

**GAMIFICATION IN HOME ECONOMICS EDUCATION TO ENHANCE
STUDENTS' DRAWING AT MPOHOR SENIOR HIGH SCHOOL**

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DECLARATION

I hereby declare that this submission is my own work towards the MPhil Art Education degree and that to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the university, except where due acknowledgement has been made in the text.

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ABSTRACT

Drawing is an important component in the General Knowledge in Art (GKA) syllabus and also an integral requirement in the WASSCE results. Most students offering the GKA as an elective subject sees drawing as canker. Comparably, Visual Art students offering GKA have an upper hand on their Home Economics counterpart who are also studying the subject: with reasons that, the Visual Arts students draw in other art-related subjects such as Picture Making, Sculpture, Graphic Design among others. Most Home Economics Students offering GKA develop a phobia for drawing; while others omit GKA and choose its alternative elective, because of how it is taught in the various secondary schools in Ghana. Grounded on these verdicts, the researcher espoused Gamification as an intervention to aid teaching and learning of drawing at the SHS level. This study identified and analyzed the teaching activities in teaching and learning of drawing; to implement Gamification as an instructional strategy in teaching and learning of drawing for Home Economics students; and also evaluate the effect of Gamification as an instructional strategy in teaching and learning of drawing for. The study employed the mixed-method research design; descriptive and quasi-experimental research methods. Participant observation, interviews and questionnaires were employed to gather and scrutinize data in the classroom environment of Home Economics second years class in Mpohor. It also weighed the effectiveness of the gamification as a mediation to improve concentration and enactment among Home Economics students offering GKA. Purposive sampling was espoused to sample fifty nine (59) Home Economics students and two (2) GKA teachers as respondents. The sample teachers were guided on the designing of definite objectives; how to choose appropriate teaching methods and approaches. The introduction of gamification heartened vigorous, participatory and collective learning by engaging students in the study of drawing in GKA. The gamification intervention transformed the classroom subtleties and promoted innovative teaching and learning methods. The gamification model also increased student-teacher interactivity; curved the students into inspired lively learners, and augmented the level of students' engagement in learning drawing. The research concluded that gamification offers a great perspective on existing methods of teaching. The researcher recommended the following: GKA teachers should move towards learner-centred approaches and engross in innovative ways of boosting up their teaching with numerous technological changes in order to make lessons collaborative, pleasurable and explicable; teachers should consider interactive based lessons, set reachable concise objectives and choose suitable teaching and learning resources from their immediate environment; GKA teachers should develop suitable formative and summative valuation methods and implement group teaching approaches considering the time allocated in order to make all students reach the accepted level of mastery.

DEDICATION

I dedicate this project to the Almighty God for his protection and mercy throughout the thesis. To my precious wife Mrs Ruth Baiden and my lovely mother Joana Bonney; my siblings Joseph Baiden, Benjamin Baiden, Daniel Boaitey Baiden and Mercy Baiden for their endless support.

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CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter serves as the foundation of the study where the various elements needed for the study are discussed. It establishes the background to the study, the statement of the problem, the objectives, the research questions, delimitation, definition of terms, abbreviations, the importance of the study and arrangement of the rest of the text.

1.2 Background to the study

Drawing is the act of making visual marks on a suitable surface using an appropriate medium and technique (Sarpong, 2008:66). To draw is one's ability to see critically an object placed before him. According to Lynch (2012), drawing helps in the following aspects of our lives: development of one's motor skills; helps one in making critical decisions; improve visual learning; develop one's inventiveness; improved academic performance; and also promote cultural awareness. Drawing can also be used as a means of communication. Drawing and gamification if combined together will produce many benefits for those receiving it.

Gamification is a process of integrating game mechanics into a situation that already exists to motivate participation, engagement and loyalty (Guta, 2017). According to Chou (2017), Gamification is the skill of deriving all the fun and addicting elements found in games and applying them to real-world or productive activities. Gamification serves as a tool, influences competitiveness to motivate people and also promotes intrinsic drives. Kapp (2012) opine that gamification is using game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning and solve problems. Marczewski (2013) also see gamification as the use of game metaphors, game elements

and ideas in a context different from that of games to increase motivation and commitment and to influence user behaviour. Looking at the usefulness of gamification, Zicherman, (as cited by Giang, 2013), opine that the use of game mechanics improves the abilities to learn new skills by 40%. Game approaches lead to a higher level of commitment and motivation of users to activities and processes in which they are involved.

Gamification in different situation such as business, education improves the quality of work output. In the field of business, it was used to motivate both workers and clients to give out their best for high productivity and sales. Mui (2016), articulate that, in the corporate world, Gamification can increase employee engagement, generate ideas through given of badges.

In the education setting, Gamification is sometimes referred to as gameful thinking, game principles for education, motivation design. To David (2016), it differs from game-based learning where students make own games or play commercially-made video games. Learners experience with games is translated into an educational context towards the goals of facilitating learning and influencing student behaviour. Using Gamification in the facilitation of drawing, students will feel ownership over their learning, learning will become visible through progress indicator, uncover intrinsic motivation for learning.

1.3 Statement of the Problem

Opoku-Asare, Agbenatoe & DeGraft-Johnson (2014) opine that General Knowledge in Art (GKA) is a mandatory subject for students offering Visual Arts in Ghana but an optional for Home Economics students. Disparate Picture Making, Graphic and similar Visual Arts subjects handled by expert teachers, GKA is vice versa. Anyone who has a certificate in Visual Arts related subject is deemed capable of delivering the GKA

curriculum effectively. This makes teaching and student accomplishment in this subject differs according to the fortes of teachers. GKA embraces both theory and practical topics designed to equip students. With practical topics, drawing is not an exception. Visual Arts students may have less difficulty in this regard since they draw in other electives like picture making, Sculpture etc. However, Home Economics students who choose this as an option with no basis in the drawing are made to draw since it is a necessity. This makes it very difficult for them to cope with the situation; some develop fear for the subject and others show little concern during drawing lessons.

According to McManus (2010), students drawing ability can be related to two things: copying simple forms and proportion and to draw from memory. It will have been good if most Home Economics students offering GKA had these abilities but in reality, it is not the case because of the phobia of drawing. They lack the needed knowledge to even draw basic forms like square, spheres etc. If the drawing of basic forms is a challenge, how then can they draw from memory? This set back affects their academic performance both in school and in their final General Knowledge in Art exams results.

Authorize examination body WAEC, has raised concern on the quality of students drawing in the General Knowledge in Art practical exams. According to chief examiners report (2015), it was said that most students drawing were very poor leading to the poor performance in their results. The chief examiner continued to say that, basic forms could not be drawn by most students and this was a failure on the part of the methodology used by teachers in teaching drawing. Again Opoku-Asare et al (2014) assert that ineffective teaching is a factor to the poor result in GKA. The traditional way of teaching drawing where either object is placed in front of students to draw or being asked to draw from their immediate environment has played a major role in this delinquent.

According to Csikszentmihalyi (2013), the most important approach toward a more creative life (drawing) is the fostering of interest and curiosity. However, this is often overlooked by Art teachers and yet want students to perform wonders when it comes to the drawing aspect of their teaching. Recognizing and engaging student's interests in the classroom will lead them to new discoveries and help sharpen their skills when it comes to drawing.

If drawing is undertaken in the absence of student interest, poor performance in their exams is likely to manifest. It is in this regard that, this thesis will focus on the implementation of Gamification as an instructional strategy in the teaching and learning of drawing and assess the academic achievements of Home Economics students in drawing lessons.

1.4 Objectives of the study

1. To identify and analyze the teaching activities in teaching and learning of drawing for Home Economics students.
2. To implement gamification as an instructional strategy in teaching and learning of drawing for Home Economics students.
3. Evaluate the effect of gamification as an instructional strategy in teaching and learning of drawing for Home Economics students.

1.5 Research Questions

1. What teaching activities are used in teaching and learning of drawing for Home Economics students?
2. How will gamification be implemented as an instructional strategy in teaching and learning of drawing for Home Economics students?

3. What are the effects of implementing gamification on the teaching and learning of drawing for Home Economics students?

1.6 Delimitation

The research will be limited to the teaching of drawing in GKA in Home Economics second-year class at Mpohor Senior Secondary School in the Mpohor Wassa District, Western Region, Ghana. In content-wise game mechanics (Badges, levels, rewards etc.) will be used in doing this.

1.7 Definition of Terms

The operational definitions of the technical terms used in this thesis are as follows:

Gamification: the use of game design elements in a non-gaming context.

Points: Running arithmetical assessment agreed for any solo act or combination of acts.

Badges: Physical symbols used to show the completion of numerous triumphs of an individual or group.

Levels: A structure by which participants are been rewarded a cumulative value for the buildup of points.

Leaderboards: It is used to display to participants their position in the gamified system.

Immersion: The acuity of becoming actually present in a non-physical world.

Onboarding: Training users on the rubrics and tools for playing the game.

Scaffolding: It is a support base system used to teach and engage users in self-regulated learning.

1.8 Abbreviations

GES: Ghana Education Service

CRDD: Curriculum Research Development Division

WAEC: West Africa Examination Council

SHS: Senior High School

GKA: General Knowledge in Art

2HE: Two Home Economics Class

T: Teacher

1.9 Importance of the study

- The research will unveil the importance of implementing Gamification as an instructional strategy and its effectiveness in the teaching of drawing.
- The research will open opportunities for more research to be done in the area of Gamification and how it enhances teaching and learning. It will also inform GES, CRDD to include other alternate instructional strategies in the curriculum when planning it.

1.10 Arrangement of the Rest of the Text

Chapter Two offers the theoretical and empirical review of literature pertinent to the subject of gamification in Home Economics education. Chapter Three deals with the methodology embraced for the research. Analysis of data is presented in Chapter Four while the summary, conclusions and recommendations of the study are transcribed in Chapter Five.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Overview

This chapter provides the germane literature on education, concepts of drawing, drawing techniques, methods of teaching drawing, learning styles learning theories, conceptual framework, technology in education, Gamification, Gamification models, game element in Gamification.

2.2 Concept of Education

Adu-Gyamfi & Adinkrah (2016) defines Education as the process of conveying knowledge for it to affect experiences, thoughts, proficiencies, norms, and beliefs, from an individual to another. It is generally accepted as the footing of civilization and development. Mayer (2001) orate that, education has two most essential aims thus to promote retention and to promote transfer which designates meaningful learning. He further explained retention as the capability to recollect what has been learned in the same manner at a given time as it was offered during teaching and transfer as the capacity to use what was acquired through learning to unravel new challenges, riposte questions or aid learning something new. According to Saeed (2018), Education is a process by which the innate potentials of a child are developed and expanded, in order for him to be advanced. In educating a person we try to offer him some needed knowledge, skills and others. For education to be effective in the classroom the presence of a teacher is needed. In support with this DeLuccia-Reinstein (2018) opine that the role of teachers in education surpasses the obligation of transferring information. He passes varied facts and proficiencies to students and encourages the social development of the child.

2.2.1 Home Economics Education

According to Kudonoo & Nyarko (2017), the majority of the populace in Ghana are naive about the merit of Home Economics in national development. This makes them disdain the course and profession. With this limited knowledge, they consider the course to be *'Stirring' (cooking), 'Sewing' and 'Sweeping' (maintaining the home)*. In disagreement, they believe that Home Economics helps in achieving optimum and sustainable living standards for a wide range of people. Home Economics can be a science and an art.

Falae (2017) orate that, Home economics sometimes referred to as a family and consumer sciences, is an area of education, which deals with management and economics of the community and home. Though it is normally associated with women it is wide open for all genders. The scope of Home Economics is cooking, child-rearing, community awareness and education, design and home management, textiles and sewing, economics and budgeting, hygiene and health. Laurel (2013) opines that the most essential facet of home economics education is the use of what has been learnt to foster growth. Its emphasis on personal development, decision making and intrapersonal skills. It also familiarizes the students to a wide range of prospective career paths.

2.3 Concepts of Drawing

Drawing is an artwork created from lines and tone with the aid of drawing instrument such as a graphite pencil, charcoal, coloured pencil and others on a suitable surface (Marion, 2018). Drawing is the physical manifestation of one's urge to create and communicate with elements of art by critically following the principles that govern art. It is a basic skill used in all the visual arts and design. In relating drawing to the artist, Mules (2011) sees drawing as an art form which is created by an artist by using line, colour and other elements of art. Both authors attest to the fact that for drawing to be done, there must be a mark on a surface

which defines a setting phenomenon. Drawing forms part of human development; starting from a child making visual marks on any available surface to a professional artist making a strong statement on an impending issue with his medium.

2.3.1 Types of Drawing

According to Marion (2018), drawing can be categorized into types ranging from more representational to more abstract; realistic, symbolic, and expressive.

1. Realistic Drawing

Realistic drawing deals with capturing what we see with our eyes and representing the three-dimensional object onto a two-dimensional surface using the elements of art.

2. Symbolic Drawing

This is the direct opposite of realistic drawing thus representing a seen object with lines, marks, or shapes. These emblems can stand for something else in a work of art. Symbolic drawings can still be identified as the object or event representing but in a simplified or graphic form.

3. Expressive Drawing

Expressive drawing brings to light ideas or emotions that are not seen. It may capture movement and energy, feelings, memories and others.

In a broader view, Sarpong (2008:66) categorized drawing into five different types; still life, memory, imaginative, figure and nature study.

1. Still life drawing

Heginbotham (2018) opines that a still life drawing emphasizes on still objects which theme is inanimate typically on household objects, flowers or fruits. It contrasts figure drawing

which focuses on a live human model. Objects used in still life will stay in the same position unless you move them making it easier to draw.

2. Memory drawing

“All drawing from life is at some point done from memory, even if the memory is only seconds old” (Rousar, 2018). In the same vein, South (2017) sees memory drawing as pulling images from your memory and putting it down on a paper. His view adds up to what Leonardo da Vinci said, “You cannot draw what you cannot see”.

3. Imaginative drawing

Imaginative drawing is a creative type of drawing which stems from one owns mind devoid of inference to any scene or event already encountered. This may come from an initiative of an artist making him very original (Adom, 2014:71).

4. Figure drawing

Figure drawing is the drawing of human and animal figures both male and female proportionally with reference to basic human and animal anatomy. It involves the drawing of the human form in any of its various shapes and postures using any of the drawing media.

5. Nature Study drawing

This is making a critical and serious observation of things in nature such as trees, animals, mountains and hills and depicting them on a suitable surface (Adom, 2014:70). In support LeGault (2018) explicitly says that all drawing of plants, flowers, water, rocks, insects, trees and others of this kind can be referred to as nature study drawing. This involves a lot of creativity from the artist to be able to depict exactly what he sees from nature using a suitable medium on a two-dimensional surface.

2.3.2 Drawing Techniques

Drawing is the most basic way in which one can confidently demonstrate his creativity. As important as it is making it happen can be very difficult especially with the techniques to be used in executing it. In regards to its techniques, different authors share their views below on how it can be done. According to Barnes (2018), for a person to draw and draw well these outlined techniques must be vividly followed: Back and forth, Hatching, Cross Hatching, Scribbling, Stippling and Blending.

1. Back and forth

This method is done by moving the drawing media back and forth across a suitable surface in an even, level motion. The higher amount of pressure you exert on your media the darker your drawing will appear.

2. Hatching

Hatching deals with the use of tiny tick lines. The lines are drawn parallel to each other. Lines which are very close to each other will look darker, while lines further apart will indicate highlights.

3. Cross Hatching

This technique is an extension of hatching; lines are drawn carefully to intersect one another in a cross-like formation.

4. Scribbling

This allows your hand to fly across the page. The drawing media is moved in a random formation making no precise mark. The more you scrawl all over an area, the darker it will look.

5. Stippling

Stippling involves making the uncountable amount of minute dots on a suitable surface. Like all other techniques, the closer the dots, the darker the drawing.

6. Blending

To be able to achieve this, you begin with the back-and-forth technique to cover your surface, and then rub the medium into it. The rubbing can be done with a finger, a blending stick or chamois cloth.

2.4 Concept of Teaching

Bhowmik, Banerjee & Banerjee (2013) opine that teaching is a necessary bustle in education that significantly affect learners' accomplishment. It basically denotes to both the livelihood or career of a cluster of persons identified as teachers; a bustle to aid a person to attain information, skills or interest. Teaching can also be defined as aiming knowledge to a learner (Tamakloe & Atta 2003). To Gagne & Briggs (1989) as cited in Dorgu (2015), the drive of teaching is to assist learners to obtain, understand, recollect and use knowledge to transform behaviours and improve attitudes.

Teachers serve as either embodiment of knowledge or facilitators in the teaching process. In this sense, Sequiera (2012) classify teachers into old-style and contemporary. Old-style teachers act as a source of information where learners are inertly intricate while contemporary teachers only serve as a guide to learners during teaching and vigorously involves them. Smith & Blake (2005) takes a stand by saying teaching include the drill of assisting learning rather than simply transmitting knowledge to the learners. For a teacher to be recognized as good, Kochhar (2004b) states that he/she must possess these characteristics: identifies individual variances amid learners; dynamic; imaginative;

logical; dares learners to learn; simplifies and stimulate learning etc. Again, for effective teaching he proposes that the teacher must teach from; known to the unknown, simple to the complex, whole to part, concrete to abstract, analysis to synthesis and many more.

2.4.1 Methods of Teaching Drawing

There are different methods of teaching which includes lecture, discussion, demonstration, buzz groups, brainstorming and role-plays (Collections.infocollections.org, 2018). In relation to the teaching of drawing, Hlwiki.slais.ubc.ca. (2018) refers to Dale's cone of experience which says learners remember 10% of what they read, 20% of what they hear, 30% of what they see, 50% of what they see and hear, 70% of what they say and write and 90% of what they do. Looking at what has been presented by them, one can emphatically say that learners' ability to do what they are learning will stick more in their mind. With this, it is obvious that in teaching a practical skill like drawing demonstration method will be very appropriate. Basheer, Hugerat, Kortam & Hofstein (2016) opines that a demonstration embraces expounding an idea throughout a lesson through the use of something instead of predictable pictographic aids. Chiappetta & Koballa (2002) and Shakhashiri (1992) as cited in Basheer et al. (2017) opines that regimented and properly presented demonstrations can improve students' understanding. Similarly, Hofstein & Lunetta (2004) opine that a well-organized demonstration has the potential to enrich learning, instinct and attitudes. This method provides learners with the opportunity to be creative and develop at their own pace since they will be assigned works to do on their own after being shown how it is done.

From a different view, Huang (2012) opine that to be able to teach a skill one must know these three things; the material, the learner and the learning process. With knowing the material, he referred to it as your ability to elucidate a complex skill in that it makes a lot

of sense to other people. With regards to knowing the learner, he says that you have to identify what the learners do not understand and what is required of them to know. Describing the learning process, he believes if these steps are followed your learners will capture every skill they would have to know. These steps are exposure, application, feedback, correction, repeat steps, and mastery. Deducing from his point of view it can be said that, a mere demonstration of a process may not click well with learners but understanding what you are teaching, knowing the shortfalls of your students and taking them through rigorous activities will help them activate their gumption and aim at mastering what is being taught.

2.5 Concept of Learning

According to Schunk (2012), learning is an unending alteration in conduct which occurs from drill and experiences. Likewise, Sequeira (2012) explains that learning is a comparatively persistent change which occurs deliberately but may sometimes take place unintentionally. It is also a behavioural change displayed by learners via the application of the information, abilities and principles of teaching (Malhotra and Goyal, 2013).

2.5.1 Conditions for Effective Learning

To Kochhar (2004), the under-listed execute efficient learning:

a. Psychological Security:

The teacher must create a motivating learning setting through which learners would be invigorated to learn. In this regard, teachers must not be autocratic thus being too strict and not inspiring confidence; but must be kind and understanding to engender countless attentiveness in the classroom.

b. Experimentation

Teachers must create opportunities for learners to vigorously partake in the learning acquisition process. In this regard, learners must be exposed to the learning condition since via discovering, abstracting, testing and relating they learn.

c. Feedback

Learners study quickly when they are provided consistent response on their improvement. Teachers must, therefore, provide feedback to exercise and assignment given to learners to motivate and inspire active learning.

d. Practice

Teachers must plan their lesson in a way that learners will practice what is being taught. This will build their confidence and also motivates to do more since practise makes a man perfect.

2.6 Learning Theories

Learning theories are intellectual frameworks which define how knowledge is obtained and managed during the learning experience. It notifies the use of instructional design through models. Notwithstanding the numerous theories of learning these three serves as the foundation which influences most instructional models. They are Behaviorism, Cognitivism and Constructivism (Instructionaldesigncentral.com, 2018). Gan (2013) opines that learning theories are theoretical frameworks that elucidate how information is engrossed, processed, and taken when learning. To him, Behaviorism considers learning as a facet of training and will back rewards systems and setting of targets in education. Cognitivist embraces the learner rather the immediate environment specifically the intricacies of the memory. Constructivism also advocates that learners' capacity to learn

depends on what is known and comprehends with the attainment of knowledge being individual through the process of construction. Accessing the description of the two authors it can be said that, learning theories forms the basis upon which a learner absorbs, process and retain knowledge during learning.

Learning theories have progressed from the traditionally known theories to more advanced ones proposed by different theories but with regards to this write up the researcher will consider the VARK model and the Theory of multiple intelligence.

2.6.1 VARK Model

This model was originally developed by Neil Fleming in 1987 from Barbe's VAK model. It is categorized into four phases which are Visual, Auditory, Read/Write and Kinesthetic (Harrington-Atkinson, 2017).

1. Visual Learners

According to Fleming et al (1992), visual learners have a penchant for thinking in pictures and visual aids that denote ideas. Pritchard (2009) as cited by Harrington-Atkinson (2017) orates that, visual learners study by vision with a great capacity for visual reminiscence. They fancy learning using visual depictions which include maps, posters, graphs and displays. They have the propensity of moving their hands when talking and looking upwards when thinking. With this type of learners, a visual media which contains words only may not be appropriate for them.

2. Auditory Learners

This type of learners learns best by listening. Habitually individuals with this penchant like to always hear what is being taught rather than writing (Fleming, 1987). In addition to this, vark-learn.com (2018) is of the view that, learners who prefer this learn best from

lectures, group discussion, radio, email, using mobile phones, speaking, web-chat and others. With the inclusion of email, they explain that, though it is text is normally written in chat-style which includes abbreviations, colloquial terms, slang and non-formal language. This learning style also involves speaking out loud and speaking to oneself. They also repeat what has already been said and earlier answered the question in the classroom.

3. Read/Write Learners

Fleming et al (1992), state that, this learning style stresses on text-based input and output - reading and writing specifically manuals, reports, essays and assignments. Persons with this are normally hooked to PowerPoint, diaries, internet and others. Students with the tendency of reading prefer printed word and text as a method to gain information. According to Murphy et al (2004) as cited by Amiruddin et al (2010), read/write learners prefer list, glossary, textbooks, lecture notes, or circulation. They are fond of making lecture notes into sketch form, summarize classroom notes, and learn multiple-choice exam questions. Besides this, Drago and Wagner (2004) as cited by Amiruddin et al (2010) opine that learners with this preference learn best through taken of notes from lecture and other reading materials. Besides that, according to Drago and Wagner (2004), these learners are note-takers. They study better through note-taking from a lecture or from difficult reading materials.

4. Kinesthetic Learners

According to Murphy et al (2004), kinesthetic learners learn through experience and practice thus they should have experience of something before they learn. Drago and Wagner (2004) see kinesthetic learners as the type who stresses more inexperience in learning something and normally with high energy and like to add touch, movement, and

interaction to their immediate environment. They hate studying solely by listening and are passive in class. To add up to Armstrong (2004) say that, learners with this type of intellect are fond of moving, active, and quick in learning physical skills.

2.6.2 Kolb's Experiential Learning Model

Kolb's experiential learning theory developed in 1984 by David Kolb focuses on learner's inner cognitive processes and is identified by a four-stage learning rotation. The theory recognizes two levels: the cycle of learning and learning styles.

To Kolb, concrete experience is when a learner is confronted with a new experience while reflective observation embroils taken a look at others or developing observations about one's own experience. He further elucidates that, abstract conceptualization is when a learner creates theories to explain observations whereas Active experimentation deals with using the developed theories to solve problems, make decisions. Greene (2014) summarize it by saying; basically, a theory must be made visible to students, involve themselves into it, think on what they have observed and vigorously experiment to really understand the subject. Aside from this learning cycle, Kolb also developed four learning styles which are Diverger, Assimilator, Converger, and Accommodator. Kolb believes that learners generally prefer one of the four styles above the others.

1. Diverger (Feeling and Watching)

According to McLeod (2017), Kolb sees divergers' to be learners who are able to view things from different viewpoints and very sensitive. They like to observe rather than do and collect information by using their imagination to solve problems. They are very good in circumstances which demand the generation of ideas. They also have a wide cultural interest, imaginative, emotional, interested in people and are strong in the arts. Apart from

these, they like working in groups and listen with an open mind. To sum up changingminds.org (2018) opine that, divergers' takes a new task and have a deep thought about it. They want to know the reason for everything and learn through logical instruction which can result in discovery. They normally take inspiration from other people and prefer to gain constructive feedback.

2. Assimilators (Watching and Thinking)

Assimilators require simplified and clear explanation instead of a practical opportunity. They prefer accurate and well-arranged delivery of information and respect the knowledge of the expert. They like lecturing method which must be accompanied by a demonstration. Learners of this preference fancy ideas and abstract concepts (web.cortland.edu, 2018).

3. Convergers (Doing and Thinking)

People with a converging learning style can solve problems and use what they have acquired to find solutions to practical issues. They prefer technical tasks and are less concerned with people and interpersonal aspects. They are best at developing practical knowledge for ideas and theories. They can solve problems and make decisions by finding solutions to questions and problems.

People with a converging learning style are more attracted to technical tasks and problems than social or interpersonal issues. A converging learning style enables specialist and technology abilities. They also like to experiment with new ideas, to simulate, and to work with practical applications.

4. Accommodators

Individuals who possess this learning style are solid in physical experience as well as vigorous investigation. It is the reverse of the Assimilator style. They are achievers and love executing experiments. Accommodators like taking a risk and can change their plans

impulsively in reaction to fresh info. They prefer the trial and error method; also fancy the practical fields and action-focused occupations.

2.6.3 Theory of Multiple Intelligence

According to Armstrong (2018), the theory of multiple intelligences created by Dr Howard Gardner proposes that the traditional notion of intelligence, based on I.Q. testing, is very limited. In its place, he developed eight diverse bits of intelligence to justify a wide variety of human potential in children and adults. They are:

- Linguistic intelligence (*word smart*)
- Logical-mathematical intelligence (*number/reasoning smart*)
- Spatial intelligence (*picture smart*)
- Bodily-Kinesthetic intelligence (*body smart*)
- Musical intelligence (*music smart*)
- Interpersonal intelligence (*people smart*)
- Intrapersonal intelligence (*self-smart*)
- Naturalist intelligence (*nature smart*)

1. Linguistic Intelligence

Linguistic intelligence also referred to as word smart are students who fancy using words and languages. They are characteristically better at reading, writing, and learning words sideways with dates. They prefer to learn by taking notes, listening to lectures, reading, discussion and debate (Kidzmet, 2018). Linguistic intelligence is the intelligence of language and communication which comprises of one's ability to speak, express and transport views and feelings to other people. It can be done through oral and written means (Silveira, 2018). Kelly (2017), defines linguistic intelligence as the capability to

comprehend and use language which is spoken and written. It can embrace articulating oneself efficiently via speech or written words. Example of people with high linguistic intelligence may include writers, poets and lawyers. He also proposes that; the following ways can enhance linguistic intelligence:

- Writing in a journal
- Writing a group story
- Learning a few new words each week
- Creating a magazine or website devoted to something that interests them
- Writing letters to family, friends or pen pals
- Playing word games
- Reading books, magazines, newspapers and even jokes

2. Logical-mathematical intelligence

People with logical-mathematical intelligence are gifted at reasoning, recognizing patterns, and logically analyzing problems. They have a habit of thinking conceptually about numbers, relationships, and patterns. They are also characterized by excellent problem-solving skills, enjoys thinking about abstract ideas, like conducting scientific experiments and good at solving complex computations (Cherry, 2018).

3. Spatial intelligence

Kelly (2018) orate that, spatial intelligence embroils a student ability to process information that is offered visually in one or more ways. A student capacity to envisage objects and alternate, transmute and use them to determine his spatial intelligence. It also serves as the basis on which numerous intelligence depends on and interrelate. Artists, scientists, architects and engineers are considered as people with high spatial intelligence. Again Paultanis (2014), is of the view that people with spatial intelligence must-see things

or have explicitly-created learning experiences to best learn. They learn well via visual aids like graphs, diagrams, pictures and colourful displays. They also prefer the visual arts which embrace drawing, painting, fashion, decoration, photography and others.

4. Bodily-Kinesthetic intelligence

Michelaki & Bournelli (2016), defines kinesthetic intelligence as the capability of a person to use his body in resolving problems, expressing thoughts and feelings and manipulate objects. People with this intelligence relish sports and activities which involve physical effort and mastery. Some also like dancing and other creative movements. They like to act and perform in the presence of an audience. According to Loh (2018), people with kinesthetic intelligence may possess these:

- Invisible control of motions within the body.
- A capability to handle objects and things with good skills.
- An ability to use the entire body to get required motions.

5. Musical Intelligence

Nugent (2013), sees musical intelligence as intelligence which embraces the processes of writing, playing, listening and understanding music. To Logsdon (2018), people with this intelligence comprehend and process sound, rhythm, patterns in sound, connections between sounds. They enjoy music performance and appreciation, band, choir, orchestra, and writing poetry or songs.

6. Interpersonal Intelligence

Interpersonal intelligence is the capability to comprehend and interrelate well with others. It embroils efficacious verbal and nonverbal communication, the skill to identify differences among others, understanding the dispositions and characters of others, and the ability to accommodate diverse views. They also converse effectively and relish partaking

in dialogues and debates. People who exhibit this intelligence are teachers, social workers, actors, leaders and politicians (Vital, 2014).

7. Intrapersonal Intelligence

According to Kowald, Werrell, Osorno & McConnell (2014), intrapersonal intelligence can also be referred to as self-awareness. People well versed with this intelligence are cognizant of their emotions, motivations, beliefs, and goals. They are aware of their likes and dislike, their capability and where their focus is. Students who exhibit this intelligence are

- Self-motivated
- Independent
- Introverted
- Organized
- Goal-oriented
- Confident
- Positive
- Skilled at self-reflection

8. Naturalist Intelligence

Vital (2014) opine that naturalist intelligence describes the human capacity to distinguish among animate things (plants, animals) and understanding other features of the natural world (clouds, rock configurations). Roth (2018) orate that, learners with naturalist intelligence are those in love with the natural world. They prefer to spend more time there, flourish there, skilled, buoyant and contented there, and are best learners there.

2.7 Technology in Education

Today's teaching space is crammed with technology ranging from tablet computers and widescreen televisions to interactive whiteboards. The advent of massive open online courses (MOOCS) also offers a maximum of 1,900 courses to users around the world. The digital medium provides the chance to rapidly elevate education and learning to the highest level. Technology will help personalize the educational experience in a manner that will increase learning results and curtails the time for learning (Frangoul, 2018). Bernard (2017) opines that the arrival of novel learning models will change old-style educational methods in the next decade. Educational models of the earlier absorbed on assisting students with the vital skills to make them skilled workers whereas educators of the latter are more interested in teaching students how to learn on their own. Technologies such as DreamBox, a math education software allow students to study at a pace which best suits their needs. Again, adaptive learning software is rapidly substituting the role of textbooks in the classrooms.

In the field of science technological advances make available the tools used in various scientific study and investigation; from filters for differentiating fluids, computer programs for learning of quantum physics. Science teachers exploit modern technologies in teaching the scientific procedure of investigation and solving a problem. They can use computer software and tablet apps in their classroom activities, also automated cameras, LCDs and experiment monitoring systems can also help in science education. Students, on the other hand, can use field-appropriate technologies like mobile phones, lore, studyblue and others for their research, perform experiments, and analyze results (University of Texas Arlington, 2017).

Whitworth & Berson (2003) as cited in Acikalin & Duru (2005) propose that, in the social studies, technology has aided a double role as a significant instructional tool which might have a momentous consequence on the universal, political, communal, and economic functioning of humanity. Likewise, Iyamu & Ogiegbaen (2004) state that computer-based technology like software, CD-Rom, videodisc player and the Internet offer tutors and students with an enormous variety of information in an easily accessible, non-chronological format which can be used as a tool for teaching.

Ribeiro (2016) point out that, some years ago, art educators had limited choices when teaching art but with the rapid maturity of technology, teachers ought to shove the restrictions of how art is taught. They must think deeper about how they can allow their learners to search and experience art rather than just reading and looking at art. He continues by saying that, during the 20th century, students' experience to most essential and inspiring artworks were done via overhead projectors or static images from a printed text but today online lists of high-resolution digital images imply that learners can have access loads of artworks, and can also go through virtual spaces. Alawad (2012) assert that, since art improves the imaginative, psychological and spiritual parts of life the availability of technology can ripen the quality of the learning experience. Likewise, Ray (2013) state that, technologies like digital space help reimagine arts education and making it participatory enough. Creighton (2016) also opines that technology essentially unlocks an entire novel medium for art. The convolution of a lot of current technology like a 3D pen, Asphyxia Adobe Ink and Slide among others permit an artist to make art in various ways.

According to Ramey (2013), the multipurpose use of technology in Education has elevated it to a high horizon creating more opportunities. The main participants of education have profited from numerous technologies, teachers have erudite how technology is assimilated in the classrooms and students, on the other hand, are learning with all vigour with technology. The boundaries in education have been eradicated making it possible for both students and teachers to work together in real-time using advanced technologies. Educational technologies are enlightening the work of educators, bringing philosophical changes in methods of teaching as well as renovating the classroom.

Stipulating the reasons why technology is important in education Mareco (2017) says this:

- Mobile devices and the applications they support if used properly will help prepare students for their future careers.
- When technology is integrated into the classroom, it will be an efficient way to link with students of all learning styles.
- It improves the collaboration between students and instructors
- It gives teachers and members of the faculty the privilege to improve their student's digital skills.
- It promotes students' engagements in and outside the classroom.
- Merging tech like virtual reality with traditional classroom instruction can enrich the learning experience of students and create varied opportunities.
- Availability and use of mobile technology in the classroom give students the opportunity to access current information quicker and easier.
- Technology in the classroom has truncated traditional passive learning making the teacher an encourager, adviser, and coach.
- It gives students the opportunity to enhance their decision-making skills which makes them responsible.

- It gives students' access to wide range opportunities which helps transmutes their learning experience.

2.7.1 Supporting Technology in the Classroom

Technology has become a prime contributor in the classroom education in this current era. Tablets are substituting textbooks, smartphones being used for research anywhere one can access the internet and social media becoming a place for learning; one can only affirm to the fact that technology is really transforming lives (Cox, 2018). In this regard, these educational technologies will be looked at and elaborated on how it helps education in the classroom.

1. Student-Created Content

Student-created content is a method that attempts to abridge the teaching and learning process and levels the authoritative relationship that is between a teacher and a learner. It entirely concentrates on student's context thus, the instructor proposes the idea while the learners generate the content and re-rehearse based on the instructor's idea as an adept (DDEUBEL, 2010). Snowball & McKenna (2017) orate that, student-generated content permits teachers to convey learners' knowledge and opinions into the community of practice and recognizes the significance of their previous competences in the production of knowledge. Kelly (2013) says that student-generated content addresses three major problems: keeping a course up to date, engaging students, and maintaining integrity.

2. Collaborative Learning

Dillenbourg (1999) as cited by Vuopala et al (2015) orate that, collaborative learning deals with the communal engagement of students in combined effort to create knowledge in solving problems. Arvaja et al (2007) define collaborative learning as result-oriented

alliance work in which students are dedicated to combining activities with the intention to create novel knowledge via negotiation, ideas sharing and constructive arguments. According to Cavanagh (2011), students place importance on the opportunities provided for learning together because collective activities can inspire, trigger and contribute to the growth of their understanding of the content. Baeten et al (2010) & Johnson et al (2007) state that, collaboration and group work brings deep learning and improve learners' engagement and their inactiveness and fears about a concept are converted into an engaging practice (Rinehart, 1999 as cited in McDuff, 2012).

3. Flipped Classroom

According to Baker et al (2000) as cited in Gough, et al (2017), flipped classroom is employed to eradicate direct instruction from the classroom and it generally includes watching or listening to a recorded lecture as an assignment in order to make time for a livelier learning activity in the lecture room. Bergmann & Sams (2012) point out that, flipped classroom move the direct lessons and the discourse separate from the classroom to be able to provide lively learning chances for learners in the teaching space. Again Acedo (2013) opines that the main drive of a flipped classroom is to improve student learning and accomplishment by changing the traditional model of a classroom, concentrating lesson time on learners understanding rather than on lecture. In using the flipped classroom model, teachers have to send their lessons in the form of videos (short), PowerPoint, and tutorials online to enable learners to watch and learn at home preceding the next classroom session. Learners are ardent to expanding on and grasping the sent lecture through joint learning tasks, projects, and deliberations. To add to Valenza (2012) state that, flipping the classroom changes the classroom to a learner-centred classroom.

4. Blended Learning

Blending learning is a learning type which combines face-to-face and online learning (Brown 2013). It permits for a part of the teaching to be completed off-campus asynchronously, allowing the relief of teaching space and teachers for numerous usages. It also enhances teacher efficiency, communication amid faculty on instruction and profound relations between learners (Baran et al., 2011; Brunner, 2007; Hege, 2011). Blended learning makes the most of students' access to education by enabling the modification from the traditional face-to-face education to a rigorous setup.

5. Mobile Learning

Mobile learning is any category of learning that transpires with a mobile device, where a student is not tied to a prearranged location (Wilson & Bolliger, 2013). It is not solely about the use of moveable devices but also the leeway that learning can be done transversely different settings, comprising the use of numerous communiqué approaches and channels to combine public interactivity with custom-made and individual learning (Park, 2011). Mobile learning has intensified ominously ever since the advent and acceptance of mobile phones and has moved a greater prominence on teaching and learning (Motiwalla, 2007). It can be carried out in a traditional classroom, in which learners can access the traditional printed resources and web-based learning resources by the use of the internet and wireless technologies. (Homan & Wood, 2003).

6. Personal Learning Networks

Personal learning networks (PLNs) are a give-and-take learning structure whereby educators partake by sharing with and then learning from others. It is personal because each participant selects his/her own set of contacts as they chase self-directed, self-governing learning involvements which normally occurs online (Nussbaum-Beach, 2013).

PLNs can permit continued professional development that employs a varied set of materials which are initialled and accessible on demand. It entails an assortment of materials that is available when in need of something which comprises of both people with proficiency in a subject who can be contacted for information and things such as books, papers and a wide range of hypermedia web resources (Bauer, 2010).

2.8 Concept of Gamification

Gamification is the application of distinctive rudiments of game playing (playing rules, scoring of point, creating competition with other players) to other parts of the activity, explicitly to engross users in solving problems. It has been applied in the field of marketing, education and others (Hall, 2014). Hendricks (2019) state that, Gamification is the idea of using the tactics, procedures and competition of the gaming setting and whirling those characteristics into a system which boosts customer involvement, commitment and constancy. It employs human feelings for achievement and reward. Workman (2013) defines Gamification as the application of game playing features to non-game situations that permit social media users to receive rewards for daily routines like calling for coffee or viewing a movie. It is applied to improve consumer engagement and devotion. Similarly, Guta (2017) opines that Gamification is a business tool signifying a completely fresh way for attaining the aims set for a company. In achieving this, game mechanics such as competition, points, achievement, rules of play, status among others are used.

2.8.1 Why Gamification work

According to Brown (2016), Gamification works because of the following reasons:

1. It gives the user control

The core of Gamification is the feel of control it offers it, users. A gamified environment always put users in control allowing them to make their own decision as to what to next.

2. It helps us know where we are, and where we're going

In Gamification, an advancement bar can be like a map for your users to help them know the process they are involved in and how far they ought to go. This allows users to experience every bit of what they are doing.

3. Reinforcing good behaviour

In Gamification, you are rewarded for any level completed making users do it again and again till there is a change in behaviour.

4. A sense of achievement

Gamification makes users feel they have achieved something which normally results in them coming back for instance when a user completes a level he/she will desire to unlock and complete other higher levels.

5. It helps to set goals and compete with oneself

It allows users to know their individual bests' and 'earlier records which persuade them to come again later to try and improve it.

6. It brings competition among users

With the presence of scoreboards in Gamification, every user desires to be in the first position creating competition among them.

Again, Martin & Dolcic (2018) proposed that the underlying reasons make Gamification works:

1. Remind Users of Unfinished Tasks

Growth bars can be used to display to users the badges they are yet to collect, accomplishments to get and tasks to finish. This technique is achievable since our intellects have an inherent wish to finish what is still uncompleted.

2. Accomplishments are Rewarded

In Gamification achievements of users are rewarded which makes them satisfied and increase their motivation in doing whatever they are doing.

3. It is simple Users to Share Their Accomplishments

In Gamification, group sharing is a good tool for escalating competition between the present users and also for dragging in fresh users.

4. The challenge in it brings fun

The struggle of attaining a goal to keep users on their toes and give them a sense of fulfilment for their achievement.

5. It brings collaboration

It provides the opportunity for users to toil together to attain a certain goal. This makes them feel they part of a bigger group which also motivates them.

2.8.2 Gaming vs. Gamification

Charrette (2017) assert that gaming also known as game-based learning and Gamification can be categorized into “*Play vs. Motivation*” and *Teaching a Skill vs. System of Learning*.

a) Play vs. Motivation

In gaming, a game is used for learning for instance puzzles and bingo games that are entrenched into a lesson whereas in Gamification game-like features are used to inspire and boost the students to accomplish the learning result. In relation to motivation, Abdussalim (2008) asserts that it is a substantial feature in the teaching and learning process. Game elements like leaderboards, trophies, point systems, badges and others are used.

b) Teaching a Skill vs. System of Learning

In Game-Based Learning (GBL), the objective is to apply a game to attain a learning outcome. The game is inserted into the course whilst in Gamification, the whole course is made around the idea of playing an active game, but rather not playing an actual game. Basically, you are creating a game out of something which is not.

Similarly, Findlay (2016) opines that Game-based learning is an experience which requires the use of game mechanics to instil a particular skill or attain a precise learning result. It takes the main content and goals and makes it fun. In a GBL learning situation, students study fresh ideas and also practice skills in a situation devoid of risk. Student's development in the game is directly linked with their ability to comprehend the subject matter being taught. It also has a substantial effect on recalling rates. On the other hand, Gamification is the process of applying game elements in a non-game setting to stimulate preferred conduct and improve learning outcomes. Gamification uses game rudiments like badges, leaderboards and the likes as an incentive for finishing existing teaching components. It brings engagement and attracts on learners' desires to accumulate, participate and succeed.

2.8.3 Game Mechanics vs. Game Dynamics

Gamification Mechanics are the features that transport the activities forward. They are the elementary activities, control devices and procedures that are employed to “gamify” an activity. These activities where players take (“agency”) and the rubrics that bound those activities to generate pressure (“urgency”) are what forms game mechanics. It is also related to how a game operates (Nielson, 2017). He also explains game dynamics as tools which help to know how to move the activities forward and get the players into the game.

2.8.4 Frameworks of Gamification

Several authors have proposed numerous frameworks for Gamification but with regards to this write-up, Octalysis, Gamification model canvas and Gamification design framework (SMA model) are discussed.

1. Octalysis

Octalysis was developed by Yu-Kai Chou in 2015 and it has eight (8) components.

a. Meaning

It is the main motivation whereby participants are of the view that they are performing a task greater than themselves. It also includes beginner’s luck – an influence where participants are of the view that they have a special gift that others do not possess to get that astonishing mark at the commencement of the game.

b. Accomplishment

This is the inner motivation of progressing, increasing skills, and ultimately overpowering tasks. It is also the main drive that is designed for with ease and includes the given of points, badges, and points recording on leaderboards.

c. Empowerment

This is when users are betrothed in a creative process in order to accomplish and constantly have to get things right and try several combinations. It also involves displaying results of the creativity of users, making them receive feedback to be able to react in turn. If this is successfully done, a game designer does not need to incessantly add more content in order to make the task renewed and appealing.

d. Ownership

It is the drive where participants are inspired because they are of the feeling that, they possess something. If a user feels he owns something, he innately tries to make what he owns better and own even more.

e. Social Influence

It combines all the social rudiments that motivate people comprising: mentorship, approval, social responses, friendship, rivalry and envy. Users are driven to do more when they see an associate that is incredible at some skill.

f. Scarcity

It is the motivation of desiring something you can't have it. It also involves appointment dynamics (come back later for your reward) and drives users to think of it all day long.

g. Unpredictability

This is the drive of wanting to know what will happen next. If you don't know what's going to happen, your brain is engaged and you think about it often.

h. Avoidance

This core drive is based upon the avoidance of something negative happening. On a small scale, it could be to avoid losing previous work. On a larger scale, it could be to avoid

admitting that everything you did up to this point was useless because you are now quitting. Also, opportunities that are fading away have a strong utilization of this Core Drive, because people feel like if they didn't act immediately, they would lose the opportunity to act forever.

2. Gamification model canvas

Gamification model canvas was developed by Sergio Jimenez Arenas in 2013 and it has nine (9) constituents.

a. Platforms

It designates the stages on which to implement game mechanics as well as platforms for integrating mechanics; pedestals to transport game mechanics to the player and also stages on which the game will run.

b. Mechanics

It defines the instructions of the game with constituents for crafting game dynamics. It also involves how to change behaviours employing designated components; how to elucidate the process to the participants and how to upsurge the difficulty of mechanics as time progresses.

c. Components

They are the rudiments that joined to create the mechanics of the gamified knowledge. It describes the elements in the game and gives a response to the participants. It involves the mechanisms which will be employed to craft the dynamics; the components to form game procedure and components that will be employed to deliver feedback. These mechanisms comprise of points, achievements, leaderboards, badges, levels, rewards etc.

d. Dynamics

They are activities participants will want to perform to be able to feel the preferred aesthetics. It involves the subtleties to be used to form the aesthetics of the game; the preferred varied work for the participants and how it will work in the gamified environment. The dynamics include progression, scarcity, appointment, reward, status, identity, creativity, productivity and altruism.

e. Aesthetics

They are the main stimuli standing-in as expressive rewards. It describes the required sensitive reactions induced in the participants as they interrelate with the game. It also involves elements to clutch the attention of the participants, the reason to play and how they can have fun. They comprise of fantasy, innovation, description, partnership, contest, feeling etc.

f. Behaviours

It talks about the behaviours required to be developed in the participants to obtain earnings from the work. It involves the behaviors needed to increase the tasks in the gamified system; behaviours participants need to improve.

g. Players

It defines how the conducts of people are like and what is be to developed. It describes who the players are; what they are like and what they want.

h. Costs

It defines the core cost for the growth of the gamified system. It also describes the focal cost of the game; the financial plan existing for realizing the set tasks.

i. Revenues

Revenues define the financial profit with regards to the starter of gamification. It describes social tasks set out for the gamified system, how to quantify the accomplishment of the game and the outcomes hoped to achieve.

3. Gamification design framework (SMA Model)

The SMA model was developed by Victor Manrique in 2013 and has four steps.

a. STEP 1 - Understand Why (Goal)

Why apply gamification? It is prominent if one decides to accomplish a goal via pleasure and inspiration. Gamification in totality is used to realize one of the following aims: accomplishing an improved result, increasing time spent and engagement.

b. STEP 2 - Establish What (Actions)

Here you plan the activities they are going to perform to realize the goal. It is done before knowing your players with the various reasons: set anticipated behaviours; activities required to accomplish the goal; mechanism, aesthetics and stories players will be engrossed with.

c. STEP 3 - Know your players

It is essential to identify which calibre of people will be using the system for you to make them cheerful and inspired. It can be done internally: existing data about the players and externally: what inspires them.

d. STEP 4 - Design it! The SMA Model

Mechanics, Aesthetics, Storytelling. What design stages must be followed to craft an excessive gamified system? It must include the **WHY, WHAT, WHO and HOW** you will make your gamified system.

2.8.4.1 Theoretical Framework (Kevin Werbach Gamification framework)

In making a gamified application, its development should be done with a game design-like thinking (Werbach, 2012). He classified these rudiments under the following straplines:

- Define objectives
- Delineate target behaviours
- Describe your players
- Devise activity loops
- Don't forget the fun!
- Deploy the appropriate tools

1. Define objectives

What is the reason for gamifying? How will it help your business or inspire people to change their behaviour? When you outline your objectives, stress on the end goal(s) of your gamified project instead of describing the means on which the goal will be achieved. Fundamentally, if your gamified method achieves it intends to, how will it help your organization?

2. Delineate target behaviours

What do you expect from participants? What are the metrics which will permit you to measure your players? Players' behaviours ought to endorse your organization objectives, though the correlation may be incidental. As you define the behaviours, be definite to elucidate how they will aid your method to attain its purposes. The metrics should be able to offer feedback to the participants, making them aware when they are effectively participating in the proposed behaviours.

3. Describe your players

Which kind of people will be partaking in your gamified task? What relationship do you have with them? Are they potential clients, workers at your organization, or what? And how do they look like? This can be define using demographics, for instance, age and gender, psychographics like their values and personalities. You must demonstrate that you comprehend what kinds of game rudiments and other structures possible to be operative for this populace.

4. Devise your activity loops

Explore in all detail how you intend to motivate your participants through rendezvous and advancement loops. You first have to define the varieties of response your system will provide the participants to inspire extra accomplishment, and clarify how to motivate your players with kind of feedback. (Note: rewards are just one type of feedback.) Again, how will participants advance in your system including how it will get new members engaged, and how it will continue to be interesting for experienced participants?

5. Don't forget the fun

Guaranteeing that your gamified structure is fun is as significant as the other features. To be able to achieve this, you should ponder how it will function deprived of any extrinsic rewards. Recognize which phases of the game might continue to inspire players to partake deprived of rewards.

6. Deploy the appropriate tools.

What game rudiments would be used and what will the experience be like for the players? What precise choices would you create in organizing your system? You should also define what response, prizes and other support the participants will receive. Your decisions should be tied back to the other five steps in the process, especially the organization goals.

2.8.5 Gamification in Education

The existing school setting time and again results in detrimental outcomes which include disengagement, boredom and at times students drop out. Richtel (2010) orate that, boredom, lack of engagement, absenteeism and distraction from technology including smartphones, internet are the reasons for drop-outs and low performance among students. Again Kapp (2012) opines that the majority of traditionally created instructions encompass course objectives, not challenges, bulleted lists not interactivity and evaluation tests, not frequent corrective feedback. Challenges, interactivity and frequent feedback are what makes Gamification an effective strategy for designing and conveying instruction. According to Huang & Soman (2013), the integration of game elements (Gamification) into education, offers a chance to aid schools to resolve the trouble of motivating and engaging students in the classroom. This is because it encourages students to perform an action and perform it better. Gamification in the long round can inspire students to cultivate the habit of performing given tasks ahead of time. With regards to the teacher, he is burden with the duty of creating a gamified environment which does not only drives and entertains the student but also demonstrates through techniques that relate with the intrinsic motivation of the student.

Gee (2009) assert that Gamification can evidently inspire users (students) with incomparable concentration. When it is well designed they relate intensely to our innate motivation and help us develop the love for learning. It can also encourage learners to participate in the classroom activities, create effective and interactive experiences which can easily be transferred to the real-life situation (Trybus, 2012) and in the end translate to a livelihood of permanent learning (Hammer & Lee, 2011).

According to Muntean (2011), Gamification aids learners gain motivation for studying, and as a result of the positive feedback, they are pushed ahead making them more fascinated and enthused to learn. It establishes a dominant boost to which drive them to study more. It increases our basic inner desires such as goal setting, competition and recognition (Antin & Churchill, 2011). Gamification therefore in education helps the learner feel motivated, supported, and become interested in not just the activity but also the content that he is learning.

CHAPTER THREE

METHODOLOGY

3.1 Overview

This chapter deals with the total stratagem used to amass data for the study, and also comprises of the research approach, research method, population, sampling techniques, data collection instruments, sources of data and also taking a look at data analysis plan, ethical considerations and research philosophy.

3.2 Research Approach

Research approach, according to Chetty (2016) is a blueprint and technique that entails the stages of wide assumptions to a comprehensive method of data collection, analysis and interpretation hence, founded on the nature of the research problem in question. Likewise, de Vaus (2001) defines research approach as the tactic to accurately gather the numerous constituents of a study to safeguard that data attained will response research questions with the minimum doubt conceivable. It depends on the nature and scope of the information planned to be acquired and also comprises of tactics for collecting, assessing and analyzing data.

The mixed-method research design was used for this study employing descriptive and quasi-experimental research methods. Mixed method characterize research that includes gathering, scrutinizing and interpreting qualitative and quantitative data in a lone study or in a series of studies that examine the same fundamental occurrence (Cameron, 2015). A vital facet of the meaning of mixed methods research is the combination of the qualitative and quantitative constituents in the study (Simons & Lathlean, 2010). Mixed method denotes the procedure in which the qualitative and quantitative features are interwoven to yield a complete justification of the research problem (Glogowska, 2011). Wisdom &

Creswell (2013) assert that mixed-method refers to a nascent approach of research that progresses the efficient combination of quantitative and qualitative data within a single enquiry or continued program of investigation. The elementary principle of this procedure is that such incorporation allows a more comprehensive and synergistic use of data than to distinct quantitative and qualitative data gathering and analysis.

According to DeFranzo (2011), qualitative research is used to attain the meaning of fundamental motives, views, and inspirations. It offers understandings into the problem or assists to ripen ideas or theories for probable quantitative research. It is also used to reveal trends in thought and views and goes in detail into a problem. To Hancock (2002), it defines the social phenomenon as they happen naturally devoid of influence. Hammarberg, Kirkman, & de Lacey (2016) explains that qualitative methods are employed to respond to enquiries about the experience, meaning and perspective, normally from participant viewpoint. Its data are frequently not pliable to counting.

- **Reasons for Using Qualitative Research Design**

This design was deliberately employed in the study to transcribe in detail the present teaching methods used by GKA teachers with regards to drawing, how it is done and students' reaction to their usage in the classroom for the teaching and learning of drawing under GKA at Mpohor Senior High School. It will also reveal the relationship of Home Economics students offering biology and chemistry as a subject and its effect on their drawing output. Again, it will allow the researcher to ascertain and scrutinize the gen and skills students had in drawing when Gamification was used. The researcher adopted it for the reason that what is understudied were centred in students' natural settings thus their classroom. The gathered data was an accurate replication of participants need, to employ

Gamification to assist the teaching and learning of drawing under GKA at Mpohor Senior High School.

Quantitative research is an orderly enquiry of phenomena by collecting assessable data and executing statistical, mathematical techniques. It collects data from existing and possible audience using sampling methods. Its results can be represented in the form of numbers (Bhat, 2019). The drive of quantitative research is to create knowledge and understanding of the human world. It relies on data which are experiential or measured to scrutinize queries about the sample population (Allen, 2017).

- **Reasons for Employing Quantitative Research Method**

Quantitative research was adopted to detect and analyze the knowledge and skills of students in the study school as well as to compare the results for both pretest and posttest score to know if there is any statistical significance.

Creswell (2014) opines that, in order for qualitative and quantitative data to be mixed, two sets of data must be collected, considering the timing thus concurrent or sequential and weight; whether like or unlike. Shorten & Smith (2017), categorize explanatory, exploratory, parallel and nested as the four main types of mixed methods research. Table 3.1 abridges the features of each design, the procedure used, and models of how to connect or integrate data.

Table 3.1: The four main types of mixed-method research

Mixed method type	Research process
Explanatory Sequential	With this type, you must first collect and analyze quantitative data, then also collect and analyze qualitative data to aid in elucidating quantitative data.
Exploratory Sequential	This involves collecting and analyzing qualitative data first, then collect quantitative data and use it to test findings empirically.
Parallel	It embroil collecting and analyzing qualitative and quantitative data concurrently.
Nested	This can either be qualitative or quantitative core design with another paradigm embedded in the study to respond to a complementary question.

Source: Shorten & Smith (2017)

Mixed methods are used to obtain a clear picture of links or discrepancies among qualitative and quantitative data and provide avenues for contributors to have a firm opinion in order to convey their experiences through the research process (Shorten & Smith, 2017). For the purpose of this research, exploratory sequential was adapted where qualitative data was gathered for objective (1) and (2). Quantitatively, data gathered from the questionnaire and the results obtained from both control and experiment group was analyzed using SPSS to know if there was any statistical significance.

3.2.1 Research Methods

The researcher used Descriptive and Quasi-experimental research methods.

3.2.1.1 Descriptive Research Methods

Descriptive research offers a thorough explanation of social scenery, people within a group, a situation and other occurrences (Salkind, 2007). It is intended to illustrate the participants in the exact way (Kowalczyk, 2019). It also seeks to pronounce the features or conduct of an audience. It defines and elucidate, or authenticate an assumption in relation to a definite cluster of people (McNeill, 2018). Breg (2004) assert that it positioned to explicate the usual happening in a data question with the principal goal of bringing to light precise and dependable account of the elements that are related to the research questions.

- Reasons for using Descriptive Research Method

The descriptive research method afforded the researcher the opportunity to give an in-depth account of the existing methods that teachers use, its strength and weaknesses for the teaching and learning of Drawing in GKA, as well as the observations on the effectiveness of using Gamification as an instructional strategy in the teaching and learning of drawing in GKA.

3.2.1.2 Quasi-Experimental Research Method

According to Shuttleworth (2008), it includes choosing groups and testing a variable, devoid of randomization. It is akin to any other experiment, but a variable is compared within unlike groups for some time. Shadish (2001) opines that it employs grounds to ascertain effects deprived of randomizing things to situations. Creswell (2014) further state that, it proceeds in a natural setting, for instance, a classroom and uses naturally made groups without randomization, via pretest and posttest of a regulated and experimental group where the latter group is given an intervention.

- **Reasons for using Quasi-Experimental Research Method**

The researcher employed this method to estimate the efficiency of Gamification as an intervention for teaching and learning of drawing in GKA at Mpohor Senior High School and assist in doing a well relative analysis of the pretest and posttest results of both classes. Again it helped in the use of non-randomized classes in the school understudy in order not to interrupt the schools' scenery. The pretest and posttest design were used. Both groups received a pretest and the intervention to be able to attain the posttest results in order to assist the researcher in comparing the results. The pretest provided insight into where both groups had similar capabilities before the experiment.

3.3 Population for the Study

A research population is normally an enormous gathering of persons or entities regarded as the core concentration of a scientific enquiry. It consists of a definite gathering of individuals identified to possess akin features (Adam, 2019). Based on this assertion, the population for this study included all GKA students (352), GKA teachers (5) in the Mpohor Senior High School, totaling 357. This is clarified in Table 3.2.

Table 3.2: Population for the study

Course	All GKA Students		GKA Teachers
Visual Arts	1VA	65	5
	2VA	72	
	3VA	20	
Home Economics	1HE1	45	
	1HE2	33	
	2HE2	35	
	2HE2	29	
	3HE	53	
Total	352		5

Therefore, the population for the study was $354+5=357$.

3.3.1 Target Population

McLeod (2014) state that, the target population is the entire set of persons from which the sample will be drawn. To Windham (2019), it is basically the cluster of characters you have designated to study. In relation to what target population represents Mack (2019) opines that it is the group an investigator desires to comprehend. Getting the total population for this study was impossible so a quota which comprised form two (2) Home Economics classes (61), two (2) teachers teaching this class were chosen using purposive sampling (as discussed in consequent pages), making 63 as shown in table 3.3.

Table 3.3: Target Population for the study

Course	Form Two GKA Students		GKA Teacher for the class
Home Economics	2HE1	31	1
	2HE2	28	1
Total	61		

Therefore, the Target Population for the study was $31+28+2=61$

3.3.2 Accessible Population

The accessible population also referred to as study population is the population in a study to which the researcher can draw his/her assumptions. It is a division of the target population and it is from which samples are drawn (Mohamed-Adam, 2019). Essel (2010) and Manor (2013) opine that, for a population fewer than 100, the total population ought to be surveyed. In view of this, the accessible population for the study was the same as the target population.

3.3.3 Sample and Sampling

According to Cherry (2018), a sample is a subgroup of a population used to signify the total group as a whole. In research, the researcher can generalize results in a bigger group if the sample is a truthful depiction of the population under study. Sampling, on the other hand, is the technique of picking an appropriate sample (representative part of a population) in order to determine the limits and features of the total population (Mugo, 2002). Sampling is done to lessening the work, time and money involve if the total population is being examined.

3.3.4 Sampling Design

According to Singaravelu (2019), a sample design is a sure plan for attaining a sample from a chosen population. Lavrakas (2008) opines that it is a structure, which aids as the root for the collection of a sample and has an impact on other essential parts of a study as well. Crossman (2018) assert that sampling design can be categorized into two main types thus Probability and Non-Probability. Probability sampling includes simple random, systematic, stratified and cluster whereas Non-Probability are reliance on available subjects, purposive or judgmental, snowball and quota. With regards to this study, the purposive sampling technique was used to select a sample from the population.

3.3.4.1 Purposive Sampling

Purposive sampling is a sampling method where the researcher depends on his/her personal ruling in selecting individuals of a population to partake in the study (Dudovskiy, 2019). It requirement is that researchers must have previous knowledge about participants and is also aware they possess similar characteristics (Foley, 2018). This technique was used to select 61 students from the population of 352 students offering GKA as a subject

in Mpohor Senior High School. The form distribution of the students who participated in the study were 61 in 2HE1 and 2HE2. This sampling technique was adopted because the students in the Home Economics classes exhibited similar characteristics of concern to the study. Again, the two teachers selected for this study was based on their specialist knowledge in GKA.

3.4 Data Collection Instruments

Research requires gathering data. The data collection instrument is a key element for this purpose since it yields reliable results irrespective of the location (Jones, 2019). In view of this, it is therefore very important to settle on instruments more suitable for the study. This research adopted triangulation where interview, observation and questionnaire were used to collect data from students and teachers in the selected school understudy. Karim (2007) opines that combining different methods (triangulation) in a single study aids the researcher to prevent bias and inconsistencies in the results in order for it to be generally accepted and be valuable for imminent research.

3.4.1 Observation

Observation is a method of gathering data via witnessing. It is can be referred to as a participatory study since the researchers has to submerge themselves in a situation where respondents are in order to take notes or record (Dudovskiy, 2019). It is the method of knowing the external and non-oral conducts of an individual and take records of what is being studied. It helps researchers to recognize problems related to respondents' conducts (Awanta & Asiedu-Addo, 2008). To Padgett (2004), data acquired through observations are vital since the researcher get the chance to collect data from live settings instead of a secondary source.

- **Reasons for using observation**

The drive of the study was to discover Home Economics education in the classroom setting and understand amid others, the introduction of Gamification in the teaching and learning of drawing in GKA. In view of this, an observation was employed as a tool in gathering data since it helped the researcher to know the happenings during drawing lessons in GKA. Again, it was used to increase understanding and certified data gathered through an interview on the existing way for teaching and learning of drawing in GKA.

The researcher uses observation to recognize and analyze how teaching and learning of drawing in GKA were done; the presence of a game element in the classroom before the intervention (Gamification). The researcher witnessed how drawing in GKA was taught by teachers in form two (2) Home Economics classes (2HE1 and 2HE2), students' response to their teaching and how the reward systems were used. The class was observed two times in a 2hours lesson (2 periods) within the whole semester. This was done on different days. Observation notes were taken to gather data for the study. All data were documented through written note, photographs and audio recordings. The observation lasted for three weeks in November 2018.

The researcher directed by the objectives of the study designed a smaller designed checklist to monitor the collection of data (See Appendix C and D). It was made in two folds: the first one for data before the implementation of Gamification and the second for collection of data after the implementation of Gamification. The checklist was assessed by colleagues from the Department of Educational Innovations in Science and Technology for rectifications and contributions before onward submission to the research supervisor for final vetting and approval. The checklist was piloted to guarantee error-free and its suitability to the data being required.

3.4.2 Interview

According to Kumar (2014), the interview is the oral dialogue between two people with the intention of gathering pertinent data for research purposes. Reddy (2019) asserts that an interview is an official gathering among two people where the interviewer probes an interviewee in order to get data. Creswell (2012) as cited in Phillips (2016) opine that interviews happen when researchers enquire data from one or more participants and make a record of their inputs. It is done using audiotapes. In the view of Bhat (2019), an interview embroils asking open-ended questions to talk with respondents in order to draw data about a subject matter. Interviews can be categorized under three basic types: structured interviews semi-structured interview and unstructured interview. With regards to this research, the semi-structured interview approach was used to hunt for responses to questions related to the study from GKA the teachers. According to Keller & Conradin (2018), semi-structured interviews are done with a properly open outline that permits attentive and casual give-and-take communication. It gives respondents the liberty to express their opinions on their own terms. The GKA teachers were interviewed on their methods of teaching, how they affect students' learning, students' behaviour during teaching and learning. The GKA teachers were again interviewed on their understanding and insights on Gamification and its incorporation into GKA drawing lessons using an interview guide to simplify the dialogues.

An interview guide for the GKA teachers was drawn to answer the research questions (See Appendix A and B). The first guide used for collecting data before the implementation of Gamification encompasses background information; teaching and learning and Gamification summing up to eighteen (18) questions. The second guide was made up of six (6) questions and used to collect data after the implementation of Gamification. To

ensure the validity of the guide, facsimiles were given to colleagues for inspection before onward submission it to the thesis supervisor for final rectifications.

- **Conducting the interviews**

The interviewees were notified ahead of time for appointments to be arranged after the guide was designed. Punctuality was a hallmark of the researcher to all dates and scheduled times with interviewees. Proper documentation was taken in the form of written note and audio recording. The interview was conducted in a casual fashion to lessen rigidity and to create a relaxed atmosphere. The interviewees were interviewed one after the other on different days (4th and 5th November 2018 respectively).

3.4.3 Questionnaire

A questionnaire is a research mechanism entailing of a sequence of questions with the aim of collecting info from respondents and offer fairly low-cost, fast and effective huge amounts of data from a large section of persons. (McLeod, 2018). It is a set of uniform questions, known as items and follow a static structure for the purpose of gathering individual data on one or more particular areas (Lavrakas, 2018 & Ahmad, 2012). Ahmed (2012) continues to say that, questionnaires can be categorized under two types: open-ended and closed-ended. Open-ended is a type whereby respondents' answers using their own words whereas closed-ended deal with questions in which respondents choose one or more options from a prearranged set of answers. A closed-ended questionnaire was used for this research to gather data from students in the experiment group (2HE2) after the implementation of the intervention (Gamification). These set of questions (refer to Appendix C) were used to regulate students' answers and guaranteed that, respondents finished the facsimiles of the questions by themselves.

- **Design and Administration of Questionnaires**

The questionnaire was adapted from Alabbasi (2018), where respondents were required to indicate from the following: Strongly Agree, Agree, Neutral, Disagree and Strongly Disagree to a series of statements on their knowledge and skills in the benefit of game mechanics in the drawing lessons (See Appendix E). The questionnaire comprised two sections, students' demographic data in section A and B made up of fifteen (15) questions on the effects of Gamification on drawing lessons, making a total of eighteen (18) items in all. To improve the appeal of the questionnaire, it was given a clear, brief and expressive title, typed, section headings highlighted, well-spaced out and easy to read. This was vetted by colleagues and thesis supervisor to ensure clarity and revised to make them error-free before being used.

Copies of the questionnaires were personally administered to students in the selected classes 61 in number on 15th April 2019. Out of the total 61 questionnaires administered in the two classes, 61(100%) of them were retrieved. Results of observation, interview and questionnaires are presented in Chapter 4.

3.5 Ethical Consideration

An introductory letter was taken from the Head of Department of Educational Innovations in Science and Technology, College of Art and Built Environment, KNUST clarifying the purpose of the study and looking for help in gathering data for this research was presented to the Head of the participating school. Participants' permission was sought before the needed data was collected. The goal of the study was openly indicated to the participants and was guaranteed of treating collected data with confidentiality.

3.6 The Intervention Strategy

Day permission was acquired from the school authorities and a training section was organized for the sampled teachers on the use of adopted Gamification framework of Kevin Werbach (2014) as an interventional tool for teaching drawing in GKA at the two (2) Home Economics classes. This was done to prepare the sampled teachers with the acquaintance on how to effectively adjust their teaching strategies with Gamification.

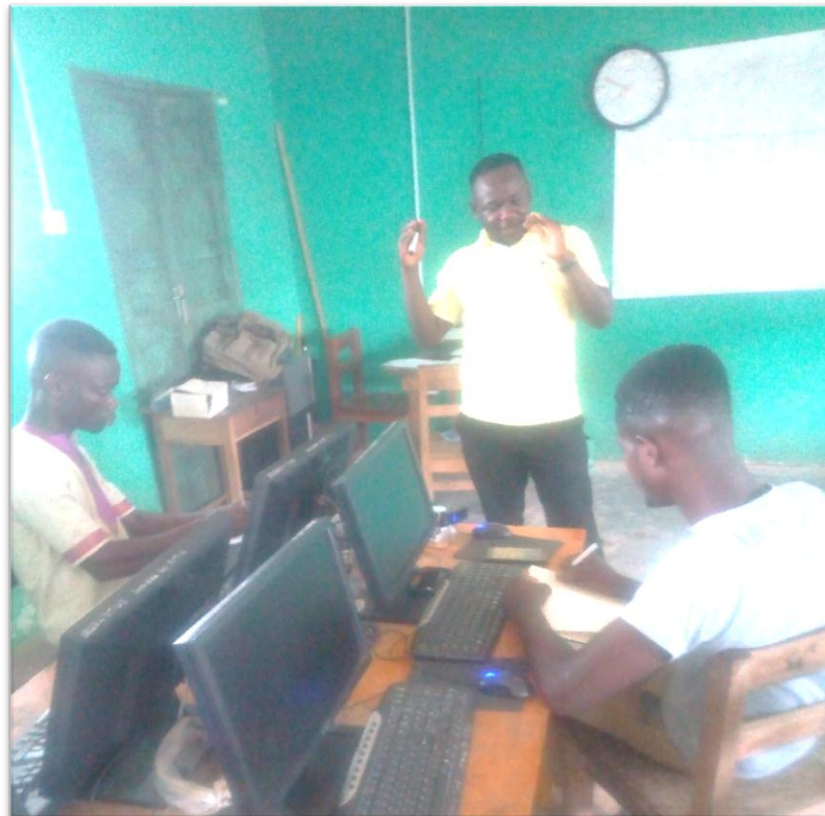


Plate 3.1: Sample teachers being taught the use of Werbach Gamification Framework during a training workshop organized by the researcher.

Source: Field Study (2019)

3.7 Types of Data

Primary and secondary data were collected for this research. Primary data gathered encompassed field records from observation, interviews and questionnaire. Secondary data

were collected from books, journals, online documents, published and unpublished thesis and other documents which was directly related to teaching methods and Gamification.

3.8 Data Analysis Plan

The data collected in part one through observation, interview and questionnaire were transliterated into a narrative and descriptive forms, analyzed and interpreted. The second part of data, gathered from the Pretest and Posttest results from the sampled classes (2HE1 and 2HE2) was also analyzed. It was done using SPSS to run a paired t-test to see if there were any statistically significant differences after the implementation of the Gamification intervention.

3.9 Research Philosophy

It is a structure of principles and expectations on the expansion of facts. It is specifically what one does when getting on research thus bringing knowledge in a specific subject area (Saunders, 2009). It is also the enlargement of enquiry postulation, its understanding and nature. The postulation is professed as an introductory declaration of thinking and it is founded on pronouncing peoples' understanding and intuitions (Žukauskas, 2018). According to Tariq (2017), there are three branches of research philosophy which includes ontology, epistemology and axiology. Ontology philosophy is categorized into two types; they are positivism and constructivism. Epistemology is also categorized into several types including essentialism, historical perspective, perennialism, progressivism, empiricism, idealism, rationalism and others. For the purpose of this research, the researcher will adopt the constructivism approach.

According to Honebein (1996), as cited in Adom et al (2016), constructivism is a slant which avers that individuals create their personal understanding and information of the biosphere via undergoing through experiences and reflecting on it. It is founded on the origin that individuals create a lot of what is studied via practice. Kalender (2007) opines that constructivism depicts the impression of learning not just taking place through lecturing but it only happens when learners ascertain understanding via the essence of trialling and performance. It can, therefore, be said that students learn best when they are completely involved in the teaching and learning process.

The constructivism philosophy is adopted to provide a platform which will fully engage students in the sample classes (2HE1 and 2HE2) in the teaching and learning process with regards to Gamification. It will also enable them to completely participate in the gamified drawing lesson to improve their drawing skills.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Overview

This chapter outlines the analysis and interpretation of the findings gained via interview, observation and questionnaires as well as the efficiency of Gamification as a teaching strategy in the teaching and learning of drawing in GKA.

4.2 Identification and analysis of the teaching activities in teaching and learning of drawing for Home Economics students (Objective One).

4.2.1 Findings from Interview with GKA Teachers

1. Demographics of Sampled Teachers

The GKA teachers interviewed in the two classes were both males, thus Teacher One (T1) for 2HE1 and Teacher 2 (T2) for 2HE2. Both teachers have been teaching GKA at the school for the past three years with a Degree in Art Education (Graphic Design option) and Art Education (Ceramics Option) respectively. They all use their classroom for their drawing lessons since there was no studio in the school. They were both professional teachers.

2. Instructional Period and Teaching Approaches

When asked if the instructional time allocated on the school timetable was adequate for drawing related topics in GKA, they all said “yes” with reasons that, “*we have 4 hours within the week on the timetable allowing us to plan the drawing lessons for the benefit of students*”. They also said that “*we used 1 hour from the 4 hours if they are to teach a drawing related topic*”. With regards to the teaching method used, Teacher 1 said, *lecture and demonstration method is what I use because it permits me to finish in time*. Teacher 2 also stated the same method for teaching drawing. T1 admitted that “*the lecture method*

does not really engage the students in the teaching and learning process". However, T2 said that *"lecture and demonstration method is the most effective when teaching drawing because after explaining the content, you also illustrate what students are to do on the whiteboard to aid their understanding"*. He later said, *"I would be grateful if you could suggest other alternate methods"*.

3. Teaching Learning Materials, Interest and Engagement

Upon asking if they use TLMs during drawing lessons they both said, *"yes especially if it is still life drawing"*. They again elaborated that, *"we send what students are to draw in the classroom and compose them if teaching still life drawing"*. With regards to other drawing topics like figure drawing T1 said, *"I make students draw from books"* while T2 said, *"I use one of the students as a model"*. When asked if their drawing class were interesting and engaging they all said no given reasons that, *"the majority of students in the class are females and some show little interest during drawing lessons while others because of their fear of drawing do not draw at all which makes drawing classes boring"*.

4. Motivation and Gamification

With regards to motivational elements in class during drawing lessons, they both said that *"apart from applauds from students and sometimes well done from us there is nothing more"*. Upon asking if they have heard of Gamification T1 said *"no"* emphasizing that, *"it is even a new vocabulary to me"*. However, T2 said *"no"* but added that *"it might be related to the playing of games"*.

4.2.1.1 Analysis of Findings from Interview with GKA Teachers

With the three years' experience of both teachers, lecture and demonstration method have been their best option with regards to teaching drawing. Considering the lecture method

Wang, Zhao & Gao (2013) opine that, it offers the teacher a principal role and permits the student to attain more knowledge but also prevents the student from being initiative and creative. Also, Teo and Wong (2000) as cited in Ganyaupfu (2013) orates that the lecture method is beneficial for rote learning but not practical application. Based on this assertion, the lecture method is effective with other procedure for effective teaching and learning. In this regard, Habil (2019) propose the following ways to aid effective teaching and to learn in drawing, thus group and individual consultation, practical assignments, demonstrative exercises, independent student assignments and presentations.

Again with the use of demonstration method as itemized by both teachers (T1 and T2), Basheer, Hugerat, Kortam & Hofstein (2016) remarks that a demonstration encompasses clarifying a point during lessons via the use of something rather than predictable pictorial aids. According to Chiappetta & Koballa (2002) and Shakhashiri (1992) as cited in Basheer et al. (2017), a well-organized and correctly offered demonstrations have the prospective to improve students' understanding. Similarly, Hofstein & Lunetta (2004) in their ample assessments, opine that a well-planned display is likely to enrich learning, impulse and attitudes. Based on these assertions, an organized and planned demonstration can increase students' interest and improve their cognitive capabilities. It can also inspire generalization since it stimulates active involvement on the students' part.

The two GKA teachers (T1 and T2) admitted that their drawing classes were not interesting and engaging with the reason being that the majority of their students were girls. In this regard, Davis (2005) remarked that girls are more inspired to accomplish better than boys in school. Similarly, Freeman (2004) opines that comparing learning capabilities between boys and girls from kindergarten through twelfth grade; girls make marginally higher average marks than boys. Again, Awan & Azeem (2017) in comprehensive review opines

that girls perform better than boys in curricular and co-curricular activities. With this assertion, it easy to say that both teachers (T1 and T2) reasons why their drawing lessons were not engaging cannot be relied on. MacDonald (2019) postulate that every single teacher needs a variety of methods in their teaching to make it very interesting. Shengi, Hongmei & Yimin (2009) remarked that teachers have to modify their teaching concept and approaches; create new instructional philosophy; perform their peculiar role and accomplish their assigned task.

With motivational elements in their drawing lessons, both T1 and T2 said they use applaude from students and sometimes well done from themselves. According to Abdussalim (2008), motivation is a significant feature in the teaching and learning process. The triumph of learning rest on the high or low motivation of students. It can determine whether learners will accomplish their learning goals or not, therefore, become a fundamental of attainment in the teaching and learning process. If motivation is very crucial in the teaching and learning process how then can the GKA teachers with their experience employ it as a strategy to make a perceived delicate area like drawing interesting to aid students' participation and engagement.

4.2.2 Findings from Observations of Still Life Drawing Lessons in Sampled Classes

The lesson observation exposed the following as practices linked with the teaching and learning of Still life drawing in the form two Home Economics Classes (2HE1 and 2HE2). The table below describes the objectives to be achieved by the teachers during the contact hours. The lesson plan used for the lesson prepared by both teachers (T1 and T2) using the MOE GKA Suggested Syllabus. The Still Life drawing lesson took place in two classes (2HE1 and 2HE2). The composed still life objects which included a gallon, a paint rubber and coconut has been captured below in plate 4.1a.

Table 4.1: Lesson plan for Still Life Drawing lesson for both classes

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 (CONT'D) EXPLORATION OF TOOLS AND MATERIALS iii. Types of Drawing (Still Life Drawing)	The student will be able to: 2.1: Define still life drawing 2.2: Describe objects which are still 2.3: Draw composed still life objects	Still Life Drawing It is a type of drawing which involves the use of inanimate objects or objects without life.eg: bottle, box, coconut, gallon etc.	TLMs: bottle, box, coconut, gallon etc. Guide students to practice drawing a composed object by looking and drawing simultaneously.	Produce a drawing from the composed still life objects.

The teachers involve commenced their lesson by writing the topic “Still Life Drawing” on the board. T1, who was in 2HE1 (Biology option) during his teaching time asked students’ the meaning of Still Life drawing but had a single response from one student. “*She said are drawings which are still*”. The teacher (T1) explained “Still” as “*something which cannot move by itself*”. He also described “still life drawing” to students and later placed the object in front of the class where the whiteboard was and told them to draw the object. He gave each student a quarto cartridge paper and emphasized on depicting what they see. In 2HE2 (Chemistry option), Teacher (T2) greeted the students after entering the class and introduced the topic for the day (Still Life Drawing) to them. He then explained the meaning of Still Life drawing to them and its importance to the students. One thing that was common among their teaching was that none of them mentioned the objective of the

lesson to the students. After explaining the theory component of the lesson, T2 also told students to get prepared for drawing and shared quarto cartridge papers to them. He also set the object to be drawn in front of the class and asked students to draw. Another thing observed was that both teachers did not do any illustration on the board to aid students' understanding of what they were drawing.



Plate 4.1a: Composed Still life objects drawn by students.

During the drawing task, students in both classes exhibited similar characteristics. One student complained about how difficult it was to draw by saying “*I wish drawing was not part of GKA*”. Some made noise during the drawing exercise; others were eating while some of them were sitting idle. The sitting arrangement of students during the drawing assignment was very pathetic; they were in rows and columns as if it was a “theory lesson”. Teacher 1 who was in 2HE1 sat at an extreme corner of the class and watch students draw without going around to assist them, but Teacher 2 who was in 2HE2 went around and watched what students were drawing but did not support any of them. There was no motivation for students who were doing well, and those who were struggling were not encouraged. Drawing exercise, which was meant to be lively and very involving, was rather dull and seen as a challenge on the part of students in both classes. At a point during

the drawing exercise, the researcher expected teachers to group students who were struggling with those who were performing better, but that was not the case.

After the drawing exercise, both teachers collected students' drawings and left the class. In all both used 30 minutes for the “theory” aspect of the lesson and 1 hour 30 minutes for the drawing exercise. The session lasted for 2 hours.



Plate 4.1b: A student eating during drawing exercise in 2HE2.



Plate 4.1c: A student sitting idle during drawing exercise in 2HE1.



Plate 4.1d: The sitting arrangement of students' in 2HE2 during drawing exercise.

4.2.2.1 Analysis of Findings of Observations of Still Life Drawing Lesson in Sampled Classes

1. Instructional Period

The observation revealed that the instructional period allocated on the timetable for GKA lessons was adequate. The reason is that GKA is done 4 hours (2 hours for each lesson and twice a week) within a week and the teachers observed were able to use 30 minutes for theory aspect of their teaching and 1 hour 30 minutes for the drawing exercises (still life drawing).

2. Objectives of Lessons

The observation discovered that the sampled teachers were teaching Still life drawing deprived of elucidation to the students the purposes of learning that topic. None of them stated the objectives for the lesson and also did not openly describe them to the students. Though the sampled teachers had a lesson plan for the session, they did not follow it. According to Sudhakar (2017), a good lesson plan is vital to the teaching and learning process but useless if you ignore delivery processes. If a critical component like a lesson

plan considered to be a teacher's manual of what students are to learn is avoided, why plan it in the first place.

3. Teaching Approaches

The observation also revealed that sampled teachers used only lecture method for their teaching of drawing though they had said during the interview that they were using both lecture and demonstration method for drawing lessons. No demonstration was done on the whiteboard to aid students understanding of the given task. Again, collaborative (group) learning was absent during lesson delivery; It affected their lesson, making students passive throughout the “theory” aspect of their teaching. The absence of collaborative (group) may have been one of the causes of some students eating in class while others were making noise when asked to draw.

4. Motivational Elements and Feedback

The observation revealed that the remuneration system in the class was not inspiring the students enough to accomplish drawing activities. The only reward system in the class was applauding; which was given by colleagues' students after a student gave out a correct answer to a question, and an oral well done by the teachers themselves. Prensky (2002) orate that motivation permits students to put out effort without dislike. Meagre reward system used during lesson demoralized most of the students and made them felt reluctant to perform drawing exercise.

Feedback is very vital to a learner's achievement since it serves as a form of motivation that inspires active learning (Kochhar, 2004). The observation also revealed that students do not have access to their summative scores but were sometimes made aware of their formative score by way of the marked exercises. In this instance, their developmental score

was not known since, after the drawing assignment, the sampled teachers collected their drawing papers and took them away.

4.2.3 Findings on Pre-Test Performance in Sampled Classes

Table 4.2 shows the frequency distributions of the pre-test results for both classes (2HE1 and 2HE2) and Figure 4.1 shows the graphical representation of the total pre-test percentages in both schools on the effect of existing methods of teaching and learning still life drawings in GKA.

Table 4.2: Frequency Distribution of Pretest results for both classes

Score	2HE1		2HE2	
0 - 2.5	6	19%	10	36%
3 – 4.5	22	71%	13	46%
5 – 7	2	7%	5	18%
8 – 10	1	3%	-	-

Source: Fieldwork, 2019

4.3 Implementation of Gamification as an instructional strategy in teaching and learning of drawing for Home Economics students (Objective 2)

The researcher modified Kevin Werbach Gamification framework, developed in 2014. The gamified lesson reflected the six (6) various components of Werbach framework with elaboration below.

1. Define Objectives

The MOE Teaching Syllabus for GKA, SHS (2010) aided in the preparation of the objectives. The purposes curved into goals (See Appendix H) and elucidated to sampled students and visibly transcribed on the whiteboard in the classroom in the course of the

lesson by each teacher. The teacher informed the students on the importance to achieve each goal before you go a level up for the various allocated task.

2. Delineate Target Behaviors

The gamified drawing lesson was designed to permit the students to relate socially with one another to create decent interactions to help overcome some of their drawing difficulties. In the two sampled classes, feedback on the task performed was to be given by teachers immediately after marking in class. The sampled teachers gave points to students who completed any drawing exercise fruitfully. The teachers documented the accumulated points on a tally sheet and later conveyed to the leaderboard, pasted at a vantage point in the classroom for students to know their stand after any drawing task.

To encourage collaborative learning, the teachers, structured students in groups with each set having five members. Each group was asked to perform a task and points gained were recorded in the name of each member in the group. This action helped the students to share ideas in performing a drawing task and also encourage weaker students in each group to put up their maximum best.

3. Describe your players

In describing your players, one must use demographics including age, gender etc. and psychographics, including their values and personalities. You should demonstrate that you know what varieties of game elements and other structures expected to work for your population (Werbach, 2014). With regards to this, the age and gender of the students were used to define the players.

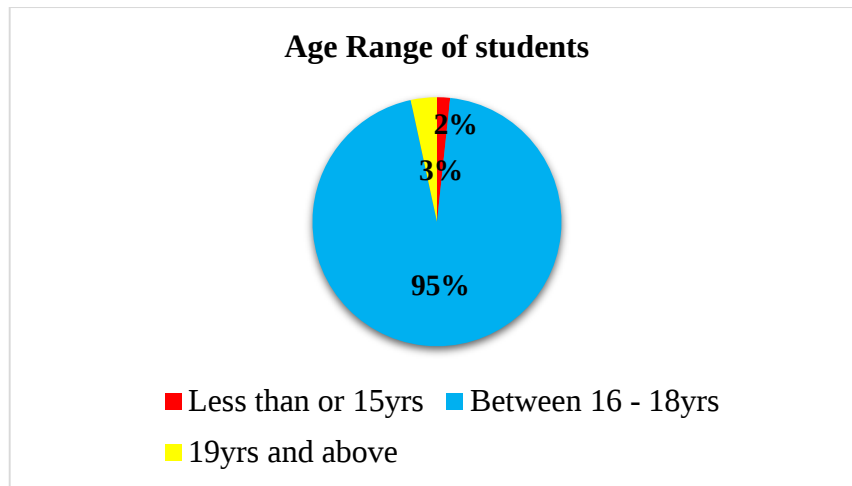


Figure 4.1: Age of students at the sampled classes

Source: Fieldwork, 2019

From the above chart, 2% of the students were between the age less than or 15 years, 95% of them were between the ages 16 to 18 years whereas 3% of the students were between the age 19 years and above. It indicates that the majority of the students who participated in the research were in their teenage.

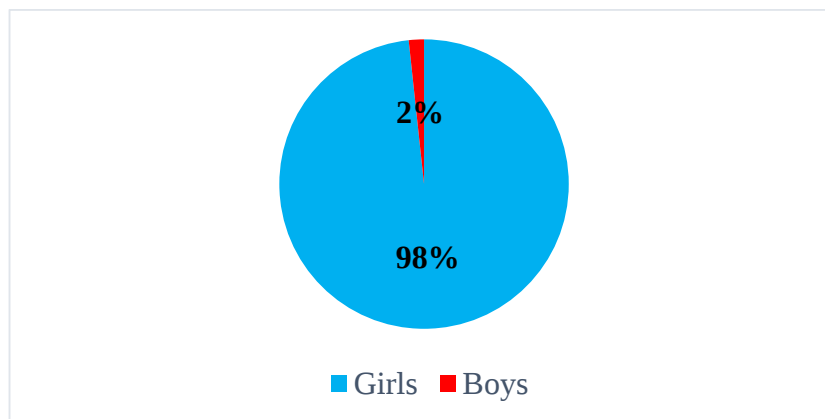


Figure 4.2: Gender of students at the sampled classes

Source: Fieldwork, 2019

The chart above shows that 2% of the students were boys while 98% of them were girls. This implies that girls dominated the respondents since the classes used for the research was Home Economics class. Again it can be said that more girls do Home Economics as compared to boys.

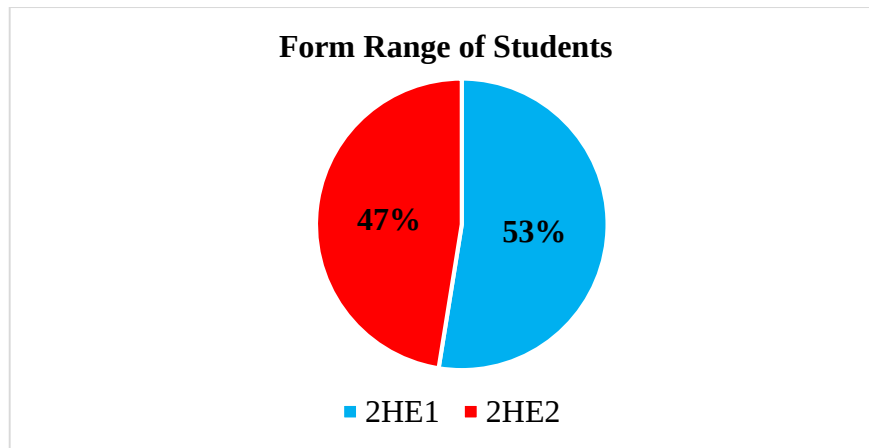


Figure 4.3: Form range of students at the sampled classes

Source: Fieldwork, 2019

The chart above shows that 53% of the students were in 2HE1, while 47% were in 2HE2. This means that majority of the respondents were in 2HE1 as compared to 2HE2. Again it can be said that most students preferred the “Food option” as against the “Clothing and Textiles option”.

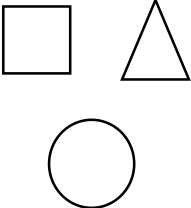
About game elements to be used, the researcher considered the under-listed items.

- Onboarding
- Scaffolding
- Points
- Levels
- Leaderboards
- Badges
- Real-Time Feedback
- Rewards
- Boss fights

4. Devise activity loops

Werbach (2014) orate that, engagement loop guarantees that learning becomes a process that offers the user (students) the motivation to perform better. If the drive is predominant, the user will respond and make a needed act. When you act, instant feedback must be given to serve as an indicator of how well the student has accomplished. It can become a motivator for the student. In line with this, the sampled teachers gave verbal and written feedback to drawing exercise done by students; the students also gave instant feedback to their colleagues who were not doing well in the group activities. The peer-review made students do more even after ending the group task. With regards to progression loop, the drawing assignment started with basic shapes, which were part of a superior challenge. Table 4.3 indicates that.

Table 4.3: Lesson plan for drawing session, including the various task.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 (CONT'D) EXPLORATION OF TOOLS AND MATERIALS iii. Types of Drawing (Drawing of Basic Shapes)	The student will be able to: 2.1: Draw the three basic shapes 2.2: Shade the shapes using the three tonal values. 2.3: Make a composition of the drawn shapes and shade it.	Basic shapes involve plane and solid figures.	TLMs: Square, triangular and circle shapes. Guide students to practice by drawing the three basic shapes by looking and drawing simultaneously. E.g.  For the group task, students will make a form from the basic shapes and shade using the three tonal values.	Produce a drawing of the following shapes and shade them a. Square b. Circle c. Triangle Make a composition from the various shapes and shade them using the three tonal values.

Source: Fieldwork (2019)

In order not to kill the interest of students, the gamified lesson had to be taught using a lesson plan which contained the various objectives to achieve. To be able to accomplish the listed objectives, the students had to complete all the minor and major tasks in the lesson.

5. Don't forget the fun!

The sampled teachers sketched an action plan for the gamified drawing lesson. The action plan was that the whole lesson was a journey which comprises of various tasks refer to as levels to complete to make it to a final challenge which was termed boss fight. Each level had a goal to be accomplished to be able to move up that level; the higher the level, the more stimulating the task became. Fun was created by scattering tasks and mysteries between levels. All actions were planned to be entertaining and motivating. The feedback system for the accomplishment of the task was intended to be fulfilling, encouraging and enjoyable. The achievement of the task was connected to an optimistic sensation and since it was entertaining, the players (students) had a tendency to accomplish more tasks. To draw with a negative attitude, attitudes like laziness, segregation and delay, were branded as scoundrels that needed to be oppressed by the student. The teacher needed to recognize such students, know their motives behind such setback and find a possible solution to it.

6. Deploy the appropriate tools

Game elements embraced to gamify the drawing lesson were onboarding, scaffolding, points, levels, leaderboards, badges, feedback, rewards, and boss fights. These are explained as follows:

a. Onboarding

It deals with the training of users on the rubrics and tools for playing the game. It begins when the user enrolls into the game and ends when he/she has grasped the basic skills required to participate in the game. In this regard, every student taking part in the gamified drawing lesson is already signed up. The sampled teachers explained the rules and how the gamified drawing lesson is done. Students in both classes (2HE1 and 2HE2)

understood the rubrics before they started and it manifested when they engaged in the various activities.

b. Scaffolding

Most of the students in the sampled classes could not draw the basic shapes of the composed objects during the pretest assignment. To improve the aforementioned problem, the sample teachers had to take them through a rigorous game activity loop known as a gamified drawing lesson. The gamified lesson is in four levels where each student is expected to complete all before the lesson ends. Level 1 and 2 has two constituents while level 3 has three constituents. Level 4 is the boss fight where participants are supposed to complete before they can end the gamified lesson. Successful completion of each level yielded points and numerous badges. Students receive points for signing up and also for accomplishing a given task. Badges are given to students as they successfully complete one level to another. Sample teachers are expected to visit individual students as they draw and provide assistance to those struggling to perform a given task. Tasks done at each level are marked by sampled teachers for students to know their feedback. The various task in each level is considered an activity which engages participating students in the gamified lesson. The accumulated points are transferred to the leaderboard to know who is performing and who is not.

c. Level

The objectives were broken into four (4) levels; all levels are to be completed with the sampled teachers tasked to observe what students are doing. However, if a student did not pass a particular level, he/she is made to practice it for as long as they get it.

Level 1: i. “draw” the square shape.

ii. shade the square shape using the three tonal values (light, middle and dark tone).

Points allocation in level 1: The same system was used for the various levels (level 2 and 3) of the gamified drawing lesson but marks allocation varies at level 4.

Drawing

1. A very accurate drawing of the square shape: 4.5-5marks
2. An accurate drawing of the square shape: 3.5-4marks
3. A fairly accurate drawing of the square shape: 2.5-3marks
4. Poor drawing of the square shape: 1-2marks

Shading

1. A Very accurate shading of the square shape: 4.5-5marks
2. An accurate shading of the square shape: 3.5-4marks
3. A fairly accurate shading of the square shape: 2.5-3marks
4. Poor shading of the square shape: 1-2marks

A participant (student) must spend 15 minutes in completing level 1.

Level 2: i. “draw” the triangular shape.

ii. shade the triangular shape using the three tonal values.

A participant must spend 15 minutes in completing level 2.

Level 3: It is divided into two parts (individual and group work). The individual work comprises of each student drawing the circle shape and shading it using the three tonal values.

Five groups were created by the sample teachers in each class and the activities included the following:

- i. change” the three drawn shapes (square, triangle, circle) into forms.
- ii. shade the forms one by one using the three tonal values.

Individual exercise in this level is to be done within 15minutes while group assignments are slated for 25 minutes.

Level 4: This level is referred to as boss fight. Each student is to make a composition using the three forms created in the various groups. The composition must be shaded using the three tonal values. 25 minutes is the time a participant needs to complete the exercise in level 4.

Points allocation at level 4

Drawing

1. A very accurate drawing of the composed forms: 21-25marks
2. An accurate drawing of the composed forms: 16-20marks
3. A fairly accurate drawing of the composed forms: 14-15marks
4. Poor drawing of the composed forms: 5-10marks

Shading

1. A very accurate shading of the composed forms: 21-25marks
2. An accurate shading of the composed forms: 16-20marks
3. A fairly accurate shading of the composed forms: 14-15marks
4. Poor shading of the composed forms: 5-10marks

d. Points

Points are awarded to each student only after the fruitful accomplishment of a task. The points assigned for a successful task was discussed with the students by the sample teachers in both classes. It made the gamify lesson both learner and teacher-centred; it aided the students to be aware of the scoring system created for the gamified lesson.

Points Allocation

- Sign up points: 10 marks
- Level completion points: 40 marks (level 1: 10; level 2: 10; level 3: 10 for an individual task and 10 for group task which sums up to 20).
- Boss fight points: 50 marks

The accumulated points will later be converted to 10% to match the pretest marks obtained from sampled students to compare their statistical difference using a paired T-test.

e. Real-Time Feedback

The instant feedback was given by the sampled teachers to involve and inspire a student executing a specific task. According to Clark et al (2011), feedback offers knowledge of practice outcomes thus, it does not just tell the user if they answered the question properly or wrongly, but also offers the chance to clarify why the answers are precise or improper. The work by each student is marked in the class after each level. It is then recorded by the teacher and given to the student immediately.

f. Badges

Badges were used as remuneration scheme after a student effectively accomplished the goal of a particular level. Sorts of badges used for the gamified lesson are defined in Table 4.4. A participant could receive as many badges depending on her accomplishment at each level.

Table 4.4: List and Meaning of Badges for the Gamified Drawing Lesson

Badge	Meaning	Badge	Meaning
Good Heart Badge 	For voluntarily collaborating to help a colleague	Speed Badge 	For finishing a task at a faster rate
Thumbs Up Badge 	Awarded to students who have been consistent with their progression in the drawing lessons	Gold Badge 	For achieving the highest score in the gamified lesson
Trophy Badge 	for successfully making it to the last level (Boss Fight	Silver Badge 	For achieving the second-highest score in the gamified lesson
Star Badge 	For an outstanding performance at each level.	Bronze Badge 	For achieving the third-highest score in the gamified lesson
Team Badge 	For being a team player		

Source: Boating, (2015)

g. Rewards

Tangible rewards in the form of badges and points were used in the gamified lesson to encourage students to participate in the drawing tasks allotted to them. The badges were made in sticker format where each receiver will paste it at the left part of the chest to depict his/her accomplishment. The point was given as marks.

h. Boss Fight

Boss fight was the final task that a student had to complete to finish the gamified task. With regards to this, each student is to make a composition from the various basic forms and shade them using the three tonal values.

i. Leaderboard

Werbach (2012) opine that leaderboard is a rated list of accomplices in a game, with the maximum score on top. It is used to determine which students in the gamified lesson are doing very well. Two leaderboards were used; one for each class to show the individual progress of each student. It was displayed at a vantage point in the class to avoid distraction during the lesson.

2 HOME ECONOMICS 2

LEADER BOARD

NAME	LEVEL 1		LEVEL 2		LEVEL 3		BOSS FIGHT	TOTAL
	Ex. 1	Ex. 2	Ex. 1	Ex. 2	Ex. 1	Ex. 2		
Abdulkarim Hassana								
Acquah Lovia								
Adusah Margret								
Afful Cecilia								
Afful Hannah								
Amoah Sarah								
Amonoo Charlotte								
Ampiah Ophelia Christabel								
Annan Leticia								
Ansah Portia								
Appiah Elizabeth								
Arthur Abigail								
Arthur Grace								
Arthur Samuel								
Asiedu Vivian								
Awepare Esi Salomey								
Ayi Angelina								
Biney Mary								
Brace Olivia								
Doomson Edith								
Dublik Gladys								
Essien Diana								
Essien Priscilla								
Fosu Olivia								
Gyekye Diana								
Kotoh Margret								
Mensah Ruth								
Oppong Gladys								
Owusu Vivian								
Quaicoe Jessica								
Quaicoe Leticia								
Quayson Francisca								
Quayson Josephine								
Takyi Linda								

Figure 4.4: Sample leaderboard used for the gamified drawing lesson

4.3.1 Step by Step Implementation of Gamified Instructional Strategy in Sampled Classes (2HE1 and 2HE2)

1. Sampled teachers started teaching by revising related earlier knowledge of the students.
2. Teachers visibly transcribed the topic of the lesson on the whiteboard and ask of students' views on the topic.

3. After, teachers clearly write the objectives of the lesson on a vantage part of the whiteboard and elucidated them to the students.
4. Teachers grouped the explained objectives into the four (4) levels. Each objective was to be achieved at a level before one move up to the next.
5. Teachers explained the three basic shapes (square, triangle and circle) to be drawn to students before starting the task of level one (1) thus to draw the square shape and shade using the three tonal values.
6. Teachers demonstrated to the class using the various shapes to be drawn and made students arrange desks' in the class in a semicircular form.
7. Teachers then gave students drawing sheets and told them to start level one (1). After the activities in level one, the teachers collected students drawn works to be able to mark them in the presence of students. This was done on all levels.
8. During the activities in level one, students who helped fellow colleagues who were struggling with the task were given a **Good Heart Badge** for their kind gestures. The marks obtained by students were recorded on a score sheet and transferred to the leaderboard posted in the class. This was repeated at all levels after marking. A student with the most outstanding work in this level was given a **Star Badge**. Again, students who were rapid in completing the task were given a **Speed Badge**. The issuance of the above badges was done at all levels.
9. After achieving the task for level one, students were asked to start level two which was to draw the triangular shape and shade using the three tonal values. It was done on a different drawing sheet. After completion of the task in level two, students who were consistent in their drawing progression from level one to two were given **Thumbs up Badge**. it was also repeated at the end of level three.

10. Level three (3) activities were done in two folds thus an individual work by all students and group work from the various groups generated in the class. The individual work was to draw the circle shape and shade using the three tonal values. However, the group project consists of turning the various shapes into form and shading using the three tonal values. After the completion of both individual and group work, teachers awarded points to the groups on the score sheets and later recorded the marks on the leaderboard. The marks obtained by each group were awarded to all members of that particular group. Members in each group who acted as team players were awarded a **Team Badge**. All students who successfully made it to the last level (Boss fight) were awarded a **Trophy Badge**.
11. After the group work, students were made to sit individually and perform the last task. This was the boss fight where students were asked to compose the various forms into one and draw them. After drawing, all works were collected and marked by the teachers and later transferred to the leaderboard. The accumulated points by students were added to know who became first and last. The best three winners for the day was mentioned and awarded various badges; first-person received the **Gold Badge**, second the **Silver Badge** and third the **Bronze Badge**.
12. After the period was over, the Teacher asked the students to put away their marked works and arrange the desk for the next subject.

4.3.2 Strengths and Weakness of the Gamified Lesson

Strengths

- Objectives for the lesson were measurable, clearly stated and explained to students to help them know what they were to achieve.

- Scaffolding as an element provided the description to the various activities and the rubrics that maintained students' engagement and interest throughout the gamified lesson.
- Reward systems (points, badges and real-time feedback) motivated the students to give their all to the gamified drawing lesson.
- Collaborative (group) learning in the gamified lesson provided an opportunity for students struggling in the drawing task to learn from those performing better.

Weakness

- The leaderboard in the gamified lesson though created competition among students but also demotivated some of the students after the tally of the accumulated points was done.

4.4 Presentation and Analysis of Findings for Objective Two

4.4.1 Findings from Observation during Gamification Intervention in the Sample Classes

The teachers openly elucidated the objectives of the drawing lesson to the students and made them aware of the goals to be accomplished at the end of the lesson. The teachers explained the rules for the gamified lesson. They explained how lessons are gamified by saying students in such class learn as if they are playing games. Game elements such as points, badges, level etc. are used. The students in the sampled classes were happy looking at their facial appearance after hearing what the teachers' said. The teachers then explained the meaning of basic shapes and displayed some for students to know exactly what they mean. Some of the students in 2HE1 asked if a cylinder or a box could also be considered basic shapes. The teacher in that class explained that the two mentioned were not shapes but forms where he added that forms are normally in three dimensions. On the other hand,

students in 2HE2 listen with attentiveness when their teacher explained the meaning of basic shapes. After explaining, the teacher asked questions in relation to basic shapes which a lot of the students had it right. The students were engaged to the assigned task in each level and even in the group work. There was competition in the sampled classes during the lesson because each student wanted to achieve one badge or the other. During the group task, the researcher observed that students in the various groups were keen to complete their allotted task and progressive to the subsequent level. It was known as a result of the joint attitude of the members in the various groups. There was an enormous improvement in students' skills with regards to how to draw and shade. Points were awarded for successful completion of levels and badges were issued to individuals and groups who successfully completed the levels. These badges were pasted on them for everybody to know what they have been able to achieve.



Plate 4.5a: Teacher explaining the rule for the gamified lesson.



Plate 4.5b: A student drawing triangular shape happily after receiving a set of badges.



Plate 4.5c: Students in 2HE1 busily drawing the assigned task.



Plate 4.5d: Students in 2HE2 busily drawing the assigned task.



Plate 4.5e: A student happy after receiving two different badges.



Plate 4.5f: A group busily doing the assigned task.



Plate 4.5g: Some students checking their marks on the leaderboard.



Plate 4.5h: A student feeling happy after receiving several badges.



Plate 4.5i: Winners of the gamified drawing task in 2HE1.



Plate 4.5j: Winners of the gamified drawing task in 2HE2.

4.4.2 Analysis of Findings from Observation of Gamification Intervention in the Sample Classes.

According to Schunk et al (2010), as cited in Sailer et al (2017), Gamification brings the prolongation of goal-directed behaviour. This was evidenced in the gamified class where each student wanted to accomplish a specific task in order to receive a reward. No wonder Prensky (2001) opine that people are impatient when it comes to playing games and can spend limitless hours at it. Relating his views to the gamified class, in both classes students wanted the drawing class to continue even when the period was over. The enthusiasm to which they were agitating for the continuation of the class was exciting. This also confirms what Csikszentmihalyi as cited Prensky (2001) flow experience that, players are immersed into a state of deep fascination during gameplay. The engagement and excitement in the class were very deep.

4.4.3 Analysis of Findings from Interview on Gamification Intervention from the GKA Teachers.

The sample teachers were very happy about the introduction of Gamification intervention into their drawing lessons and recommended that it should be used in the teaching of practical related topics in GKA especially drawing. With the issue of the scoring system in the gamified lesson, they both responded affirmative meaning the scoring system was appropriate and encouraged the students to go all-out for more points and by this improving their drawing skills. Again on the suitability of tasks given the two teachers responded positively stating that the tasks really improved students drawing skills looking at the scores they had as compared to their pretest scores. With regards to the skills, Kapp (2012) opine that a well-designed game help learners gain skills and knowledge. On the feedback systems used during the gamified lesson, the sample teachers responded affirmatively with an explanation that students knowing their scores instantly after a given task motivated them to strive for more especially when they did not do well. It can,

therefore, be said that students knowing their marks after completion of a task will motivate them and encourage them to do more. In all the researcher agrees to what Kapp (2012) said that robust engagement can be achieved if a task is reasonable, own and inspiring.

4.4.4 Analysis of Findings from the Questionnaire on Gamification Intervention in the Sample Classes.

Table 4.5a: Effects of Incorporating Game Elements in Drawing Lessons.

Descriptive Statistics

	N	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Dev.
Did the gamified lessons provide encouragement that was worth attending?	59	52	6	1	-	-	1.1356	.39206
Did you manage to keep your focus on the lessons and its tasks the whole time?	59	47	12	-	-	-	1.2034	.40598
Were the tasks suitable for your skills?	59	49	10	-	-	-	1.1695	.37841
Did the task get more challenging during the progress of the gamified lessons?	59	45	12	2	-	-	1.2712	.51963
Did you see any improvement in your skill in performing drawing tasks?	59	57	1	1	-	-	1.0508	.28910

Source: Fieldwork (2019)

Results from Table 4.5a show the findings from the students' perspectives on the effects of incorporating game elements in GKA drawing lessons. The findings reveal that, in the gamified drawing lessons with factors such as providing encouragement (Mean =1.14, Std Dev.=0. 392), making you keep focus (Mean =1.20, Std Dev. = 0. 406), tasks suitability (Mean=1.17, Std. Dev. = 0. 378), task getting more challenging (Mean = 1.27, Std Dev. = 0.519), game elements improving drawing skills (Mean = 1.05, Std Dev. =0.289) there was statistical significance as clearly shown in their means and standard deviation which also implies that game elements in the above-listed factors affected students' positively.

Table 4.5b: Effects of Incorporating Game Elements in Drawing Lessons**Descriptive Statistics**

	N	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Dev.
Were the instructions and scoring systems of the lesson clear to you?	59	59	-	-	-	-	1.0000	.00000
Were you able to control the number of points you got for the lessons?	59	38	19	2	-	-	1.3898	.55761
Did the scoring system offer appropriate rewards for the tasks completed?	59	45	14	-	-	-	1.2373	.42907
Did you receive immediate feedback about a task given?	59	56	3	-	-	-	1.0508	.22157
Were you always aware of your score in the course of drawing lessons?	59	58	1	-	-	-	1.0169	.13019

Source: Fieldwork (2019)

Results from Table 4.5b show the findings from the students' perspectives on the effects of incorporating game elements in GKA drawing lessons. The results also indicated that clarity in instruction and scoring system (Mean=1.00, Std Dev. =0.000), control on points obtained (Mean=1.39, Std Dev. =0.558), appropriate rewards offered by scoring system (Mean=1.24, Std Dev. =0.429), immediate feedback received (Mean=1.05, Std Dev. =0.222), being aware of score (Mean =1.02, Std Dev. =0.130) also shown a statistical

significance implying that the existence of Gamification in the drawing lesson had a positive impact.

Table 4.5c: Effects of Incorporating Game Elements in Drawing Lessons

Descriptive Statistics

	N	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Dev.
Were you aware of the goals to achieve for each drawing lesson?	59	59	-	-	-	-	1.0000	.00000
Did at any time felt that the tasks given were so engaging that they involved you emotionally?	59	59	-	-	-	-	1.0000	.00000
Did you feel the competition between you and your colleagues?	59	59	-	-	-	-	1.0000	.00000
Did you cooperate well with your team members?	59	44	12	-	1	2	1.3898	.87132
Did you learn anything from your team members?	59	50	7	1	-	1	1.2203	.64508

Source: Fieldwork (2019)

Results from table 4.5b show the findings from the students' perspectives on the effects of incorporating game elements in GKA drawing lessons. The results indicated that, being aware of the goals to be achieved (Mean=1.00, Std Dev. =0.000), being emotionally attached to a task (Mean=1.00, Std Dev. =0.000), competition (Mean=1.00, Std Dev. =0.00), cooperation among team members (Mean=1.39, Std Dev. =0.871), learning from team members (Mean=1.22, Std Dev. =0.645) shown a statistical significance apart from "cooperation with team members" and "learning from team members" which shown no

statistical significance. By implication, it can be said that game elements in drawing lessons proved to have a positive effect on students' skills and performance.

In summary, looking at the answers given by students' to the questions asked after the implementation of the intervention it is evident that, Gamification in GKA drawing lesson has proven to have a positive effect on students' achievement and must be encouraged in this regard.

4.5 Evaluating the effect of Gamification as an instructional strategy in teaching and learning of drawing for Home Economics students (Objective Three)

4.5.1 Presentation and Analysis of Findings for Objective Three

4.5.1.1 Pretest and Posttest Results from 2HE1

Table 4.6a: Pretest and Posttest Results from 2HE1

Respondents (Students)	Pretest Results	Posttest Results
1	4	5.2
2	3	5.2
3	3	5
4	3.5	5.9
5	3.5	6.8
6	3.5	5
7	2	5.5
8	3	5.5
9	3	6
10	7	5.8
11	2.5	5.8
12	2	5.7
13	3	5
14	3	5.8
15	3	8
16	4	5.5
17	2	6
18	4	6
19	3	5
20	3.5	5
21	4	5.6
22	6	8
23	4	6
24	8	6
25	4	5.6
26	2.5	6
27	4	6.9
28	3	6
29	3.5	5.9
30	2.5	6.5
31	3	5.5

Source: Fieldwork (2019)

Table 4.6b: Results from Paired T-test on Pretest and Posttest Results from 2HE1**Paired Samples Statistics**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	3.548	31	1.3251	.2380
	Posttest	5.861	31	.7513	.1349

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
					Lower	Upper				
Pair1	Pretest – Posttest	-2.3129	1.3783	.2476	-2.8185	-1.8073	-9.343	30	.000	

A paired t-test was conducted to evaluate whether a statistically significant difference existed between the mean of GKA drawing achievement scores before and after the implementation of Gamification. Assumption testing indicated no gross violation of assumptions. The results of the paired sample t-test were significant, $t(30) = 9.343$, $P < 0.0005$, $\eta^2 = 0.744$, indicating that there is a significant increase in GKA drawing achievement scores from the pretest ($M = 3.548$, $SD = 1.325$, $N = 31$) to the posttest ($M = 5.861$, $SD = 0.751$). The effect size was large, based on Cohen's conventions (1988). The mean increase was 2.313, with the 95% interval for the difference between the means 1.807 to 2.819. The researcher rejects the null hypothesis with the reason that Gamification intervention has improved students' performance in relation to their drawing skills and has also boosted their scores as clearly seen in paired sampled t-test analysis.

4.5.3 Pretest and Posttest Results from 2HE2

Table 4.6c: Pretest and Posttest Results from 2HE2

Respondents (Students)	Pretest Results	Posttest Results
1	6.5	5.5
2	4	6.5
3	2.5	5.5
4	5	8
5	3	5
6	5	7
7	2	6.5
8	2	5.5
9	3	7
10	3	6
11	2	5
12	3	5.5
13	6	8
14	3	5.5
15	2.5	5
16	3.5	6
17	3	6
18	2	5
19	3.5	5.5
20	2	5.5
21	4	6
22	3	7
23	2	6
24	2	4.5
25	5	8
26	2	6
27	3	6
28	4	7

Source: Fieldwork (2019)

Table 4.6d: Results from Paired T-test on Pretest and Posttest Results from 2HE2**Paired Samples Statistics**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	3.2679	28	1.26551	.23916
	Posttest	6.0714	28	.94980	.17949

Paired Samples Test

		Paired Differences					t	df	
		Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference				Sig. (2-tailed)
					Lower	Upper			
Pair 1	Pretest - Posttest	-2.80357	1.02143	.19303	-3.19964	-2.40750	-14.524	27	.000

A paired t-test was conducted to evaluate whether a statistically significant difference existed between the mean of GKA drawing achievement scores before and after the implementation of Gamification. Assumption testing indicated no gross violation of assumptions. The results of the paired sample t-test were significant, $t(27) = 14.524$, $P < 0.0005$, $\eta^2 = 0.887$, indicating that there is a significant increase in GKA drawing achievement scores from the pretest ($M = 3.268$, $SD = 1.266$, $N = 28$) to the protest ($M = 6.071$, $SD = 0.950$). The effect size was large, based on Cohen's conventions (1988). The mean increase was 2.804, with the 95% interval for the difference between the means 2.408 to 3.200. The researcher rejects the null hypothesis with the reason that Gamification intervention has improved students' performance in relation to their drawing skills and has also boosted their scores as clearly seen in paired sampled t-test analysis.

Table 4.6e: Pretest Results for both 2HE1 and 2HE2

Respondents (Students)	2HE1	2HE2
1	4	6.5
2	3	4
3	3	2.5
4	3.5	5
5	3.5	3
6	3.5	5
7	2	2
8	3	2
9	3	3
10	7	3
11	2.5	2
12	2	3
13	3	6
14	3	3
15	3	2.5
16	4	3.5
17	2	3
18	4	2
19	3	3.5
20	3.5	2
21	4	4
22	6	3
23	4	2
24	8	2
25	4	5
26	2.5	2
27	4	3
28	3	4
29	3.5	
30	2.5	
31	3	

Source: Fieldwork (2019)

Table 4.6f: Results from Independent T-test on Pretest Results from both 2HE1 and 2HE2

Group Statistics

	Class	N	Mean	Std. Dev.	Std. Error Mean
Pretest	2HE1	31	3.5484	1.32511	.23800
Score	2HE2	28	3.2679	1.26551	.23916

Independent Sample Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pretest Score	Equal variances assumed	.247	.621	.829	57	.410	.28053	.33820	-.39671	.95777
	Equal variances not assumed			.831	56.812	.409	.28053	.33740	-.39515	.95621

An independent sample t-test was conducted to compare the results of 2HE1 and 2HE2 before the implementation of Gamification intervention. There was no significant difference in the scores for 2HE1 (M=3.54, SD=1.33) and 2HE2 (M=3.23, SD=1.27) conditions; $t(57) = 0.83$, $p = 0.410$. These results suggest that the drawing skills of both classes before the implementation of the Gamification intervention were alike meaning students drawing performance in both 2HE1 and 2HE2 were the same.

Table 4.6e: Posttest Results for both 2HE1and 2HE2

Respondents (Students)	2HE1	2HE2
1	5.2	5.5
2	5.2	6.5
3	5	5.5
4	5.9	8
5	6.8	5
6	5	7
7	5.5	6.5
8	5.5	5.5
9	6	7
10	5.8	6
11	5.8	5
12	5.7	5.5
13	5	8
14	5.8	5.5
15	8	5
16	5.5	6
17	6	6
18	6	5
19	5	5.5
20	5	5.5
21	5.6	6
22	8	7
23	6	6
24	6	4.5
25	5.6	8
26	6	6
27	6.9	6
28	6	7
29	5.9	
30	6.5	
31	5.5	

Source: Fieldwork (2019)

Table 4.6d: Results from Independent T-test on Posttest Results from both 2HE1 and 2HE2

Group Statistics

	class	N	Mean	Std. Dev.	Std. Error Mean
posttest Score	2HE1	31	5.8613	.75130	.13494
	2HE2	28	6.0714	.94980	.17949

Independent Sample Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Posttest Score	Equal variances assumed	2.433	.124	-.947	57	.348	-.21014	.22190	-.65448	.23421
	Equal variances not assumed			-.936	51.374	.354	-.21014	.22456	-.66088	.24060

An Independent sample t-test was conducted to compare the results of 2HE1 and 2HE2 after the implementation of Gamification intervention. There was no significant difference in the scores for 2HE1 (M=5.86, SD=0.75) and 2HE2 (M=6.07, SD=0.95) conditions; $t(57) = 0.95$, $p = 0.348$. These results suggest that the drawing skills of both classes after the implementation of the Gamification intervention were alike meaning the teaching method used by the sample teachers in the two classes yielded similar results in both classes.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Overview

The chapter highlights the summary of the study, the conclusions derived from the findings and the recommendations made by the researcher.

5.2 Summary

The research targeted at introducing gamification as an intervention in Home Economics Education to improve students' drawing skills in GKA in the classroom at Mpohor Senior High School. It also provides suggestions for making the teaching and learning of drawing in GKA more innovative in order to improve students' skills. The objectives guiding the research were to identify and analyze the teaching activities in teaching and learning of drawing for Home Economics students; to implement gamification as an instructional strategy in teaching and learning of drawing for Home Economics students; and evaluate the effect of gamification as an instructional strategy in teaching and learning of drawing for Home Economics students'. The following were improved as a result of achieving the above-listed objectives.

With regards to the gamified lesson, the researcher took the selected teachers through the making of a lesson plan that was concise which Cox (2019) perceive it to be a comprehensive step-by-step guide which describes the teacher's goals for what learners will achieve throughout the sequence of the lesson and how it will be learnt. The researcher also directed them in the designing of definite objectives; how to choose appropriate teaching methods and approaches; and in the creation of activities for the lessons, they taught in the two classes.

The teachers were also taken through how to gamify a lesson. It was interesting how the teachers accepted the method and efficiently used it to strategize all the lessons taught. The researcher also showed the processes and practices involved in implementing gamification. The selected teachers were also given the opportunity to ask questions which helped them to comprehend the ideas and ethics involved in gamifying the drawing lessons.

Meador (2019) orate that, preparation and planning are acute constituents for a successful teaching meaning deficiency of it will yield failure. This manifested during the implementation of gamification. During the observation, it was obvious that the preliminary preparation by teachers afore the lesson empowered them to outline specific objectives which were focused on the success of the lesson. It also helped them to acquire in advance all the pertinent instructional materials required for the lesson and also to know their use in the gamified GKA drawing lesson. Again, the gamified lesson plan created by the sampled teachers aided the effectiveness of the teaching and learning of drawing in GKA at the sampled classes. It also aided them to comprehend the ethics and procedures involved in the gamified activities. The gamified activities adapted brought lively students' participation allowing them to think freely and creatively ensuing in the development of their drawing skills.

The gamified learning activities brought more interaction of students with their colleagues, the instructional material and the gamified procedures. It was not only on point's accumulation but also engaging the students to perform the GKA drawing activities. This then motivated the students' to cultivate positive attitudes towards drawing looking at how passionate students' in the sampled classes wanted to draw whatever task was given by their teachers.

Main Findings

- The study established that the lecture method was the teaching method used for teaching drawing in GKA in both classes. This teacher-centred method did not permit student-teacher and student-student interaction, which made lesson unexciting and boring. The teachers adopted participatory methods like individual practice, demonstrative exercises and independent student assignments.
- Before the implementation of the intervention, lessons were lacking the motivation to encourage students, but became very interesting and captivating, engaging, fun, challenging and took away dullness during the gamification intervention.
- Group activities were not integrated into lessons as was done with the gamification intervention.
- Gamification implementation in both classes proved a suitable and effective complement for the teaching and learning of drawing in GKA considering the enthusiasm, interest and participation demonstrated by students.
- Posttest scores shown a remarkably better performance as against the pretest scores in both classes meaning the interactive and participating nature of gamification can stimulate and improve the learning of drawing in GKA among students.

5.3 Conclusion

Prior to the intervention, the teaching method for the teaching and learning of drawing in GKA in both classes being the lecture method did not permit interaction and involvement among teacher-student and student-student making lessons monotonous and boring therefore dipping students' curiosity and enthusiasm to learn to draw. Again, this method did not provide the opportunity for teachers to take their students through participatory

lessons in order to help them to clutch entirely the concepts and skills necessary for increasing and nurturing creativity among the students.

Again, the use of Werbach Gamification framework has proven its efficiency not only in the business setting as already purported but in a classroom setting as well. The framework as used in the teaching and learning of drawing in GKA at both classes aided as an intrinsic and extrinsic stimulus for the students.

Moreover, gamification became an appropriate and efficient complementary strategy for the teaching and learning of the drawing in GKA since it increased students' eagerness, excitement and involvement during testing and improved the students' posttest performance as against their pretest performance in both classes after evaluation.

5.4 Recommendations

The under-listed recommendations will help encourage and improve students' interest in the teaching and learning of drawing in GKA in Ghanaian SHS schools.

- GKA teachers should move towards learner-centred approaches and engross in innovative ways of boosting up their teaching with numerous technological changes in order to make lessons collaborative, pleasurable and explicable.
- Teachers should consider interactive based lessons, set reachable concise objectives and choose suitable teaching and learning resources from their immediate environment.
- GKA teachers should develop suitable formative and summative valuation methods, implement group teaching approaches considering the time allocated in order to make all students reach the accepted level of mastery.

- The Ministry of Education (MOE), the Ghana Education Service (GES) and School Heads should design systems to monitor and supervise GKA teachers to guarantee the use of suitable approaches to improve learning quality.
- GES should adopt novel educational technological innovations as an aide to teach topics considered to be difficult in GKA to improve students' interest and performance.
- The Government through the GES should offer sufficient resources and infrastructure to support the integration of new educational technological innovations in schools and also organize workshops to aid teachers understanding in its use.

Suggestions for further studies:

- Further research should be conducted on ways of adapting gamification frameworks into education.
- Research should be done by the Curriculum Research and Development Division (CRDD) of MOE to be aware of the new educational technological interventions that will crop up in the course of time.

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APPENDIX A

INTERVIEW GUIDE FOR GKA TEACHER BEFORE THE GAMIFICATION INTERVENTION

Background Information

1. Gender
2. Are you a professional teacher?
3. If yes what is your highest professional qualification?
4. If no what is your highest academic qualification?
5. How long have you been teaching?
6. Indicate the form you have taught GKA after your training.
7. What form are you currently teaching?

Instructional experience

8. Do your students attend lessons regularly?
9. Do your students complain about not understanding topics related to drawing?
10. Do you set clear and defined objectives about topics related to drawing?
11. Do the majority of your students participate in the doing of drawing assignments?
12. Do you reward your students after completing a drawing task?
13. If yes, how do you reward your students?
14. Do you give students instant feedback from a task assigned them?
15. If yes, how do you give this feedback to the students?
16. Does your drawing lessons engage students?
17. Do you encourage collaborative learning in your drawing lessons among students?
18. Have you heard of Gamification as an intervention in education?

APPENDIX B
INTERVIEW GUIDE FOR GKA TEACHER AFTER GAMIFICATION
INTERVENTION

1. How did Gamification affect your teaching and the students' learning process?
2. How did students accept Gamification in the drawing lessons?
3. Which game elements met your expectations during drawing lessons in ascending order?
4. What do you wish to improve in your next gamified lessons?
5. What are your suggestions for designing lessons with game elements?
- 6: Is there anything you will like to add with regards to Gamification?

APPENDIX C
OBSERVATION CHECKLIST FOR THE TEACHING AND LEARNING OF
DRAWING FOR HOME ECONOMICS STUDENTS BEFORE GAMIFICATION
INTERVENTION

Form..... No. on roll..... Date..... Lesson Duration.....

Teaching and Learning

1. Was instructional period enough for the lesson?
1. Were objectives clear and measurable?
2. What teaching method(s) were used by teacher?
3. Were instructional materials available?
4. How did students' response to lesson
5. What behaviour were demonstrated by students' during lesson?
6. How were students assessed after lesson?
7. Were they given instant feedback?

Qualities of the Teacher

8. Teacher ensuring understanding of concepts
9. Teachers' skill in using available resources
10. Teachers' creative skill
11. Teachers' assistance to students
12. Teacher encouraging students' interest during lessons

Teaching Strategies Used

13. Were different methods of teaching used during lesson?
14. Did the teacher use only one method?
15. Were the teaching methods suitable for the topic?
16. Were the teaching methods learner-centered?
17. Were the students interested in the lesson?
18. Were students encouraged and motivated?
19. Were students paying attention?

APPENDIX D
OBSERVATION CHECKLIST FOR THE TEACHING AND LEARNING OF
DRAWING FOR HOME ECONOMICS STUDENTS AFTER GAMIFICATION
INTERVENTION

Modified from Sweetser and Wyath (2005)

Criteria	Course Element	Teacher 1 (T1) 2HE1	Teacher 2 (T2) 2HE2
Concentration	Offer opportunities for students to work with different tasks.		
Challenge Player Skills	Task given should vary in difficulties and should meet the skills needed to perform the tasks.		
Control	Students should be able to control how they would want to receive their points.		
Clear goals	Students should know the goals for each lesson before and during the progress of the course.		
Feedback	Students should receive feedback on any task they perform in the classroom and on assignments.		
Immersion	Students should be immersed during the delivery of lessons and performance of task.		
Social Interaction	Provide an environment for social interaction among students in class.		

APPENDIX E **QUESTIONNAIRE FOR STUDENTS AFTER IMPLEMENTATION OF** **GAMIFICATION INTERVENTION**

Modified from Alabbasi (2018)

Please Tick [√] the correct answer

Demographic Characteristics

1. Gender: a. Male [] b. Female []
2. Age: a. Less than 15 [] b. between 16-18 [] c. 19years and above []
3. Form: a. 2HE1 [] b. 2HE2 []

Indicate: [√]

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Effects of Incorporating Game Elements (points, badges, and leaderboards) in Drawing Lessons					
4. Did the gamified lessons provide encouragements that was worth attending?	☐	☐	☐	☐	☐
5. Did you manage to keep your focus on the lessons and its tasks the whole time?	☐	☐	☐	☐	☐
6. Were the tasks suitable for your skills?	☐	☐	☐	☐	☐
7. Did the task get more challenging during the progress of the gamified lessons?	☐	☐	☐	☐	☐
8. Did you see any improvement in your skill in performing drawing tasks	☐	☐	☐	☐	☐
9. Were the instructions and scoring systems of lesson clear to you?	☐	☐	☐	☐	☐
10. Were you able to control the number of points you got for the lessons?	☐	☐	☐	☐	☐
11. Did the scoring system offer appropriate rewards for the tasks completed?	☐	☐	☐	☐	☐
12. Did you receive immediate feedback about a task given?	☐	☐	☐	☐	☐
13. Were you always aware about your score in the course of drawing lessons?	☐	☐	☐	☐	☐
14. Were you aware of the goals to achieve for each drawing lesson?	☐	☐	☐	☐	☐
15. Did at any time felt that the tasks given were so engaging that they involved you emotionally?	☐	☐	☐	☐	☐
16. Did you feel the competition between you and your colleagues?	☐	☐	☐	☐	☐
17. Did you cooperate well with your team members?	☐	☐	☐	☐	☐
18. Did you learn anything from your team members?	☐	☐	☐	☐	☐