

Games: An Educational Technology Instructional Media toward Effective Teaching and Learning in Ekiti State Secondary Schools.

Ajayi, Opeyemi¹, Okoh, Maureen O.², & Adeoye, Ayodele J.³

¹*Ekiti State University Faculty of Education, Department of Vocational and Technical Education*

²*Federal University of Oye, Faculty of Education*

³*Ekiti State University, Faculty of Education, Department of Vocational and Technical Education*

Abstract: This study investigated games as an educational technology instructional media towards effective teaching and learning in Ekiti State Secondary Schools. Descriptive research design of the survey type was employed. The population of the study was 250 students in senior secondary schools in Ekiti State, using multistage sampling techniques. A self-design questionnaire titled "Students Educational Games Questionnaire SEGQ" contains three sections used to elicit information from the respondents which consist of 25 items. Section A is to know the impact of games as an educational technology instructional media. Section B is for students' attitude toward games as an educational technology instructional media. Section C is Educational Technology Instructional Media Performance Test (ETIMPT). Both face and content validity were satisfied by experts after the construction of the instrument. A test-retest method was used through the administration of the instrument to 20 respondents outside the sample within 2 weeks to obtain a reliability coefficient of 0.86. The data obtained through the research questions were analysed using frequency count and percentage. The result of the study indicated that games as an educational technology instructional media have a great impact on students' performance and produced effective teaching and learning in secondary schools in Ekiti State. It also indicated a positive attitude of students toward games as an educational technology instructional media which motivated the students to study well. It further shows that games as an educational technology instructional media enable students to be creative, innovative, initiative, problem-solver and have deep knowledge about the content of the subject matter. Specifically, the study sought to: - investigate the impact of games as an educational technology instructional media on teaching and learning; determine whether there will be any improvement in the student's academic performance with the use of educational technology instructional media and examine students' attitude toward games as an educational technology instructional media during teaching and learning activities. The findings of this study will be of immense benefit to students, teachers, parents, school administrators, curriculum planners, society and prospective researchers. It was concluded that educational technology instructional media make use of all available resources (human and non-human) in the environment to facilitate teaching and learning, innovative strategies like games are rich sources of knowledge to teach tolerance, reality of life, behaviour modification and role modelling unconsciously. Implementing the concept of gaming in education has a lot of opportunities and many types of games that could be made use of during teaching and learning process

which include problem solving, jigsaw puzzle, simulation, Brain Teasers, Sliding puzzle and tutorials based games. It was recommended that, if games are encouraged, they relax, stimulate and enhance learning without stress in a humorous way. It was also recommended that teachers should make use of games to liven up teaching and learning processes. Also, students should be guided towards the use and types of games to involve in and time of playing such games should be monitored in order not to abuse the opportunity of playing games. Moreover, parents should encourage their wards to engage in playing educational games to bring reality to teaching and learning processes.

Keywords: Games, Technology, Media, Instruction, Teaching, Learning

I. INTRODUCTION

Teaching and Learning on the part of both teachers and students require concerted efforts to be able to achieve the required or expected objectives. It is more tasking when the learning contents are perceived to be abstract to the learners, that is when students can not readily relate with instructional contents within their everyday experience. Hence, the need for carefully selected media material(s) that can assist in the transmission of learning contents to learners (Obielodan, 2014)

Media are all means by which information can be disseminated by a sender to a receiver within the same or different locations. When these media are used for the purpose of teaching and learning, then media become instructional media (Obielodan, 2014)

Instructional media encompass all the materials and physical means an instructor might use to implement instruction and facilitate students' achievement of instructional objectives (go.roguecc.edu). Instructional media could also be defined as human and non-human devices, material or methodological used by teachers to overcome all learning problems, including noise factors.

Instructional media is a collection of materials including animate and inanimate objects, human and non-human materials that a teacher uses in the teaching and learning situation to concretize learning experiences so as to make learning more exciting, interesting and interactive to all

categories of learners with the ultimate aim of achieving the learning objectives. When the instructional media are rightly used by the teachers in any teaching and learning situations, it makes teacher's job easier and makes presentation of facts clearer to learners. It assists the teachers in presenting, explaining, disseminating and delivery learnable facts effectively and efficiently.

Also, the use of instructional media makes learning interactive, stimulating and motivating to the learners. It ensures that all categories of students are properly carried along in the teaching and learning situations and students are able to grasp difficult learnable concepts. A good instructional medium is like a window whose duty is to let in light for clearer presentation of instructional contents. Teachers need instructional media in their teaching and learning situations to illuminate contents to aid students' achievement of instructional objective (Obielodan, 2014)

Instructional media cover whatever the teacher uses to involve all the five senses of sight, hearing, touch, smell and taste while presenting lessons, (Azikiwe, 2007). Also, Adegun (1997) say instructional media are things which are intended to help the teacher to teach more effectively and enable the students to learn more readily. From educational psychologists that every person learns by receiving information through the sense organs such as the ears, eyes, nose, mouth and tongues; and hands and skin. There is a relationship between the quantity of information we remember and the sense organs being used. Students learn skills, concepts and ideas better when they try them out in practical (www.nzdl.org). The importance and relevance of instructional media materials in teaching and learning situations cannot be overemphasized. But care must be taken to ensure that the essential benefits the instructional media help bring is not lost due to poor application or wrong selection.

Games are students centred learning strategies that employ humour to hold attention and engage learners emotionally and intellectually; games consider the need, interest, ability and age of students to enhance learning through play, which is a useful tool for learning (Soetan, 2014). Piaget (1965) viewed play as manifestation of assimilation and mental process to intellectual growth. Play is self-initiated and it is essential to human development because it is part of growth. Ginsburg (2007) described play as an important element for healthy child development including learning development. Play, if properly guided suites, motivates, subsumes learners to learn tolerance, reality of life, behaviour modification and prepares learners for the task ahead. These strategies involve systematic learning from simple to complex.

Games are methods of learning towards behavioural change when used. Salmon (2004) described play-way method as an instructional approach that involves engaging students in activities that bring pleasure or enjoyment to them. It infers that both old and young learn through play involve a sense of

humour. Gentry (1994) is concerned with the overall methodology and set of techniques employed in the application of instructional principles. Usually, games incorporate "fun" which allows students to be freely involved in learning activities in and outside the classroom, it teaches patience, perseverance and practical life experience.

Games are full of activities of learning towards behavioural change, involving active participation of learners, learning are able to express themselves freely without hindrance, and learners interact freely within the environment where learning activities take place (Soetan, 2014). Ogunmilade (1991) posited that games provide necessary direction, explanation and demonstration to enable learners process and rearrange the information. Learners can contribute and be part of the learning business not just listener. Sometime learners have control over their learning by designing learning and teaching styles most suitable to them. Games encourages interaction through self-discovery whereby learners are made to partake, criticize and solve problems. AECT (1977) supported that games enhance learning while the environment where learning takes place is utilized. Also Ogunmilade (1991) opined that interaction through self-discovery is encouraged as the individual is actively engaged by processing learning and this may involve one or more students at a time.

Driscoll (2005) opined that learners should not be seen as empty vessel to be filled but seen as active organism seeking meaning. Learners are part of teaching and learning activities. Learners can think, contribute and be part of teaching and learning processes rather than being just a passive listener. Teachers act as guide while students are meaningfully engaged. Students are relaxed and are able to express themselves freely thereby hidden talents can be discovered. These strategies teach all subjects if properly used from early childhood class to tertiary level. In order to employ these strategies, the teacher must find out its appropriateness, adaptability and mastery of the use. A teacher should have tested the media before using it in the class.

Games are types of fun learning activities which one or more persons can participate in. Games serve to assist learners to achieve goals using problem solving skills and also to find solution to problem, encourage productive and healthy rivalry, tolerance, reality of life and emotional stability. Games are entertaining, motivating, and pleasurable learning strategies that involve competition. Games are universal exercises that are present in all cultures- Yoruba, Hausa, and Ibo and even in the western world. It is a structured playing tool undertaken for enjoyment and for education; sometimes games can be seen as a task because it has rules and regulations, number of players, challenges and so on (Soetan, 2014). Encarta (2009) described games as activities governed by sets of rules. People engage in games for recreation to develop mental or physical skills. Games enable people to think critically, analyze issues and develop mental alertness.

Squire (2002) and Gee (2003) noted that interactive digital entertainment games are powerful untapped medium for learning. Games should be encouraged but players should be guided on the type of game to play, time limit, and the reason for playing it. If games are encouraged, it relaxes, stimulates and enhances learning without stress in a humorous way. This is supported by developmental psychologists that claim play can be a useful mechanism and the deprivation of it can impede cognitive and creative growth.

Games require time, space and expected outcome if properly guided. It adds humour to learning especially when new concepts are introduced to motivate learners in improving their performance. Parents and teachers should encourage and guided learners towards use of games to learn. Games can be produced from – cardboard, plastic NMC, and so on. Players are to be time conscious and work towards achieving the necessary goal (Soetan, 2014)

Games for Educational Instruction

All games can be considered as a branch of educational simulation. The game types depend on the environment where learning is taking place. Examples of such games include “Ayo”, “Whot”, “Scrabble”, “Mastermind”, “Chess”, “Draft”, “Ludo”, “Adventure games – Zuma”, Word Cross” and so on (Soetan, 2014). Also, games can be any of these: Sliding Puzzle, Brain Teaser, Word Search and jigsaw puzzle.

- ★ Single player games – One battles with the game alone against his own time skills. Usually it is to engage oneself with an artificial opponent. It may be for recreation
- ★ Competitive games – This involves one or two opponents that requires competition
- ★ Sports – Requires equipment, playing field and spectators who watch such games for recreation.
- ★ Table top games – These kinds of games are usually played on a table, for example Ludo. The brain coordinates the hands to carry out the exercise.
- ★ Board games – These require a surface designed for its kind. For example, Chess, Go and Draught for draft
- ★ Card games – These use a deck of cards as the tool. Example, they are played with a small selection of cards that has been collected or purchased from large available sets
- ★ Dice games – It uses a number of dice as the central indicator of persons standing in the game. It involves a high degree of luck, example, “Yahtzee”, “Bunco”, and “Ludo”. Dice can be used to improve numeracy skills
- ★ Video games – Computer or Microprocessor controlled games. It uses one or more input devices like USB game pads, joystick, and so on. “Pong” was a simple simulation of table tennis.
- ★ Simulation games – Represent /Simulates an environment accurately. They represent interactions

between playable characters and the environment realistically. Such games include “SimCity”, “Tiger Woods PGA Tours” also “Flight and Driving simulations business”

- ★ Online games – Are played using internet connections while others require a web browser. Example, internet checkers
- ★ Role playing games – Refers to a type of game in which participations usually assume the roles of characters acting in a fictional setting, example, monopoly
- ★ Computer games – Games played on computer that does not necessarily require internet connections
- ★ Mathematics games – These are games that are played to stimulate interest of learners towards mathematics
- ★ Biblical games – These are games that are played to stimulate interest of learners towards reading of Bible.

Procedures for playing instructional games

1. Roles of playing and scoring must be well stated
2. It must be structured to encourage active participation of the learners
3. Time limit should be set as well as number of players to be made known at the beginning of the game
4. Students must have specific instructional goals of the game
5. Students must be guided towards the rules of the game
6. The game must be activity based and within a time limit so as for it not to be a waste of time and effort.
7. The game must follow discussion based on the achievement of the set goal
8. The goal must be achieved

Roles of games in Education Instruction

The roles of games in education instruction can not be overemphasis in teaching and learning process. Games encourages holistic learning through active participation of learner to achieve the set goal; all the senses are involved which makes students to be absorbed in learning; It reduces tension and adds humour to learning; It encourages healthy rivalry that is, everyone tends to compete, putting in their best to perform well; Games entertain and educates therefore students are gainfully occupied; It helps to deal with unpredictable circumstances; Students are able to practice the skills with immediate feedback; It can be incorporated to various instructional situation to stimulate / motivate learners; It caters for the slow and faster learners as individual students work at their own pace and It enables students to think and reason very well.

Limitations of games in Instruction

The following are the limitation of games in education instruction. Games can be impossible to play if guidance is

not provided; damage or loss of any part may render it unusable; it can be time wasting if not well directed or guided; learner focus could be shifted to winning rather than learning, especially if the rewards assume more significance; shift employers' focus from collaboration and diminishes the importance of cooperation and sharing ideas with the students

Moodle (Modular Object-Oriented Dynamic Learning Environment) will be used to make the game easily accessible. According to (Robb, 2004), Moodle is a dynamic learning environment which can be used to balance traditional methods of teaching with online teaching. Moodle is an open-source platform which provides a flexible and user friendly environment that can be accessed on any device. Students can log in to Moodle using their already existing usernames and passwords and access the game by clicking on the link that will be provided to access the ProProfs platform.

Games could be played physically and also online games could be played at the following sites:

- <http://school.demo.moodle.net/course/view.php?id=59>
- <http://www.proprofs.com/games/player/1932848/>

Statement of the problem

The problem of this study is predicated against the researchers' personal observation that classroom teaching and learning process alone seems not sufficient enough for students to perform maximally in their academic pursuit. The researchers' also, observed that the teaching method explored by the teachers appears not to be effective for students to gain proper understanding and assimilate the subject content during classroom activities of teaching and learning. Observation shows that students appear not to be active and attentive during Educational technology instructional activities in classroom. Conventional teaching, this may attribute to how students' performance tends toward negative due to abstractive nature of the conventional teaching method.

Purpose of the Study

The study was out to examine Games as an educational technology instructional media toward effective teaching and learning in Ekiti State secondary schools. Specifically, the study sought to:

- i. investigate the impact of games as an educational technology instructional media to teaching and learning;
- ii. determine whether there will be any improvement in the student's academic performance with the use of educational technology instructional media and
- iii. examine students' attitude toward games as an educational technology instructional media during teaching and learning activities.

Research Questions

1. What is the impact of games as an educational technology instructional media towards effective teaching and learning in Ekiti State Secondary Schools?
2. What is the attitude of students toward games as an educational technology instructional media during teaching and learning in Ekiti State Secondary School?

Significance of the study

The study will be of immense benefit to students, teachers, parents, school administrators, curriculum planners, society and prospective researchers.

The study will be of help to students to improve their performance through the use of games as an educational technology instructional media. Also, games will be of help to students in such that games will make the such student an active listener during teaching and learning classroom activities. The study would provide information that could help teachers to know the important of games in effective teaching and learning. The study will also help the parents to understanding the use of games in education of their wards so as to allow their wards to participate in playing educational games and make it available for use at home. The study will further help the school administrators to provide different educational games to students and make it available for use during teaching and learning to improve students' performance. The study will be a great benefit to the prospective researchers since it will expose them to the importance of games in education and equip them more information that will help carry out further research.

II. METHODOLOGY

Descriptive research design of the survey type was employed. The population of the study was 250 students in senior secondary schools in Ekiti State, using multistage sampling techniques. A self-design questionnaire titled "Students Educational Games Questionnaire SEGQ" contain three section was used to elicit information from the respondents which consist 25 items. Section A is to know the impact of games as an educational technology instructional media. Section B is for students' attitude toward games as an educational technology instructional media. Section C is Educational Technology Instructional Media Performance Test (ETIMPT). Both face and content validity were satisfied by experts after the construction of the instrument. A test-retest method was used through the administration of the instrument to 20 respondents outside the sample within 2 weeks to obtained reliability coefficient 0.86. The data obtained through the research questions were analysed using frequency count and percentage.

Administration of instrument

The researchers sought permission from the schools' principal and other staff. The questionnaire was administered on the students. They were required to complete the questionnaire given to them and return immediately after completion to the researchers.

III. RESULTS

The results are presented as follows

Research Question 1

What is the impact of games as an educational technology instructional media towards effective teaching and learning in Ekiti State Secondary Schools?

Table 1. Percentage responses of students on the impact of games as an educational technology instructional media towards effective teaching and learning in Ekiti State Secondary Schools

S/N	ITEM	AGREE	DISAGREE
1.	Games help me to pass my examinations very well	152 (60.8%)	98 (39.3%)
2.	Game help me to understand the content subject very well	161 (64.4%)	89 (35.6%)
3.	Games enhance my performance	189 (75.6%)	61 (24.4%)
4.	Games take a lot of my time	154 (61.6%)	96 (38.4%)
5.	Games distract me from studying	153 (61.2%)	97 (38.8%)
6.	Games increases my reasoning ability	163 (65.2%)	87 (34.8%)
7.	Games help me to have active participant	171 (68.4%)	79 (31.6%)
8.	Games help me to assimilate fast	169 (67.6%)	81 (32.4%)
9.	Games help me to interact with other students within the classroom activities	154 (61.6%)	96 (38.4%)
10.	Games help me to quickly remember content of the subject matter	164 (65.6%)	96 (34.4%)

The result in Table 1 shown that majority of the students (75.6%) are of the view that games as an educational technology instructional media enhance their performance and games have positive impact on their performance.

Research Question 2

What is the attitude of students toward games as an educational technology instructional media during teaching and learning in Ekiti State Secondary School?

Table 2: Percentage responses of students toward games as an educational technology instructional media

S/N	ITEM	AGREE	DISAGREE
1.	The use of educational games motivate me to study very well.	175 (70%)	75 (30%)
2.	The use of educational games improves my interest in learning new things.	165 (66%)	85 (34%)
3.	I desire to learning new things about content of the subject matter.	154 (61.6%)	96 (38.4%)

4.	Learning is fun and active to me using educational games	167 (58.8%)	83 (41.2%)
5.	Educational games makes classroom activities bore to me.	172 (68.8%)	78 (31.2%)
6.	Students have good interaction with teacher and others students using educational games.	126 (50.4%)	124 (49.6%)
7.	Educational games help me to have deep content knowledge of subject matter.	160 (64%)	90 (34%)
8.	Using educational games help me to be creative and innovative.	151 (60.4%)	99 (39.6%)
9.	Using educational games help me to be initiative in reasoning.	156 (62.4%)	94 (37.6%)
10.	Using educational games help me to be problem solver.	157 (62.8%)	93 (37.2%)

The result in table 2 show that majority of the students (70%) are of the view that games as an educational technology instructional media motivate them to study very well, learn on their own and have positive effect on students' attitude to learn new things.

IV. DISCUSSION OF RESULT

The result of the study indicated that games as an educational technology instructional media has great impact on students' performance and produced effective teaching and learning in secondary schools in Ekiti State. It also indicated positive attitude of students toward games as an educational technology instructional media which motivated the students to study well. It further show that games as an educational technology instructional media enable students to be creative, innovation, initiative, problem-solver and have deep knowledge about content of the subject matter.

V. CONCLUSION

Educational technology instructional media make use all available resources (human and non-human) in the environment to facilitate teaching and learning, innovative strategies like games is rich sources of knowledge to teach tolerance, reality of life, behaviour modification and role modelling unconsciously. Implement the concept of gaming in to education has a lots of opportunities and many types of games that could be make use during teaching and learning process which include problem solving, jigsaw puzzle, simulation, Brain Teasers, Sliding puzzle and tutorials based games.

VI. RECOMMENDATIONS

Based on the findings of the study, it therefore recommended that if games are encouraged, it relaxes, stimulates and enhances learning without stress in a humorous way. It was also recommended that teacher should make use of games to liven up teaching and learning process. Also, students should be guided towards the use and types of games to involve in and time of playing such games should be monitor in order

not to abuse the opportunity of playing games. More so, parents should encourage learners to involve in playing games to bring reality to teaching and learning process.

REFERENCES

- [1] Association for Educational Communication and Technology (AECT), (1977). *The Definition of Educational Technology: A summary*. Washington, DC.: AECT
- [2] Azikiwe, U. (2007). *Instructional Media for Effective Teaching and Learning* Blog.commlabindia.com: when games may not work: Limitations of Game-based learning
- [3] Boyle, S. (2011). *Teaching Toolkit: An Introduction to Games based learning*. UCD Dublin, Ireland: UCD Teaching and Learning/ Resources. Retrieved from <https://www.ucd.ie/t4cms/UCDTLT0044.pdf>
- [4] Driscoll, M.P. (2005). Trends and Issues in Instructional Design and Technology. In Reiser R.M.A., & Dempsey, J.V. (Eds.), *Upper Saddle River, NJ: Pearson. Educational game* – <https://en.m.wikipedia.org>.
- [5] Encarta Encyclopedia (2009). In *Critical Issues in Educational Technology*. Edited by Yusuf M.O. & Onasanya S.A.: Department of Educational Technology, University of Ilorin.
- [6] Gentry C.G. (1994). *Introduction to Instructional Development*. Belmont, CA: Wadsworth Publishing
- [7] Ginsburg K.R. (2007). *Importance of Play in Promoting Healthy Child Development and Maintaining Strong Parent-Child Bond*. Official Journal of the American Academy of Pediatrics
- [8] Obielodan, O.O. (2014). *Instructional Media: Typology and Relevance in Instruction*. *Critical Issues in Educational Technology*. Edited by Yusuf M.O. & Onasanya S.A.: Department of Educational Technology, University of Ilorin.
- [9] Ogunmilade, C.A. (1991). *Principles and Practice of Educational Technology in Critical Issues in Educational Technology*. Edited by Yusuf M.O. & Onasanya S.A.: Department of Educational Technology, University of Ilorin.
- [10] Piaget, J. (1965). *The Child’s Conception of Number*. New York: WW Norton and Company Inc. RCC Instructional Media – <https://go.roguecc.edu>
- [11] Robb, T. (2004). Moodle: A Virtual Learning Environment for the Rest of Us. *TESL-EJ*, 8(2), 1-8.
- [12] Salman, M.F. (2004). *Fundamental Principles and Practice of Instruction* edited by Abimbola I.O. & Abolade A.O.: Department of Curriculum and Educational Technology, University of Ilorin, Ilorin, Nigeria.
- [13] Soetan, A.K. (2014). *Games, Simulation and Cartooning in Instruction*. *Critical Issues in Educational Technology*. Edited by Yusuf M.O. & Onasanya S.A.: Department of Educational Technology, University of Ilorin. www.nzdl.org.