Haas (2009) expounded that Game-Base Learning is best facilitated when learners are made the central theme to come out with new notions, reflect on their experiences, make fresh decisions and think of how to apply them in their endeavour. This means learners learn on their own with little or no assistance. Games used in Game-Based Learning help learners to attain high academic achievement. The games are also characterized by make-believes. Game-based learning engages, gives feedback to learners and provides immediate rewards.

Concept of Game

According to Prensky (2001), many definitions of the term Game exist but in the simplest terms, games are based on the concept of fun. Huizinga (1955) stated a game is a free activity outside ordinary life with no profit. It has rules and a defined way of progressing. Caillois (1961) also stressed that games have rules and a make-believe element. Avedon and Sutton-Smith (1981) also defined a game as an exercise of voluntary control systems with an opposition between forces, confined by procedures and rules. A **game** is a structured activity, usually undertaken for enjoyment and sometimes used as an educational tool. Goals, rules, challenges, and interaction are the key components of games (Rowe, 1992). Liegh (2008) posited that games are guided by overt rules that are set forward and defilements of these rules result in some form of penalty which is not reversible. Games are made of rewards and penalties. Even if the rule is something simple, a player needs to go through a start point to an endpoint. Players are sometimes given information on how to construe and relate with the game environment. It is crystal clear that there is no single definition for games, however, all the definitions given to games share some common ideas. It can, therefore, be deduced that games are activities that involve systematic procedures, and are also governed by codified rules which remain non-negotiable or unchanged. Once a player breaks the rules he/she faces the penalties. Games are also characterized by achievable goals, rules, challenges, interaction, emotions, values, and enjoyment. Many different forms of games exist and one aspect of it is a folk game.

Hopscotch Game

According to Marri (2009), hopscotch *(Abatoɔ)* is a hopping game popularly played by children worldwide. It can be played on the bare ground (in the sand or on the cemented floor). It can be played indoors or outdoors. It can be played alone or in a group. Hopscotch game improves

children's' balancing skills as well as their counting skills. Although the hopscotch game has been around for centuries, it is still a popular game for school children (Julie & Kar, 2009). McNamee (2009) stressed that hopscotch is easy to play and it is mostly played by children for fitness and fun. It can be played using a pattern drawn in the dirt with a stick, or on a hard surface using chalk. Children can also make their versions of the hopscotch games. The basic idea of the game is to toss a marker into one square of the grid or court, then hop through the grid, turn around and hop back. According to Julie & Kar, there is no exact size for drawing the hopscotch court and suggest that, it can be as big or small as one wish depending on the size of the kids playing the game. Logically, kindergarten class needs smaller squares than primary or elementary classes. They, however, propose about eighteen inches (18") to twenty-four (24") per square for a hopscotch court and six feet (6ft) to eight feet (8ft) per square for the four square. They also hinted that the best way to get a suitable square size or hopscotch size is to simply test it out with few students from different levels by allowing them to draw their courts to decide how big or small the squares should be for the rest of the students.

The Origin of Hopscotch

McNamee (2009) stated that hopscotch has been a popular game with children for centuries, dating to the time of the Romans. Lankford (1992) emphasizes that hopscotch patterns have been found in Ancient Roman ruins. It is thought that the Romans brought hopscotch to Britain, who later sent it to other countries. Adding to this, Brutus (2009) hinted that, hopscotch began in the Ancient British Era, during the early Roman Empire. During this era, the original hopscotch courts were over a hundred feet (100ft) long. These hopscotch courts were used for military training exercises. Roman foot soldiers ran the game course in full amour intending to improve their foot works. Later Roman children imitated the soldiers by drawing their court or diagram. They also created their scoring system. Hopscotch game in no time spread through Europe and other parts of the world, where it assumed different names. Lankford (1992) hinted that instructions to each hopscotch game vary according to the country and provides different hopscotch game played in other parts of the world and their names. Some of these names have been presented in table 1.

Table 1: Countries and Names given to the Hopscotch Game

Country	Name Given To Hopscotch
Germany/Austria/Switzerland	Templehupfen/Himmel und Halle
1. Netherlands	Hinklebaan
2. India	Ekaria Dukaria
3. Vietnam	Pico
4. Argentina / Columbia/Spain	Rayuela
5. Indonesia	One-leg jump
6. Aruba	Pele
7. Bolivia	La Thunkuna
8. United States (New York)	Potsy
9. France	Escargot (Snail), Marelles
10. Iran	Laylay
11. Brazil	Amarelinha

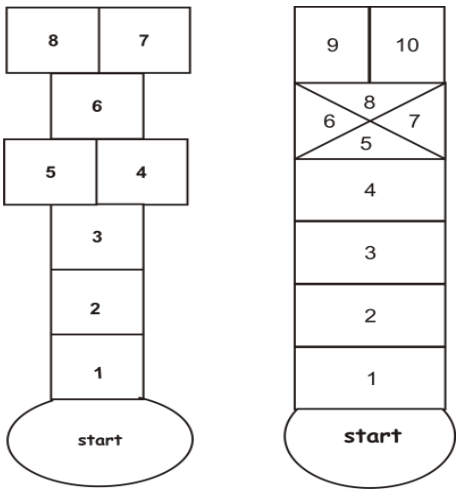
Sources: *https://en.wikipedia.org/wiki/Hopscotch*

The Ghanaian Traditional *Abatoɔ* Game

Abatoɔ is the name given to hopscotch by most Akan communities in Ghana. It is one of the oldest traditional games played in Ghana over some years ago. Different versions of this game are played among different communities in Ghana. Most of these traditional games were not documented since they were not developed by any known persons. Traditional games are played because everyone knows how to play. Although many different versions are played in Ghana and across the world, *Abatoɔ* still holds some close similarities with other versions of hopscotch in terms of the court layout, rules and regulations, and mode of play. It is a vigorous game, which involves throwing, counting, and hopping. *Abatoɔ* is one of the most familiar games of childhood and one of the easiest to play. Both boys and girls and at times solely boys or girls play it. One player plays the game at a time while others also wait patiently for their turn.

Traditionally, this game is played in a court which is drawn on the bare ground either on cemented terrain or in the sand. Almost every fun of Traditional *Abatoɔ* game is skillful in drawing the game court. Participants also play with their bare feet to ensure smooth hopping. In general, some of the aims and objectives for playing *Abatoɔ* include physical fitness, recreation, passing over the traditions of the old to the younger ones, carrying out some hidden messages, protection against immoral practices, and socialization. The game requires no sophisticated equipment; one simply needs to draw the game court on the ground with a piece of stick or on a cemented ground with either chalk or charcoal. Usually, any material could be used as *aba* (marker or token) provided it is capable of landing well in the squares. Commonly used materials are moistened pieces of fabric, pebbles, or rubber filled with sand. *Abatoɔ* court is divided into squares or grids, and each square is referred to as *adukro* (territory) and have a start and endpoint as well as a turning point. As a rule of the game, a player is declared a winner after capturing or having a lot

of *adukro* (territory) to his/her credit (Owusuah, Takyiwaa & Mensah, 2010). Some examples of the Ghanaian Traditional *Abatoɔ* game courts have been demonstrated in Figure 1.



A **B**

Figure 1 (A & B): An Artistic Impression of the Ghanaian Traditional AbatoƆ Game Court

How to play the Traditional Ghanaian *Abatoɔ* game (Rules and Regulations)

The traditional *Abatoɔ* game is played with two-game components. These are the game court and the marker *(Aba)*. The fundamental idea of playing *Abatoɔ* is to toss the *aba* (marker) into one square- *adukro* of the court, then hop through the court, turn around and hop back to pick the *aba* (marker) at where it was placed. It is played in two different stages. These are the normal gameplay *(Abatoɔ)* and owning a territory or grid *(Adukro)*.

Stage 1: The normal gameplay (throwing the marker (aba) with the front, facing the court)

1. Draw the *Abatoɔ* court in the sand or cemented floor. A piece of stick or charcoal can be used.
2. Standing inside the starting point grid, throw the *aba* (marker). If the aba lands outside the grid you lose your turn.
   Throwing of the marker (aba) is accompanied by a verbal announcing indicating the targeted *adukro* (square). For instance, a player might say:
   adukropee !!! 1, indicating *adukro* (square) one
   adukropee !!! 2, indicating *adukro* (square) two.
3. Hop on one foot over the grid where the aba was placed. This should be repeated throughout the game. (Never hop into grids with the *Aba* inside) if your foot lands on the line or outside the grid or in the wrong grid you are disqualified.
4. At the pairs (4 and 5) for picture 'A' and (6 and 7) for picture 'B', jump with both feet, turn around and hop back toward the start.
5. When you reach where the Aba was placed, pick it up, still on one foot complete the game.

Note: Grids (*Adukro*) 4/5 and 7/8 or 6/7 and 9/10 are stepped in with the two legs simultaneously. Again, *adukro* (squares) 7/8 or 9/10 serve as the turning points depending on the version of the court used.

Stage 2: Owning a Territory (throwing the marker (aba) with the back facing the court))

Unlike stage one, where a player throws the *aba* (marker) facing the court, here a player turns back and throws the *aba* (marker). Whichever *adukro* (squares) the *aba* (marker) lands into becomes the player's permanent territory (*adukro*). Other game players are forbidden from throwing a marker or hopping into it. The game is over when it becomes impossible for anyone to hop to the end. The player with the most captured *adukro* (squares) becomes the winner of the game (Owusuah et al. 2010).

What are the Educational Games?

According to Watters & Carolyn (2005), there is a clear cut difference between learning games from entertainment games in terms of purpose. In educational games, the purpose of playing the game is strictly for achieving educational goals and not for social and personal entertainment. However, elements of entertainment games can be adopted to develop educational games. One characteristic feature of Educational games is the inclusion of weighty and clear educational challenges. Prensky (2001) sees educational games as both play and fun and hint that it is a blend of educational content, learning principles, and games. Thus, a game designed for learning. It is important to note that most educational games use the elements of traditional games, with several modifications. Takacs & Sugar (1999) reported that, learning games promote collaborative learning and convert sedentary learning material into learning experiences. This implies learners become active players and participants. Yaman & Covington (2006) held the view that what makes a learning game is that, it should engage learners, bring out the learner's inquisitiveness and promote can-do spirit. The level of engagement and mode of presentation of information by educational games help learners to memorize more of the lessons learnt.

The Importance of Learning Games in Children's Education

Learning games have a strong place in the academic success of learners. They are potential learning tools for improving the academic performance of learners (Dewey, 2009). According to Keith & Kevin (1997), most learning games allow children to sharpen certain academic skills. For instance, most board games for children involve either counting or colour matching. Similarly, most card games for children also comprise matching suits or numbers or comparing numbers. Children habitually become mathematically and artistically inclined through these educational games. It is therefore important to introduce children to games play at a very tender age. Three (3) years is the impeccable age to introduce children to games such as board games and card games. The rules of these games instill in children human values such as perseverance, patient, honesty, confidence, and self-esteem as they win and lose games. Besides these values, educational games also equip learners with vital social skills that are needed to cope with other children as almost all games deals with taking turns, sharing, waiting for a turn, and patience. Sutton (1973) admits that, through educational games, children learn some skills necessary to be

capable of their immediate social function. Sluckin (1981) who studied the school playground in Oxford, is also of the view that educational games offer children opportunities for peer interaction in the context of which many lessons relevant to adult life are learnt. Anthony & Kentaro (2001) indicate that games especially on the school playground at recess are important to consider as they may serve an important role in children's adjustment to school and social adjustment.

Methodology

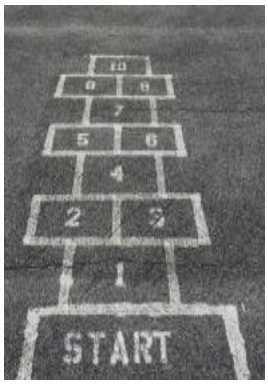
The Qualitative Research Design was adopted with Descriptive and Action Research methods. The study focused on using a modified Ghanaian Traditional version of *Abatoɔ* Game to improve teaching and learning among Basic school pupils of M.A. Bediako Adventist Preparatory School (APS), Amakom-Kumasi Ghana, with a total population of five hundred and eighty-seven pupils (587) pupils. Purposive and Convenience Sampling Techniques were used to select Forty (40) Basic One pupils, Thirty-Six (36) Basic Four pupils and Thirty-Nine (39) Basic Six pupils as sample for the study, constituting a sample size of One Hundred and Fifteen (115) pupils. Basic One, four and Six pupils were selected as sample for the study because they serve as transitional or formation classes at the basic school level and that, any implementation with them yields greater impact on the other classes. Test, observation, feedback cards and opinionnaire were the instruments used to collect data. Other strategies such a prototyping and computer-aided designing, testing, sketching/drawing, and painting were also employed to modify the game. Data collected in the form of test results, Video tape, Opinions, and Feedback cards were assembled in descriptive and table forms, analyzed, interpreted, conclusion drawn and recommendation made.

Working Procedure

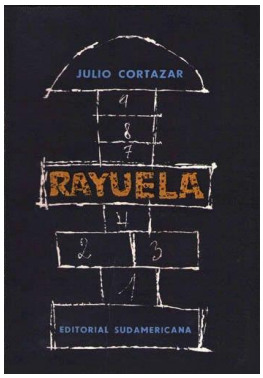
1. Modification of the Traditional *Abatoɔ* game into educational game

To modify the Ghanaian Traditional version of the *AbatoƆ* game toward improving teaching and learning at the basic school level, some ideas, layouts, and rules from other variations of Hopscotch games across the Globe where integrated into the Ghanaian version of *Abatoɔ* game. Some of these ideas are shown in figures 2, 3, 4 and 5.

Figures 2: Escargot from France



Figures 3: Potsy from USA (New York)



Figures 4: Rayuela from Spain

Figures 5: Luche from Chile

These ideas were then developed through sketches, drawing, and CorelDraw Software Applications. Two different sets of modified *Abatoɔ* game were designed for both Upper and Lower primary pupils. The modified game comprises three (3) major game accoutrements or accessories. These are the Game Court or Field, Question Chart, and Marker, Token or Game Piece. The Question chart which was a new game component added to modify the *AbatoƆ* game is a visual aid with opened pockets for storing questions to be answered while playing the game. These question charts made it possible to integrate learning content into the game for pupils to learn and have fun. Artistic impressions of the three accoutrements are shown in Figures 6, 7, and 8.

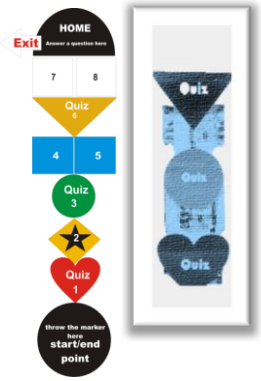


Fig. 6: upper primary game court And the question chart

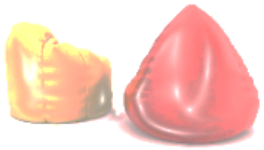


Fig. 7: Aba, Maker, Token or Game Piece

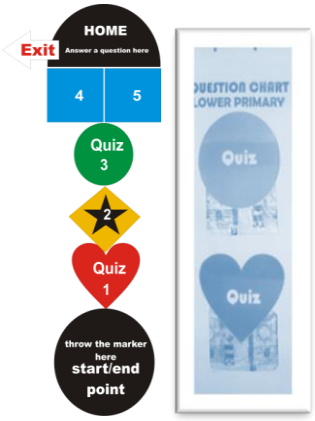


Fig. 8: lower primary game court And the question chart

2. How the modified game is played.

Virtually most of the strategies, rules, and regulations for playing the traditional version of *Abatoɔ* game also apply to the modified game. However, the modified game allows for integration of learning content. In this case, progress through the game depends on learners' abilities to answer questions correctly from the question chart.

Steps:

1. A player must first stand in the start/end shape.
2. The player announces his or her hoping leg as well as the targeted shape
3. Throw the *aba* (maker, token) into the first shape. (If it lands on a line, or outside the square, you lose your turn. Pass the marker to the next player and wait for your next turn).
4. Make sure to pick a question to answer from the question chart after throwing the marker into any shape indicated quiz before proceeding. (If you get the question wrong you lose your turn).
5. Hop on the one foot and skip shapes indicated quiz.
6. At the pairs (shapes) 4/5 and 7/8 jump with both feet.
7. At home hop with both feet, turn around, and hop back toward the start/endpoint.
8. To start again, pick another question from the question chart and answer correctly and repeat the steps of observing the rules and regulations.

3. Making and Testing Prototypes

In other to have a child friendly and standard dimensions for the modified game courts for both Upper and Lower Primary pupils, prototypes of the courts were drawn on the floor with charcoal by the Researchers for some pupils within the two levels to try on it and was observed. These are presented in Figures. 9, 10 & 11.

Figure 9: Making a Prototype of the Modified Game Court

Figure 10: Upper Primary Pupil Testing the Prototype Game Court

Figure 11: Lower Primary Pupil Testing the Prototype Game Court

4. Executing the Modified *Abatoɔ* game court in M.A. Bediako Adventist Preparatory School (APS).

After making all needed changes on the prototype game, permission was sorted from the Authorities of M.A. Bediako Adventist Preparatory School to execute the final game court in the school. After a length deliberation, the school's authorities offered the researchers a spacious pavement ground to execute the game. Guided by the prototypes and the computer aided designs, the researchers prepared, designed and made two different Modified *Abatoɔ* game courts for the upper and lower primary pupils on the ground. However, the other game components (Question charts, marker or tokens) were also made. Some of the working procedures are represented from A – H in figure 12.

Figure 12: Some activities undertaken in preparing the grounds and executing the two game courts

5. The Two Modified *Abatoɔ* games for Upper and Lower Primary.

The two Modified *AbatoƆ* games were completed within two weeks. These are shown in figures 13, 14 and 15.

Figure. 13: The modified game courts for upper and lower primary pupils.

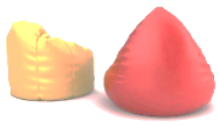


Figure. 14: Aba, Maker, Token or Game Piece

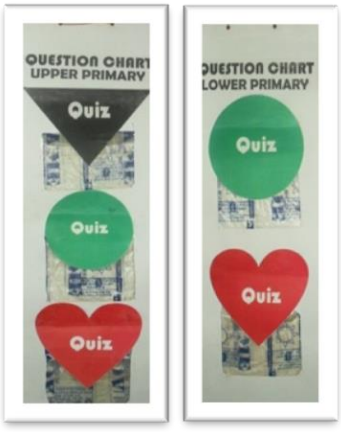


Figure. 15: lower primary game court And the question chart

6. Using the modified *AbatoƆ* games to improve teaching and learning in M.A. Bediako Adventist Preparatory School (APS).

The time table allocated for Physical Education periods were given to the researchers for the study. Both teaching and non-teaching staff assisted in the study. The modified *AbatoƆ* game was used in the school for a month. Each of the selected classes (Basic one, four and six) was met twice in a week. Each game section lasted two (2) hours. Before the game commenced, the Researcher collected previous exercises done by pupils (participants) for the past two to three weeks from different subject areas of the respective classes. They were then organised into the question charts for players (leaners) to answer while playing the game. Some subject areas where questions were selected were: English language, Mathematics, Religious and Moral Education, Environmental Studies, Natural Science, Creative Arts, and I.C.T. observational strategies such as checklist and video recording were used to collect data on learners' performance while playing the modified game. At the end of each game section, participants were given feedback cards to express their views on the game. Opinions from participants and audience were also sorted for during and after each game play.

Figure. 16 & 17: Pupils playing the Modified Abatoɔ

Figure 18: A teacher with learners critically observing an on-going Modified *AbatoƆ* game

Results and Discussion

Research Question 1: How can the traditional version of *Abatoɔ* game be modified to improve teaching and learning in Basic School?

The first research question was to find how the traditional version *Abatoɔ* game can be modified to improve teaching and learning in basic schools. To answer this research question, question charts with tests were incorporated into the modified *Abatoɔ* game for learners to answer while playing the game. Table 1 shows the results of the inclusion of question charts with tests into the modified game.

Table 1: Results from the Question Charts-Day 2

Class	Total Number Of Questions Asked	Correct Questions	Wrong Questions	No Attempt Questions
ONE	9	5	4	-
FOUR	11	6	5	-
SIX	10	4	5	1

From table 1, Nine (9) questions were fixed into the question chart to class one pupils. Out of this, five (5) questions were correctly answered and four (4) wrongly answered. This indicates that attempts were made on all the questions by class one pupils. The table further indicates that eleven (11) questions from the question chart posed to Class Four pupils. Out of these six (6) questions were correctly answered and five (5) wrongly answered which also indicates yet another attempt for all questions. Class Six on the other hand also had ten (10) questions from the question chart, from which four (4) questions were correctly answered and 5 wrongly answered, suggesting that 1 question was not attempted. From the discussion so far, it is obvious that during the second day, participants were willing and eager to answer the majority of the questions posed to them except for one question. Meanwhile, the quiz results showed slight improvement between the correctly answered questions, and the wrongly answered ones, especially that of Class One and Four. To add up, Class Six pupils got most of the questions wrong (5 questions) and four (4 questions) correctly answered. This may be evidence that pupils had forgotten about a lot of the things they had learnt for the past weeks or perhaps the one who gave the feedback (I don't like the game at all) from class six is the same person who failed to attempt the question for Class Six.

Table 2: Results from the Question Charts -Day 3

Class	Total Number Of Questions Asked	Correct Questions	Wrong Questions	No Attempt Questions
ONE	9	7	1	1
FOUR	12	9	3	-
SIX	11	7	4	-

From the table, nine (9) questions were given to Class One pupils during gameplay. Out of these seven (7), questions were correctly answered and one (1) wrongly answered. This means only one (1) question was not attempted. The table further indicates that, out of (12) questions for class four pupils, nine (9) questions were answered correctly and three (3 questions) wrongly answered, which indicates an attempt for all questions. Also, Class Six had eleven (11) questions from the question chart, from which seven (7) questions were correctly answered and four (4) wrongly answered, indicating an attempt on all questions. These results so far indicate a significant improvement by the participants, since most of the questions were correctly answered as compared to the wrongly answered questions, although only one question was not attempted by a class one pupil. This might because participants were motivated to revise their notes to enjoy the game for a longer period, since getting a question wrong will lead to disqualification. It also suggests that pupils might have understood the motive behind playing the game. Comparatively, from all that has been discussed so far, it is clear that, as pupils continue to play the game, they showed a significant improvement in the questions posed to them which is evident that the modified game as a learning tool for learning has achieved its set goals. This indicates that, questions interjected into the modified AbatoƆ game instigated learners to revise their notes to get most of the questions correct. It also indicates that learners' understanding about some learning concepts have been reinforced by answering questions from previous lessons while playing the game. Prensky (2001) added that educational games are blend of educational content, learning principles, and games designed for learning. It is important to note that most educational games use the elements of traditional games, with several modifications.

Teachers' Opinion

To further answer this Research Questions 1, opinions by three (3) teachers on the modified AbatoƆ game was used.

Teacher 'A'

The modified version of the AbatoƆ game is good and can be used to teach many different subjects at a time, outside the classroom.

Teacher 'B'

The game can help to reduce the work load on teachers

Teacher 'C'

It reinforces learners understanding on learning content, as student have to revise their notes anytime they want to play the game. The three (3) teachers seem to share similar opinions that, the modified game can aid in improving teaching and learning thereby reducing the workload on teachers, promoting integrated teaching and learning as well as reinforcing learners understanding. El-Shamy (2001) supported these findings and hinted that games are wonderful tools for engaging learners and reinforcing learning.

Research Question 2: To what extend will the modified *Abatoɔ* game motivate leaners to learn?

The second research question was to find how the modified *Abatoɔ* game will motivate learners' to learn. To answer this research question, responses from feedback cards given to learners after each game were used for the analysis. Tables 3, 4 and 5, shows responses from feedback cards from learners about the modified *Abatoɔ* game.

Table 3: Results From Class One (1) Feedback Cards

Views	Number of Pupils
1. **I like the colours**	4
2. **It attracts me to learn**	4
3. **I like everything about the game**	3
4. **It makes me happy**	2
5. **It is difficult to play**	1
Number of Pupils who responded	**14**
Number of Pupils who did not respond	**6**
Total Number of feedback cards issued to Pupils	**20**

Table 3 reveals the feedbacks received from Class One pupils at the end of three game sessions. Out of the total number of pupils thus, forty (40), Twenty (20) feedback cards were issued out to pupils who participated in the game, of which fourteen (14) feedbacks were received and six (6) not received. This suggests that the majority of the participants gave their views on the exercise. The table further indicates five (5) major views out of which the majority of the participants hinted that they like the colours (4 pupils) and it attracts them to learn (4 pupils). These views topping the table suggest that Class One Pupils fancy colours and the game also induce them to master learning contents integrated into the game. It further indicates how effective the modified game is, towards achieving educational goals. This notwithstanding, one (1) person thinks the game is difficult to play. It could mean that the person has no interest in the learning contents integrated into the game.

Table 4: Results From Class Four (4) Feedback Cards

VIEWS	NUMBER OF PUPILS
1. It is educative	9
2. I like the inclusion of quiz in the game	8
3. It forces me to learn	8
4. It difficult to throw the marker into grid 4 to grid 8	2
5. It exercises my muscles	2
6. I like everything about the game	2
7. I don't like the hooting and shouting when one goes wrong	2
8. It is a game for girls not boys	1
9. I don't like this game at all	1
10. It is colourful	1
Total Number of pupils reached	**36**

Table 4 presents the feedbacks received from Class Four pupils at the end of three game sessions. Out of forty-six (46) pupils, forty (40) feedback cards were issued to first 40 participants of the game from which thirty-six (36) feedbacks cards were received and four (4) not received. This indicates another rise in pupils' views about the modified game. From the table, the first three feedbacks are in support of the use of educational games as a teaching and learning tool, in which various learning contents could be integrated towards achieving educational goals. Based on this, it could be stated emphatically that, the modified version of the *AbatoƆ* game has met its set objectives. Furthermore, only one (1) pupil, showed dislike for the game. This probably might be due to the learning content integrated into the game.

Table 5: Results From Class Six (6) Feedback Cards

VIEWS	NUMBER
1. It is educative	8
2. I like the inclusion of quiz in the game	6
3. It forces me to learn	6
4. It exercises my muscles	5
5. It difficult to throw the marker into grid 4 to grid 8	4
6. I don't like the hooting and shouting when one goes wrong	3
7. It refreshes my mind	2
8. It is a game for girls not boys	1
9. I don't like this game at all	1
10. I am fat; I can't hop and get tied easily	1
11. The questions are difficult	1
12. It helps me to socialize with others	1
Total Number of pupils reached	39

Table 5 outlines the views received from Class Six (6) pupils after going through the modified game for three sessions. Out of forty-three (43) pupils in a class, forty (40) feedback cards were issued to participants, out of which thirty-nine (39) were received, and only (1) not received. This again indicates a significant rise in pupils' views about the educative aspect of the modified game as compared to that of Classes One and Four. The first view on the table (it is educative) confirms again that the modified game has shifted from playing for fun to achieving an educational goal. It also suggests that pupils saw much interest in the educative aspect of the game which is supported by the second view on Table 4 (I like the inclusion of quiz in the game). The third view (it forces me to learn) which also had six (6) pupils expressing that view suggests that the game perhaps gingered them to revise their notes before the commencement of each game session to be able to answer questions from the chart. In addition to this, feedback 7 (it refreshes my mind) also indicates and confirms how the game helps pupils to ease tension after being indoors for quite a long time. This view is, however, thigh closely to that of Keith & Kevin (1997), who hinted in the literature of chapter two that, "there is a sound mind in a sound body".

Results from Observation

On day one when the game was played without learning content fused into the Question Chart, almost every pupil wanted to partake in the gameplay. On the subsequent days, when the game was strictly played in full with questions integrated through the Question Charts, pupils' zeal to play the game somehow reduced as some were reluctant to answer questions from the chart. This suggests that pupils are more exposed to entertainment games (played just for fun) as opposed to educational games (a merger of both fun and Education) in which children might acquire knowledge in subject areas such as mathematics, English language, Science, and a host of others. This attitude however changed, in the second week when pupils have understood the essence of learning games. This was evident from the way some learners took their test and notes books with them and read anytime there was a game session. This suggest that the modified *AbatoƆ* game motivated learners to revise what they have been taught in class before engaging in the game. This might again improve teaching and learning in the school. Furthermore, the eagerness on the part of students to play the game escalated when competition among boys and girls was introduced. This compel learners to learn in groups according to gender in order to answer all question for the chart correctly. This observation again indicate how learners were enthused to learn by the introduction of the modified *AbatoƆ* game.

Conclusion

The study concluded that, the modified *AbatoƆ* game used as a Game-Based Learning approach have the potential of improving teaching and learning at the basic level of education, by way of motivating learners to learn, reinforcing learners understanding on learning concepts, reducing the workload on teachers and promoting integration of different learning contents.

Recommendation

Based on the findings of the study, the following recommendations have been made;

i. Teachers must adopt and use educational games to teach learning contents to motivate learners to learn and reinforce their understanding of learning concepts.
ii. To reduce the workload on teachers, it is recommended that teachers modify some other traditional games and use as a pedagogical strategy at the basic school level.

Suggestion for further Research

This study was done with the Ghanaian Traditional *AbatoƆ* game with Basic School pupils from M.A. Bediako Adventist Preparatory School (APS), Amakom-Kumasi in the Ashanti Region.
The researchers therefore recommended that, similar studies be done using other traditional games in other schools to ascertain what the situation may be.

Acknowledgments: The researchers appreciate the kind assistance given them by the Authorities of Amakom SDA Preparatory School, Kumasi-, who willingly offered pupils for the study and shared their views on the modified game. The researchers also appreciate the kind assistance given to them by St. Louis College of Education and Offinso College of Education for carrying out his research activities.

Conflicts of Interest: The authors declare no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

Disclaimer Statement

This paper is solely the product of a concerted effort of the researchers to modify the Ghanaian Traditional *AbatoↃ* game to support Formal Education using a Game-Based Learning (GBL) approach.

Author Bionote

Victor B. Nimoh received an MA Degree in Art Education from Kwame Nkrumah University of Science and Technology Kumasi, Ghana in 2011. His MA research focused on developing Traditional games into learning or Educational Games. His primary interest is to develop new pedagogical skills to support formal education. His research and teaching interests include theory and practical application of acquired knowledge. Victor is currently an Art Education Lecturer at St. Louis College of Education, Ghana. He is also the Head of the Department of Vocational Education, and a member of several Committees including the Academic Board Committee.

William K. Nantwi is an experienced Art teacher with a demonstrated history of exploring the right pedagogical approaches in Art education. Skilled in contemporary Art, Art Pedagogy, Graphic Design and Public Speaking. William is a strong research professional who serves as an Editor for African-British Journalistic, European Journal of Education Studies, and a member of the European Centre for Research Training and Development-UK. He is currently studying for a Doctor of Philosophy – PhD focused in Art Education from Kwame Nkrumah University of Science and Technology.

Authorship and Level of Contribution

Victor B. Nimoh is the principal investigator for this study. He abstracted the research idea, wrote its proposal, developed the research instruments, led the collection of the data for the study and the writing of the manuscript. William K. Nantwi assisted with the organization of the interviews, the observations, and analysis of the data generated for the study. He also assisted with the data collection and final writing of the manuscript.

References

Anthony D. P., & Kentaro, K. (2001). A Short-Term Longitudinal Study of Children's Playground Games across the First Year of School: Implications for Social Competence and Adjustment to School. *American Educational Research Journal*, 39(4), 991-1015. https://www.jstor.org/stable/3202452

Avedon, E. M., & Sutton-Smith, B. (1981). *The study of games*. New York, NY: John Wiley & Sons, Inc.

Brutus (2009). *Hopscotch origin*. https://www.streetplay.thegame.com

Caillois, R. (1961). *Man, play, and games*. New York, NY: Glencoe.

Campbell, D. M., & Harris, L. S. (2001). *Collaborative theme building: How teachers write an integrated curriculum*. Boston: Allyn & Bacon.

Dewey, J. (2009). Training: Using games to embed learning. https://www.thetrainingworld.com/

El-Shamy, S. (2001). *Training games: Everything you need to know about using games to reinforce learning*. https://www.stylus.styluspub.com/

Garris, R., Ahlers, R., & Driskell, J. E. (2002). Games, motivation, and learning: A research and practice model. *Simulation & gaming*, *33*(4),441-467. https://sag.sagepub.com/content/33/4/441.full.pdf

Gee, J. P. (2014). *What video games have to teach us about learning and literacy*. New York, NY: Palgrave Macmillan.

Huizinga, J. (1955). *Homo Ludens*. Boston, MA: The Beacon Press.

Isbister, K., & Schaffer, N. (2008). *Game usability*. New York, NY: Morgan Kaufmann.

Julie & Kar (2009). *Hopscotch variations*. https://www.topic-mag.com

Keith & Kevin (1997). The importance of playing games with your preschooler: Building skills while playing games. https://www.familyeducation.org

Kinnerk, P., Harrey, S., MacDonncha, C., & Lyons, M., (2018). A review of the Game-Based Approaches to coaching Literature in Competetive team Sports Setting. www.researchgate.net.

Klopfer, E., Groff, S. J., & Haas, J., (2009). Using the Technology of Today, in the Classroom Today: The Instructional Power of Digital Gaming and Social Networking and How Teachers Can Leverage It. Researchgate. http://www.researchgate.net.

Lankford, M.D. (1992). *Hopscotch around the world*. New York: Junior Books.

Liegh, A. (2008). *Games as Art, but at what cost*. https://www.kotaku.com/

Light, R (2015) Self-directed learning of TGfU and the influence of mentor teachers during practicum in Portugal. University of Canterbury Research Repository. https://ir.canterbury.ac.nz/handle/10092/11100 (accessed 1 June 2017)

Marri (2009). Hopscotch game. Available at https://www.topic-mag.com/

McNamee, T. (2009). How to play hopscotch. Available at https://www.topic-mag.com/

Mead, K. (2011) Game-Based Learning and intrinsic Motivation. California State University, Fullerton. IDT 520, Section 09

Perrotta (2013). Game-Based Learning; Latest Evidence and Future Direction.
ResearchGate. https://researchgate.net/publication/268445246

Prensky, M. (2001). Digital Game-based Learning (1 ed.). Two Penn Plaza, New York, NY 10121: McGraw Hill.

Rheanna, O. B. (2008), How To Play Hopscotch: Learn the Basic Rules. https://www.*parents.com/*

Rowe, M. W. (1992). *Definition of Game*. Cambridge: Cambridge University Press. http://www.jstor.org/stable/3751702

Shaffer, D. W., Halverson, R., Squire, K. R., & Gee, J. P. (2005). Video games and the future of learning (WCER Working Paper No. 2005-4). Madison: University of Wisconsin–Madison, Wisconsin Center for Education Research (NJ1).

Sluckin, A. (1981). *Growing up in the Playground: The Social Development of Children*. London: Routledge & Kegan Paul.

Sportsknowhow (2020). Hopscotch Ball Court Dimensions. https://www.sportsknowhow.com

Sutton-Smith, B. (1973). *The Folk games of children*. Austin: University of Texas Press.

Takacs, G. & Sugar, S. (1999). *Games That Teach Teams: 21 Activities To Super-Charge Your Group*!. London: Wiley & Sons

Tinning, R., & Hunter, L. (2006). Using iPads to improve pre-service teacher's engagement, confidence and knowledge when teaching movement skills in physical education. *Journal of Physical Education, Recreation and Dance, 82*(8), 7. https://www .acu.edu.au

Van Eck, R. (2006). Digital game-based learning: It's not just the digital natives who are restless. *Educause Review*, 41(2).

Watters & Carolyn (2005). Games genre evolution for educational games [On-line abstract. https://www.ir.lib.sfu.ca/

Yaman, D. & Covington, M. (2006). I'll Take Learning for 500: Using Game Shows to Engage, Motivate, and Train. Wiley & Sons, Incorporated. https://www. https://books.google.com.gh/