GENERATING ANIMATED CARTOONS OF ARABIC ALPHABETS FOR EARLY CHILDHOOD EDUCATION IN UGANDA;

A case of Husma Kids School, Wakiso District

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APRIL, 2021

DECLARATION

I, MAYANJA Hussein, declare that this is my original work and has not been submitted to any University for the award of a Masters degree or other academic qualification.

Signed:……..

Date:…….

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APPROVAL

This Research Report by MAYANJA Hussein registration Number, 17/U/14742/GMID/PE has been submitted to the post graduate School, Kyambogo University's board of examiners with our approval as supervisors.

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Second supervisor

Signed:……

Date:……..

DEDICATION

I dedicate this Research to my beloved parents, the late Hajji BWANIKA Abdul Kariim and Hajjat NAGGAYI Hafiswa for the education founndation, moral formation, encouragement and financial support throughout the pursuit of my education.

May the almighty reward them abundantly!

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LIST OF ABBREVIATIONS & ACRONYMS

ECD Early Childhood Development

ECE Early Childhood Education

ESD Education for Sustainable Development

GUI Graphical User Interface

ICT Information and Communication Technology

SDGs Sustainable Development Goals

TV Television

VFX Visual Effects

3D 3 Dimension

DEFINITION OF OPERATIONAL TERMS

Animation: Moving picture

Cartoon: Comic strip/animated film

Generate: Create / develop / Produce something

Yasarna: The first learning book for anyone who wants to start learning Arabic language

Conceptual Framework: Theoretical background

Storyboard: is the visual story form of the scriptwriting.

Animators: are the people who bring onscreen characters or objects to life.

ABSTRACT

This study sought to generate animated cartoons to facilitate teaching sounds of Arabic Alphabet for Early Childhood Education at Husma Kids School in Wakiso District, Uganda. The objectives of this study were to; to study the methods used in teaching Arabic sounds to develop animation methods for Early Childhood Education. To produce animated cartoons for teaching sounds of the Arabic alphabet for early Childhood Education in Wakiso district at Husma Kids School. To produce animated cartoons for teaching sounds of the Arabic alphabet for early Childhood Education in Wakiso district at Husma Kids School.The studio based method was used to produce animated cartoons with Autodesk Maya software and adobe After Effects.

Findings revealed that the animated cartoon method of teaching greatly promoted children's learning of sounds of Arabic Alphabets. Both teachers and children responded more positively towards the animated cartoon method than the other two methods. The study concludes therefore that the animated cartoon teaching method is a more appropriate method for teaching the sounds of Arabic alphabet and perhaps other concepts to children in Early Childhood Education.

CHAPTER ONE: INTRODUCTION

Overview

The study sought to generate animated cartoons for teaching sounds of Arabic alphabet to children in Early Childhood Education (ECD). It focused on Husma Kids School under where situation analysis on appropriate methods of teaching sounds of Arabic alphabets was carried out. Further, the study developed cartoon that capture sounds of Alphabets and latter produced animated cartoons which were to be used as medium of instruction in teaching sounds of Arabic alphabet at ECE level in Wakiso District.

This chapter describes the background of the study, the statement of the problem, purpose of the study, objectives of the study, guiding questions of the study, the scope of the study, significance of the study, limitations and the conceptual frame work.

1.1 Background to the study

This study is a result of the efforts to formulate animated cartoons for teaching sounds of Arabic alphabets at Husma Kids School in Wakiso District. Aimed at helping children to be able acquire reading skills and articulating issues in their social life that relating to Islamic tradition. This research was carried out for five years. A situation analysis was carried out at Husma Kids School, a nursery school located in Wakiso district. At the school, teaching was conducted with three different groups of pupils in cooperation with the teachers. There were 20 learners (aged 3-6 years). They were categorized into three groups. In the first group were 7, second group were 6 and third group had 7 learners. First, pupils were taught using a traditional method of chalk and talk as pupils copied content from what was written on the blackboard and the use of text books which were written in only Arabic.

Secondly, another group was taught with only visual learning material (charts) and assessment was done. The third group was taught with the video of animated cartoon on a computer combined with teacher's instructions and was assessed the level of pupil's ability to understand the content. This was intended to evaluate the integration of visual animated cartoons with verbal instructions by a teacher, this greatly promote students ability of acquisition of knowledge and skills. Student's response and perception were very positive towards the cartoon method than the other two methods. Understanding sounds in Arabic alphabets taught was difficult because of the text book, chalk and talk methods used which were not friendly to pupils. From observation children tend to understand better any message being sent through visual means than those sent through text or sound because not everyone can read or hear but everyone can understand and interpret whatever they see. Ultimately, this cartoon leaning system strongly was an appropriate method for ECE.

Arabic language was the mother tongue of over 200 million people across the Middle East and North Africa by 2008 (Shah, 2008). Its modern standard representation, whose form was ultimately derived from the Classical Arabic idiom (Maxos, 2016), was officially adopted as the primary language of administration, education, and discourse in countries as diverse as Oman, Yemen, Saudi Arabia, Kuwait, the United Arab Emirates, Bahrain, Qatar, Iraq, Syria, Lebanon, Jordan, the Palestinian territories, Egypt, the Sudan, Libya, Tunisia, Algeria, and Morocco. This notwithstanding, the language has a significant official status in neighbouring states like Mauritania, Chad, Djibouti, and Somalia (Shah, 2008). The purposes of learning Arabic are categorised into three major groups, which are: getting acquainted with Islam via a thorough study of Islam and its culture; purposes related to political aspects and economic aspects for instance, business administration and tourism (Jamous and Chik, 2012).

Arabic language is very important to all Muslims both children and adults as it enhances understanding the Quran and Islam in general. As such, Muslim parents and religious leaders in

Uganda are committed to the teaching of Arabic language throughout school levels. The Arab world has added its efforts by funding some schools and organisations that teach Arabic.

There is no doubt that, the Arabic Language has an exceptional position in Islam (Richard Hooker, 1999). Allah says in the Qur'an that He Has Chosen Arabic Language as an effective medium of communication for His message. Thus, for the Muslim community Arabic is not only a language per se, but also that which been chosen by Allah to communicate with His servants (James Coffman 1995). Indeed, Allah says in the Quran: 'Verily, We have sent it down as an Arabic Qur'an in order that you may understand' (Qur'an, 12:2).The same Quranic verse adds further that in order to understand the beauty of Al-Quran, the revelation by which Allah Has Sent down His Message, one must give the first priority to learning Arabic Language. The implication is that Allah is directly telling us that learning Arabic is crucial to understanding His message. This justifies the teaching of Arabic language in many Islamic countries such as Malaysia well as the various Muslim founded schools in Uganda.

Historically, the teaching of Arabic language can be traced from the 16th Century where the language has been a fundamental instrument for spreading Allah's message through the Quran in many countries worldwide (Selim 2018). To aid learning Arabic language and subsequently the Quran, the Yasarna book was developed as an instructional and beginner's guide. This enhanced spreading and teaching the Islamic faith to all both younger and adult converts. To date the Yasarna book is used in many countries including Uganda to introduce Arabic language, the Quran and subsequently teachings of the Islamic faith especially to younger Muslim children.

Muslim children in Uganda have a constitutional right to understand the teaching of Arabic sounds and be able to read the Quran, Muhumuza N, (2018). To achieve this, they need to understand Arabic language in which the Quran is written. Understanding their faith is in line with one of the

broad national aims of education in Uganda: 'to inculcate moral, ethical and spiritual values in the individual and to develop self-discipline, integrity, tolerance and human fellowship, chapter four of the 1995 constitution source. Similarly, one of the major outcomes derived from the broad aims and objectives of pre-primary education is producing a person who is God fearing, morally and spiritually built (Government White Paper on Education, 1992).

Besides, the world has been reported to be turning into a global village and therefore all Ugandan children would benefit from learning Arabic since it is a unique and internationally recognised language Xuan and Mei (2018). Learning Arabic language still aligns with the Education 2030 Agenda and ESD, SDG 4, Target 4.7: By 2030, ensure that all learners acquire knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development. Being a rich, international and fairly accurate language, Arabic language has the potential to enhance sustainable development for children in future.

Teaching methods are very important in teaching foreign languages (McClelland, 2017; Xuan & Mei 2018). However, most teachers of Arabic especially in non-speaking countries like Uganda use non-child friendly methods. For example, research conducted by Mall and Neiman (2002) about the teaching of Arabic language to learners in private Muslim schools in South Africa revealed that teaching was largely based on grammar translation method and learners did not reach the desired level of communicative competence.

While there is some research on the teaching of Arabic language in Uganda, local newspapers have reported rampant use of teacher-centred practices such as text book, chalk and talk and demonstration methods and extreme cases of corporally punishing children as they learn Arabic

language have also been reported, (Najjuma, 2011), The use of text books has been encouraged traditionally and associated to improved performance with the claim that students performed better in tests for which the subjects have text books used in the classroom (Heyneman et al., 1978; Fuller, 1987; Fuller and Clarke, 1993).

The above practices may be accelerated due to the fact that less attention has been given to the methods of Arabic as a foreign language in Ugandan ECE. Most people who teach Arabic in Uganda and East Africa are not trained as teachers but simply knowledgeable people / experts in Arabic language and Islamic culture, usually called sheikhs. Wakiso district in Uganda is the most populated district with over 867 registered pre-primary and 1395 registered primary schools (https://ugandaschools.guide-wakiso), not to mention the unregistered ones. According to the website, about 134 of the schools are Muslim founded and children thereof are taught Arabic Language as a foundation to understanding the culture of their religion and their guidance, the Quran. Experience reveals that teachers in Wakiso are also using advanced textbooks for example Yasarna to teach children Arabic Language. Not only are that text books unsuitable for beginners, but they also discourage learners from learning Arabic Language.

Over time, there has been much concern about teacher-centred methods all over the world. The methods have been condemned and discouraged in favour of learner-centred methods. 21st century teaching and the Sustainable Development Goals encourage the use of Information and Communication Technology, Butler E (2018). Although ICT has been widely used across countries, disciplines and learning levels, there is hardly any evidence of its usage in teaching Arabic language to children in ECE centres. Yet this method potentially enables learners to effectively go through an interactive learning system to improve their higher order thinking skills like analysis as well as the lower order skills like knowledge acquisition and memorizing. More so, involving items such as audio-video animated cartoons can encourage creation of high quality

and realistic learning environment for learners (Wyatt, 2010)

On the basis of literature by Adeyanju I. A (2015), this study defines computer animation as a technique for creating illusion of movement on a screen, or recording a series of individual states of a dynamic scene. Computer animation can also be viewed as a way to manipulate a sequence of images on a frame by frame basis. The end product of most computer animation is generally known as cartoon. 3D Computer animations create and render digital drawings thereby producing perfect and three dimensional looking animations. Single frame drawings can be designed using standard painting software tools and then composited.

The digital animation has been in spotlight in today's society especially the children who are great fun of animation films. Animation is one of the graphical elements capable for expressing a human fantasy to reality because they occupy the viewer's mind and give an impression of real situation. Graphic animation plays a big role in communication and motivates learners towards a more enjoyable learning method. The integration of animated cartoons with verbal instructions by a teacher, can greatly motivate the learners' ability to acquire knowledge and skills.

Khaled and Tarek (2015) support the use of visual animated cartoons asserting that children grow up enjoying cartoons and become used to the way they function from an early age. Cartoons are associated with experiences of humour, happiness and fun which are associated to play, a natural method through which children learn. Such experiences help relax an audience in a potentially dull or tense circumstance. Khaled and Tarek Ibid further argue that cartoons act as icebreakers, uniting the audience with humour. Since they involve dialogue and action, they give an impression of shared communication and can permeate people's lives. Children's cartoon animations that usually feature on Televisions are mostly derived from several attractive and familiar inspirational features such as animals including humans, flowers, fruits and many non-living objects. The implication is

that the cartoonist and the cartoon manager have a pre-primed audience to which to deliver a message.

With an appropriate choice of inspirational features cartoon learning system is strongly an appropriate method for Early Childhood Education (ECE). Besides the Quran, the Islamic holy book, does not explicitly prohibit the depiction of images in form of human figures; it merely condemns idolatry, John L. (2011).

Therefore this study chose to use a yellow banana fruit to develop cartoons for teaching the Arabic alphabet. Children in Uganda like the yellow banana very much and thus the use of such an inspirational feature for alphabet learning greatly attract children's attention and interest which will accelerate grasping of what is taught. It will also have an artistic therapeutic effect on the child's mind. This kind of cartoons link the brain to fruits and settle knowledge into the child through learning and food connection.

In Uganda static cartoons have been used to convey different political, economic and educative messages through print media like newspapers. Although such cartoons are available to the public, they have not been used in schools as teaching aids for Early Childhood Education. Animated cartoons like Katoto for politics (Katoto in Atakola Talya) during the presidential campaigns have been designed. Perhaps, one of the most important innovations in the age of technology is cartoon animation. Upon evaluating and proving the effectiveness of animated cartoons in supporting teaching and learning the sounds of Arabic Alphabet.

This study has consequently helped to ascertain the impact of animated cartoons on children's acquisition of new knowledge or skills.

1.2 Statement of the Problem

Whereas animated cartoons for teaching sounds are commonly used in many parts of the world, it is also taking root in schools in Wakiso district and at Husma Kids School, however there is hardly any use animated cartoons to teach Arabic sounds in early childhood centres in Wakiso district and Husma Kids School.

These animated cartoons for roman and Arabic sounds have been produced by artists worldwide, however there is no evidence in the case of Uganda. The research found out that artists have ventured in different animations for teaching the general public about social issue (Katoto mosquito nets cartoons; USAID family planning animations) but however no artist has ever produced animated cartoons for teaching specifically sounds of Arabic alphabet linked to Early Childhood Education.

The study sought to develop animated cartoons that are capable of teaching Arabic sounds to children in early childhood centres.

1.3 Purpose of the Study

To generate animated cartoons for teaching sounds of Arabic alphabet in Early Chıldhood Educatıon at Husma Kids School in Wakiso District.

1.4 Objectives of the study

1. To study the methods used in teaching Arabic sounds to develop animation methods for Early Childhood Education
2. To study the processes involved in developing animated cartoons to aid the studio process of developing animated cartoons
3. To produce animated cartoons for teaching sounds of the Arabic alphabet for early Childhood Education in Wakiso district at Husma Kids School.

1.5 Studio guiding questions

1. How do the methods used in teaching Arabic sounds aid the development of animation methods for Early Childhood Education?
2. What processes are involved in the studio process to aid the development of animated cartoons?
3. How can cartoons that can be used in the teaching of the Arabic alphabet sounds to learners in Early Childhood Education be developed?

1.6 Significance of the study

The study is expected to contribute to the existing knowledge in the teaching of Arabic language and benefit stakeholders in the following ways:

To the researcher, find out whether animated cartoons can be used to teach sounds of Arabic alphabet in Early Chıldhood Educatıon at Husma Kids School in Wakiso District.

It is anticipated that the Policy makers especially Ministry of Education and Sports would be guided by the study in developing a better the curriculum to include animation. For ECDs

Other upcoming Researchers from the public and students in tertiary institutions are expected to utilize and find results of this study a useful reference.

It is also anticipated that ECDs like Husma Kids School and other schools worldwide will benefit from the study when children watch cartoons, learn Arabic easily and cheaply.

1.7 Scope of the Study

1.7.1 Geographical scope

Wakiso District stretches and boarders Kampala district right from Entebe along Lake Victoria in the south to Wakiso District headquarters in the north of Kampala city. Husma Kids School is

located on Hoima road approximately 17 kilometres away from Kampala centre in the northern part of Wakiso area.

1.7.2 Content Scope

The study generated animated cartoons for teaching sounds of Arabic alphabet in Early Chıldhood Educatıon at Husma Kids School in Wakiso District. It aimed at helping children to acquire reading skills and articulating issues in their social life that relating to Islamic tradition. And this was achieved through Studies on the prevailing methods used in teaching Arabic sounds from which animation methods for Early Childhood Education was developed. Both teachers and learners were involved in oral sound practical and classroom environment. Secondly, the processes involved in developing animated cartoons were studied and aided the studio process of developing animated cartoons for teaching sounds of the Arabic alphabet for early Childhood Education.

1.7.3 Time Scope

The researcher being a teacher professionally and a Muslim by faith was concerned, started investigations on the issue of teaching of the Yursan book and Arabic sounds especially at early childhood levels even before registering for his post graduate programme. Hence this research was carried out for five years.

1.8 Limitation

Financing animated cartoons was too expensive but the researcher managed to finance it with some of the salary since he is a secondary school teacher at Bilal Islamic Institute Kakiri and a Graphic designer at Nasser Road. Time was limited to carry out all the necessities of producing animated cartoons.

1.9 Theoretical Frame work

The study is framed by the observational theory by Albert Bandura (1925), which states that learning happens through observing and modelling others behaviors. It is also commonly believed that the observer copies the model. This theory is suitable for this study because developing an animation that is for teaching children requires imitating what teachers do. Observing the teacher and using the teacher as a model make the theory rich for this study. The study aims at using the teacher as a model for developing animated cartoons that can teach Arabic sounds.

Conceptual Framework

The conceptual framework explains that teaching sounds of Arabic alphabets in ECE, when Yasarna content is transformed to cartoon animation to teach the learners. Learners will effectively acquire sounds of Arabic alphabet.

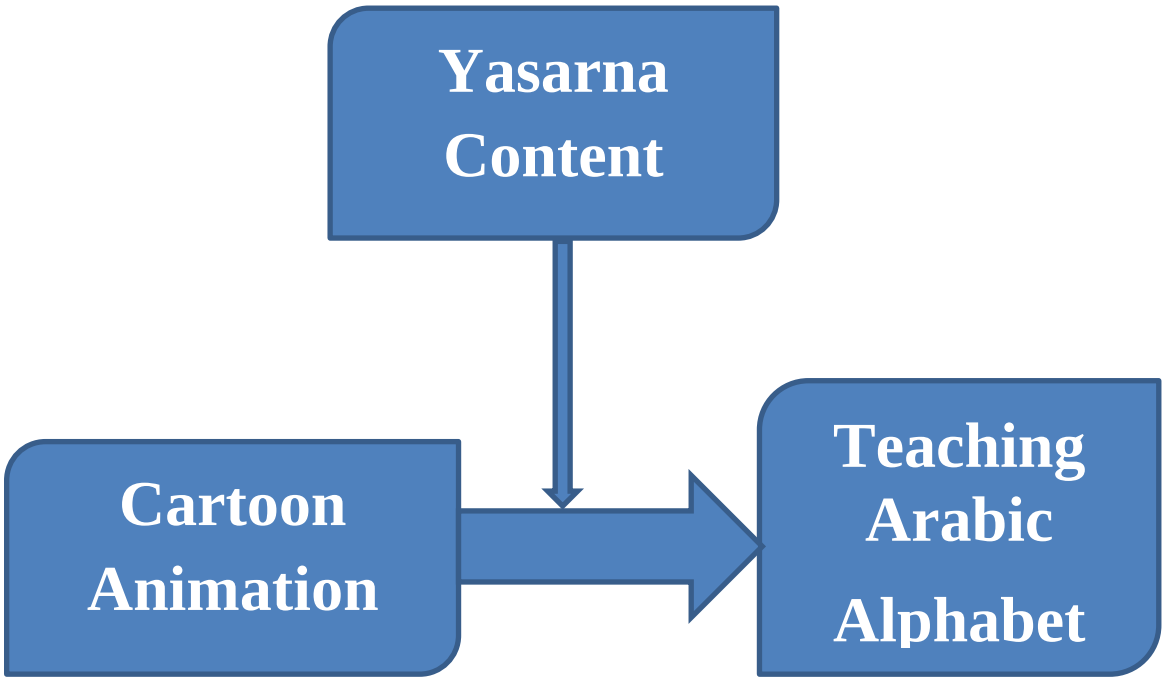


Figure 1: Conceptual frame work

CHAPTER TWO: LITERATURE REVIEW

2.0 Overview

This chapter analyses literature related to animated cartoons for teaching sounds of the Arabic alphabet in Early Childhood Education. In particular, it addresses the three main objectives that guided this study.

The chapter presents the analysis of the literature that relates to the objectives of the study. First, methods for teaching sounds of the Arabic alphabet in Early Childhood Education Secondly, a review on how to develop cartoons that capture sounds of the Arabic alphabet is performed. Finally, the previous research works on how to produce animated cartoons used in teaching sounds of the Arabic alphabet are studied and analysed.

2.1 Methods of teaching sounds of the Arabic alphabet

Globally the general teaching methods are teacher-centred and learner-centred methods. Other methods include direct instruction, flipped classrooms, kinaesthetic learning, differentiated instruction, inquiry-based learning, expeditionary learning, personalized learning, game-based learning, lecture by teacher, Class discussion conducted by teacher, Recitation oral questions by teacher answered orally by students, Discussion groups conducted by selected student chairpersons, Lecture-demonstration by teacher. All these methods and approaches need an element that will make them more attractive for children in early childhood education and cartoons are one of the elements that make learning for children more enjoyable and exciting (Pokrzycka, 2020; Ilyasov, 2020 and Bebeau, 2019).

In Africa Uganda inclusive, teachers teach their students by introducing textbooks along with verbal instructions in traditional education system. However, teaching and learning methods could be

changed with the developments in Information and Communication Technology. It's time to adapt students with interactive learning system so that they can improve their learning, catching, and memorizing capabilities. It is crucial to create high quality and realistic learning environment for learners in ECE. Analysed that visual learning can be easier to understand especially in ECE (Islam et al. 2014). Emphasised, animation which is a visual media can help children to adopt their English vocabulary and receive higher score than those who apply the normal one. It is a beneficial teaching material to stimulate and support the learners, especially at 5 - 6 years old to enjoy the class with good results. The same method of animation can also be applied in teaching sounds of Arabic alphabets in ECD and effectively help teachers, children and the entire community in Wakiso District to learn Arabic interestingly and easily.

Still researchers studied and analysed the feeling of students when listening to the playing video as learning tool where he observed that all students were very enthusiastic and loved to see the video more often. This implies that computer aided language learning process is very important and children can learn and understand quickly. Consequently, the researcher decided to implement the idea of developing animated cartoons for sounds of Arabic alphabet in ECE in Wakiso district, central Uganda (Islam et al. 2014).

Another study emphasized the importance of using animated cartoons in learning languages, in which a six year-Finish girl learned English language by watching cartoon videos without any formal education (Jylhä-Laide 1994). Within a couple of years of watching cartoons repeatedly, she had acquired a command of English language. This indicates that the cartoons are very effective tools for teaching children even in formal education which is more organized than informal education. Khaled and Tarek (2015) confirm that animated cartoons are one of the best ways to promote learning among children as they involve dialogue, humour, fun and widen children’s sense of imagination.

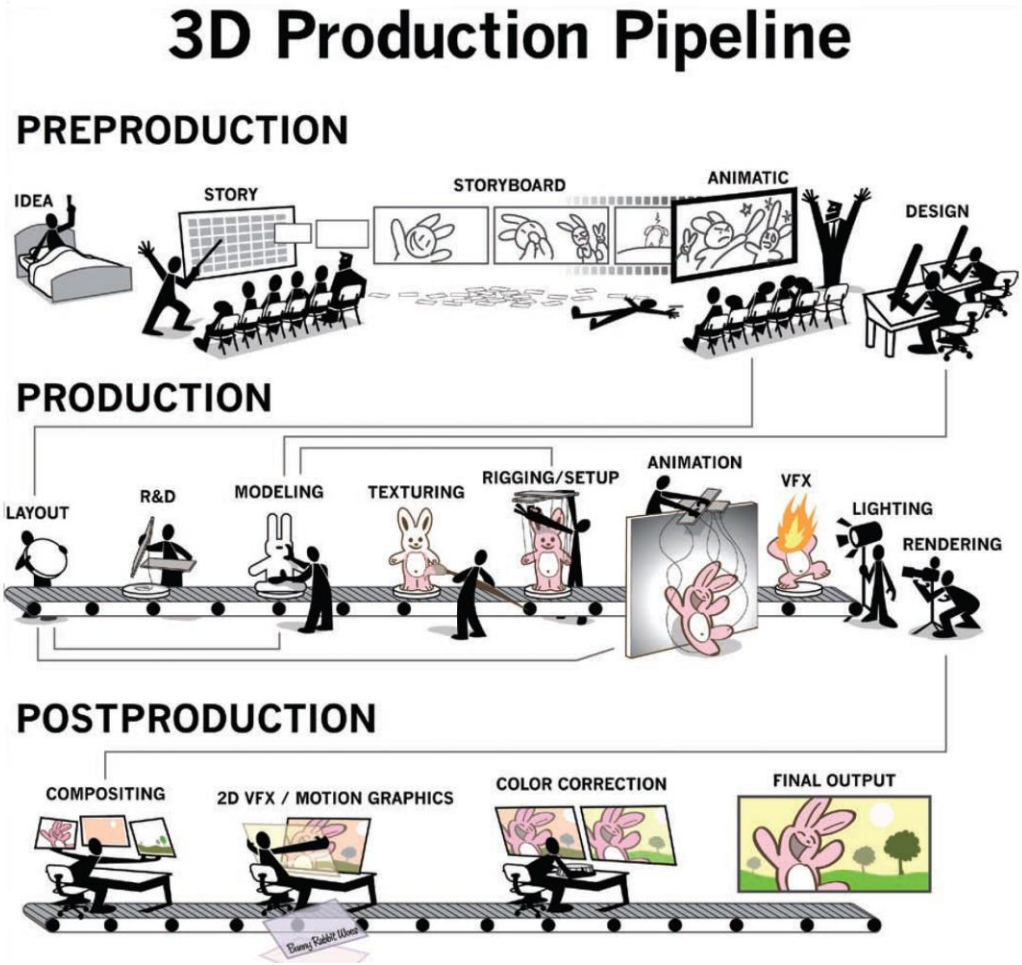
Elsewhere, in an Experimental study carried out on supporting children's English vocabulary learning in multimedia Context, it was discovered that a Chinese seven years old girl who encountered difficulties in English as a second language, applied multimedia context as an effective learning tools (Sun and Dong 2004). A different study which compared the effectiveness of a cartoon-style with a traditional-style, observed that the students who were given a cartoon-style handout were reading more of the material and achieved higher post-learning test scores than other students who were given a traditional handout (Blackwell, Lauricella, and Wartella 2014). This emphasizes the use of cartoon method as an alternative method for learners in schools.

A guide to young children for learning and Development from birth to Kindergarten,specifies five developmental dimensions through which young children learn, including; social and emotional, language development, physical well-being and motor development, cognitive and general knowledge, and approaches toward learning (Development and Virginia Department of Social Services 2013). These dimensions are explored based on effectiveness of interactive media especially to facilitate the learning of disabled and at-risk students. Research review was to provide a description of what future interactive media, especially interactive television, would look like and what their educational potential might be. The multimedia courseware developed for teaching especially pre-school or primary school students. It has a positive impact for promoting learning but designing and developing the materials for their engagement are essential aspects for paying careful attention.

2.2 Developing cartoons and sounds for Arabic alphabets

The Development of cartoons and sounds to be carried out demands, the budgets, creation of plans, and consultation of 3D production artists. The production process then started after consultations discovered the programs to be used for production of the animated cartoons. These include, Auto Desk Maya, Adobe Illustrator, Photoshop, Adobe after effects and premier pro. It was also found

out that the production stage includes the following components: Layout (presentation), Research and development (R&D) (contents gathering), Modelling (generating), Texturing (Colouring), Rigging/setup (Skeleton), 3D visual effects (VFX), Lighting, rendering and Animation (Illusion of movements) Andy B. (2002). The production process was supported by the 3D production pipeline below;



The production process

Adeyanju I, Babalola C, Salaudeen K. and Oyediran B (2015) analysed; the impact of animation on children and their behaviors has previously been investigated. The focus was on violence and formation of characters in children and how animations create ideas in children in comparison with

other media. The content and characteristics of 2D and 3D animation on children in visual media was studied especially in TV, Internet and Film in Kerala part of India.

They added that similarly, animations accompanied with traditional teaching increases the performance of high school biology students. The teaching of chemical bonding using the animation and jigsaw techniques was found to be more effective than the traditional teaching methods. Other similar studies reported that animations improved students' academic performance in mathematics and statistics.

Adeyanju I, Babalola C, Salaudeen K. and Oyediran B (2015) supported their analysis with the photo in Figure 2 below.

Figure 2 Playing interactive learning materials along with verbal instructions in front of students

Cartoons are important features of newspapers and magazines with a lot of readers following such cartoon series. The effectiveness of cartoons in print media was examined. The authors also looked at the safety such cartoons offer in terms of freedom of expression, especially during the intolerant military regimes. An animated folk tales edutainment software was developed to motivate socio-cultural awareness among children and adolescents. The software included animated cartoons, movies and digital games in Malay to motivate socio-cultural awareness. The effectiveness of exposure to news, cartoons, and films as three different types of authentic audiovisual programs was analyzed as a means of improving the language proficiency of learners. Their results showed

that audiovisual programs generally are a great source of language input for teaching purposes. Animations with good story lines seem to motivate the learners to better understand the language. A model is a geometric surface representation of an object that can be rotated and viewed in a 3D-animation software package. Present Education system demands new techniques in teaching and learning process (Young 2008). Today children expect joyful environment in the classroom for learning with interest and attention because Media has attracted them very many ways with variety of programmes. In specific learners are getting attracted to fun fulfilled programs which clearly highlights the importance of cartoons while teaching young children.

So, Teaching should not transform information from textbook to the students but it should make the students think critically and creatively by engaging themselves always in hands on experience or should make them active participants in learning.

There are teachers who use artistic material in teaching learning to attract the students towards experiential learning. Teaching is an art where various tools and techniques are employed to make the students learn better. Regarding these tools and techniques, the cartoon as a method advocated by this research comes in.

A cartoon is one such material with which a teacher can provide joyful environment and also can make her/his students to think differently and encourage them to create something on their own. It is a visual media with lot of humour which can be either in the form of single picture or series of pictures, captioned or non-captioned. These are seen in magazines, newspapers, books, television etc.

A cartoon is a two-dimensional illustrated visual form of art. The term cartoon is derived from Italian word ‘cartone’ and Dutch word ‘Karton’ means strong heavy paper or paste board.

According to Tamblyn 2002, the cartoon increases interest and intrinsic motivation and reduce boredom, academic stress and anxiety.

The cartoons can grab the attention of the students by making them healthy and interested in learning (Srinivasalu 2016). This argument is in line with the current study that is interested in a teaching method that can be exiting for young children.

They are funny and non-offensive, enjoyable material which give memorable experience to everybody. By having comic strip with proper messages by adding humour to the topic a teacher can reach everybody very easily.

The concept of cartoons is believed to be an efficient tool in order to identify student misconceptions and finding the solutions to them (Srinivasalu 2016). Hence, the concept of cartoon can positively contribute to the learners existing knowledge and increase their participation in its process.

The results of such experiments indicate that teaching via concept cartoons was effective in remedying the misconceptions concepts may be from any subject of schools curriculum.

Among many subject of secondary school curriculum, social science is subject full of controversial issues provokes teachers to think differently to make it free from misconceptions. Imaginary visuals created by the teacher in the form of cartoons for a controversial issue in history would give clear picture of concepts. Weaving concepts with cartoons is a challenge to the social science teacher. Here social science teacher as a researcher thought of an experimental study to verify about his assumptions in social science teaching and learning process.

This says that cartons of visual elements with textual information, dialogues, gestures and animations may be interpreted in many ways by students with their imaginations. This approach helps the teachers to develop imaginative power amongst students by building proper knowledge.

Cartoon learning can be helpful for initiating debate and focused group discussions in a classroom among learners as it stimulates them to engage in critical thinking in order to assess and formulate their views and opinions. Learners are given the opportunity to participate in classroom discussions to support their own ideas and knowledge as well as identifying others conceptions of a particular topic with cartoons. Researchers think that teaching via cartoon is effective in remedying misconceptions.

2.3 Animated cartoons and the teaching of sounds for Arabic alphabets

How Arabic is being taught in UK schools familiarity with language teaching methods in order to investigate this question, we asked the teachers to tick all the language teaching methods that they are familiar with and think they apply in their teaching. Out of a list that included seven teaching methods plus a space for other methods that they might be using. Chart 1 below shows the listed seven methods and the number of teachers who chose each method to be familiar with.

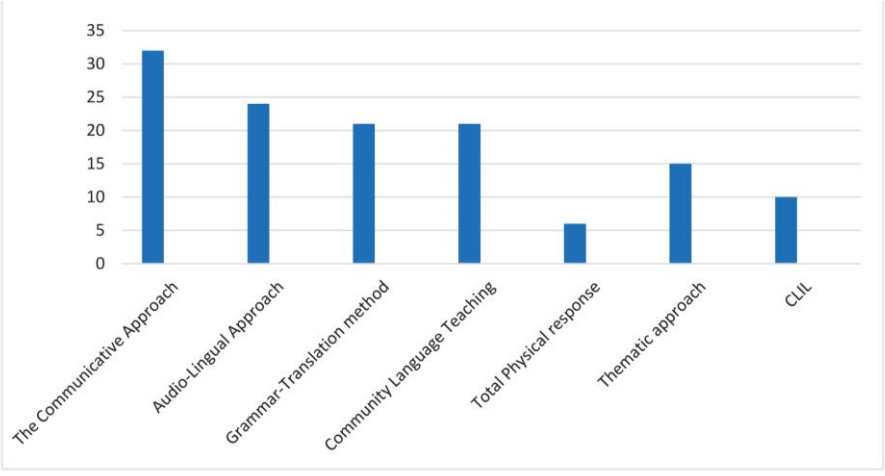


Chart 1: Familiarity with language teaching method

The methods that were ticked by most teachers were the Communicative Approach chosen by 32 (74%) out of 43 teachers, the audio-lingual approach was selected by 24 (56%) teachers. Five teachers also ticked "Other" with one of them indicating their reliance on the scheme of work given to them, two teachers mentioned the "Structural Approach" which is based on teaching grammar and two teachers said that they were not familiar with any of the listed methods and they relied on their own intuition in teaching. Two teachers did not comment at all on which methods they are familiar with. This shows that majority of teachers are familiar with the Communicative Approach which can be considered the most common approach to language teaching. However, there is also a lack of knowledge about language teaching methods, five teachers (12% of the participants) either did not recognize the methods or were confused between teaching content and methods. This may indicate the need for further training for teachers regarding foreign language teaching and learning methods and the underpinning learning theory. Rasha S., Melissa T., Emma S., (2016).

By Interactive multimedia, educators unusually refer to the using of multimedia and Information Communication Technology (ICT) equipment are to offer an effective dialog between the resource materials- indirectly with the instructor and the students in comparison with traditional methods of teaching which may lack such interactivity. Modern education and communication environments can offer alternative ways in the learning process. Multimedia has been widely used in educational technologies. It is also expected that future will see more of the utilization of such tools in education. Using interactive multimedia in the teaching process is growing in the present context. Multimedia plays a very important role in assisting students in learning processes, Dawood A. (2018).

Nusir E. (2013) investigated the possibility of enhancing the early education system with multimedia technologies previously developed to teach students at young ages basic skills. He found the positive impact of the developed program on students' abilities to understand new knowledge or skills. The researchers commented that multimedia education offers an alternative to

traditional education that can enhance the current methods and provide an alternative especially in some cases where teaching in educational methods is not applicable. Similarly, another group of researchers developed an English short play as a teaching material to promote children's (second language learners) English learning attitude and interests and was presented to all classmates and evaluated by three professors. The findings of the study reveal that incorporating project-based learning into the development of an English short play can effectively guide students in creating the short play effectively. Additionally, a Chinese folk story based English short play enhanced elementary school students' English learning interests and motivation. Another study sought to explore the effects of contextual cues and support requirements of multimedia animation on children's English learning. Support requirements for design were put into two categories: no support requirements vs. support through display of key images before listening and English description and the display of key images after listening as well as printing materials. The study found: 1) contextual cues play an extremely important role in the process of children's learning via multimedia animation, which means children are more dependent on contextual cues; 2) the design of support requirements needs to provide or complement relevant and specific contextual cues in order to help children's comprehension and match the audio to the context, Baharul .I, Kabirul I, Arif A, Kalam S, (2010).

Baharul .I, Kabirul I, Arif A, Kalam S, (2010), also emphasized that an animation media can help children expand their English vocabulary and receive higher average score than those who apply the normal one at statistical significance level. The researchers commented that the animation method is a beneficial teaching material to stimulate and support the learners, especially at 5 to 6 years old to enjoy the class with good results.

Baharul .I, Kabirul I, Arif A, Kalam S, (2010), expounded that, “we visited one kindergarten school named Ahsania Mohila Mission High School in Dhaka. There were 52 kindergarten children (aged

4-5 years). We took a pre-test before showing our developed learning materials through the help of class teachers. Almost all children already are known the alphabet but only few children can make word using each alphabet. Fig. 3 playing interactive learning materials in front of kindergarten students in Ahsania Mohila Mission High School In the phase of third, we showed our developed interactive learning materials using projector. In figure 3 we demonstrate our learning materials in Ahsania Mohila Mission High School where 52 kindergarten students. And we played video one time and asked the children individually about alphabet with correspond words and objects. Most of the children recognized the words and objects. Only few students could not identify objects with corresponding words. For them, we played the same video again and asked the weak children second time. Surprisingly, they recognized objects and words more than the first time. Possibly they got some ideas from first time video display and received help from other successful children.

Result and discussion indicated by the Table 1 and Figure 3 show the results of pre-test before playing interactive learning materials. There were 19 students already know the alphabets, digits, words with corresponding objects because of test held at the end of academic year. They knew it from the home and school said their class teacher.supported their arguments with a table below;

Table 1: Pre-test result for students

No. of Students	Recognized Alphabets	Recognized words with objects	Recognized Digits
19	Yes	Yes	Yes
12	Yes	No	Yes
11	Yes	No	No
6	No	No	Yes
4	No	No	No
TOTAL: 52	**46**	**19**	**37**

The literature review indicates that the multimedia courseware developed for teaching children especially preschool learners has a positive impact for promoting learning but designing and developing the materials for their engagement are essential aspects for paying careful attention.

This implying that while cartoon usage in capturing learners' attention is considered, appropriate animation focusing on particulars such as comprehension and conceptualization of sounds must be paid great attention in a case like teaching sounds of Arabic alphabet for early childhood education.

2.4 Summary

This chapter gave empirical foundations and relevant studies related to the topic. It gave understanding of the theories underlying animated cartoons, (Observation Theory) in relation to animation. It explained concepts used in the study. The role of animation and how it may enhance the teaching and learning for in Early Childhood Education, the strategies animators employed during animation and the challenges of conducting animation. The review of related literature presented some scholars who gave some elaborations, explanations and suggestions towards how animation may influence quality education in ECD.

Chapter Three will discuss the methodology that was employed in the study.

CHAPTER THREE: METHODOLOGY

3.0 Overview

The research was completed in two phases. Firstly, through animated cartoon for teaching sounds of Arabic alphabet was developed using different software like 3D Autodesk Maya, Adobe After effect and Adobe Photoshop; Animated cartoon with the recorded voice of Sheikh KIYAGA Hassan Wasswa which pronounces sounds of Arabic alphabets properly.

Secondly, a visitation to Husma Kids School in Wakiso District where 20 learners aged 3-6 years was used. They were categorized into three groups. In the first group were 7, second group were 6 and third group had 7 learners respectively.

This chapter presents the methodology that was used to conduct the study. Particularly, the research design, research site and population of the study, data collection methods, review of documents, data collection instruments, data analysis and ethical consideration are presented.

3.1 Research Design

The researcher used case study design in which a studio based investigations was used to arrive at the findings and therefore, qualitative approach was the appropriate choice for the study. Fieldwork, observations, drawings and design analysis were applied to tackle studio exploration of the selected nursery school to develop cartoons for teaching the Arabic alphabet in ECE. Interviews were also conducted to ascertain the effect of the animated cartoons on learning the Arabic alphabet. Experimental design was used throughout studio practice in cross-sectional nature where the researcher experimented with different sketches to create the cartoon character, which was used for the final animation.

3.2 Area and population of the Study

Geographically the study was conducted in Husma Kids School in Wakiso district. The school offers both Islamic theology and secular education. As such, children are taught the Arabic alphabet as a foundation to learning to read the Quran.

3.3 Target population

The targeted population included children aged 3 – 6 years and teachers at Husma Kids School.

3.4 Population Sample

On the basis of the Morgan (1970) sampling table, the study worked with 48 children and 2 Arabic teachers. Children were selected randomly while teachers were selected purposively in order to guide the exercise. The age of the children was a key factor because they would give the required information genuinely. Only teachers of Arabic were used as the study was about teaching the Arabic alphabet. The sample size was adequate to provide enough information to facilitate studio work.

Table 2: Population Sample

Description	**Population**	**Sample**	**Sample procedure**
Children	58	20	Random sampling
Arabic Teachers	2	2	Purposive sampling

3.5 Data Collection Methods

Data for the study was collected using various methods below

3.5.1 Review of Documents

The documents both theoretical and visual, published books and unpublished theses, journals, magazines, catalogues and existing videos of cartoons were all considered and reviewed to get information that helped the researcher focus the literature review and the studio work. The libraries which include; Makerere University Main Library and Kyambogo University libraries for both the physical and online library for the journals and books were visited. This review enabled the researcher to obtain literature that was used.

3.5.2 Interview

With consent from the head teacher, parents and teachers of the school, the researcher set out a semi-structured interview with questions that helped to gather as much data about the topic as possible. The interview method with teachers gave the researcher some level of flexibility to respond to the interviewee's answers thus developing themes and issues on the spot.

3.5.3 Observation

Observation of the teaching method used in class was carried out. The researcher in conjunction with the teachers of Husma Kids School art facts widely collected information through observation during the field study. This method helped the researcher to observe the existing teaching methods and cross check the information from the teachers and children personally and directly.

3.5.4 Studio exploration

The researcher through the studio exploration method executed the work- developed the character through the animation process that he presented in an exhibition, the guide book and catalogue. The studio exploration method was employed for it enabled the researcher to experiment using ICT and come out with visual-audio products in form of software and hard copies

3.6 Data Collection instruments

3.6.1 Documentary Review Guide

Document review is a systematic method of data collection that involves collection, documentation, analysis and interpretation of documents as data sources (Pamela, 2017). A document review guide was created to collect information on how the teachers document the use of different methods of teaching Arabic sounds. The researcher reviewed lesson plans, schemes of work and teachers records of work books to find out if animated cartoons were used in teaching Arabic sounds.

3.6.2 Interview Guide

The interview guide was necessary for good organization and follow up and it constituted the following guiding questions; what is the appropriate method for teaching sounds of Arabic alphabets in early childhood education? What possibilities are there in developing cartoons that captures the sound of Arabic alphabet? How do animated cartoons that can be used in the teaching of the Arabic alphabets be produced? The researcher shared with the teachers on how best animated cartoons can improve the teaching method for sounds of Arabic alphabets.

3.6.3 Observation Guide

Observation is the active acquisition of information from a primary source through use of senses or through use of scientific instruments in which the researcher directly involves with data sources (Dodovskiy, 2018). The researcher used the eyes physically, the camera and video recordings to conduct class room observations. The focus was on the way how the teachers in sessions were using sounds of Arabic Alphabets and the children's response to the teaching.

3.6.4 Studio exploration

The following activities were done under this method: selecting, observing and sketching the inspirational objects-Banana finger re-drawing them using illustrator computer programme,

photography and video for observing, and recording classroom sceneries including learners and teachers, all other informative features such as back ground landscape-environment expected to be of further use in executing studio work. The study developed animated cartoons targeting children 3- 6years. This was enhanced with the use of computer-aided programs like Auto desk Maya, Adobe After effects and Adobe Photoshop.

The approach, methods and instruments were chosen and employed because the study was both studio-based and classroom based. It involved creating something and implementing it which requires in-depth observation and explanation.

3.7 Data analysis

The researcher used content analysis that involved coding and classifying all the data such that similarities and differences recognized.

3.8 Ethical Consideration and Environmental consideration

3.8.1 Ethical Consideration

During research exercise, the following ethical considerations were emphasized.

3.8.2 Consent of the respondents

The researcher informed the respondents about the purpose of the study and this brought confidence in the study to enhance their participation. It involved informing them about the objective of the study.

3.8.3 Honest disclosure of the study

The researcher reported the information as was given by the respondents without any manipulation. The researcher highly avoided plagiarism of information so as to maintain the quality of data compiled.

3.8.4 Confidentiality

Assurance was given that the information gathered during the research process remained confidential and was used for the designated research and academic purposes only. Issues relating to full disclosure of proper identity like names, photographs were based on consent, where the researcher respected anonymity and confidentially on information to be supplied by research subjects. Additionally, participation based on voluntary basis and the benefits of the study were clearly explained to all willing participants.

3.8.5 Environmental consideration

The research was based on environmental consideration; all the activities of the research were environmentally friendly. The process of developing the sketches and cartoon characters were non-pollute in terms of plants or animals, air, water and soil pollution. Therefore, they had no danger to environmental degradation.

3. 9 Limitations to the Study

The researcher met the following challenges during the research process; obtaining information was difficult because of little access to relevant data sources and personalities in Nursery schools, some respondents were hesitant to respond to the questionnaire and interview guide due to unknown intentions of the study. The researcher cleared such misconception by rightly explaining the true intentions of the research study by stating it that this was an academic research whose findings and responses were to be kept highly confidential and used for the research purposes only.

3.10 Procedure

The researcher acquired permission and clearance from the supervisor of the research proposal. This clearance led to obtain an introductory letter from Kyambogo University that further helped to introduce the researcher to respective offices of the administration structure of the field under study especially the heads of nursery schools. It was from this background that a written permission was issued and it was used as a tool for accessibility to whoever required formalities of the researcher's field activities.

CHAPTER FOUR: PRESENTATION AND ANALYSIS OF RESULTS

4.0 Introduction

This chapter presents findings guided by the objectives of the study. Themes were generated from the objectives and the data that was collected. The data is presented under three themes that represent the objectives.

4.1 **Theme 1:** Method for teaching sounds of Arabic alphabets

4.2 **Theme 2:** Animated Cartoons and sound capture

4.3 **Theme 3:** Production of Animated Cartoons

4.1 Theme 1: Method for teaching sounds of Arabic alphabets

A situation analysis was carried out at Husma Kids School, a nursery school located in Wakiso district. At the school, teaching was conducted with three different groups of pupils in cooperation with the teachers. First, pupils were taught using a traditional method of chalk and talk as pupils copied content from what was written on the blackboard.

Secondly, another group was taught with only visual learning charts that appear in Figure 4, after which the assessment was done. The third group was taught with the video of animated cartoon on a computer combined with teacher's instructions and was assessed the level of pupil's ability to understand the content. This was intended to evaluate the integration of visual animated cartoons with verbal instructions by a teacher, this greatly promote students ability of acquisition of knowledge and skills. Student's response and perception were very positive towards the cartoon method than the other two methods. This cartoon leaning system was a good method for Early Childhood Education.

Figure 2: Teachers demonstrates the class with charts

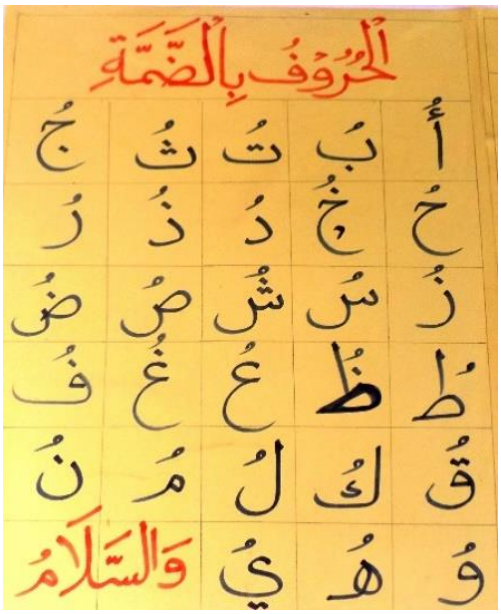


Figure 3: Chart of Arabic alphabets

Figure 4: Learners engage in instructions, observations and watching sessions

Figure 5: Recording the voice Sheikh Hassan while reading sounds of Arabic Alphabets.

The researcher consulted to resourceful person, he involved attending to and recording of alphabets' sound reading by sheikh Hassan who appears in figure 5.

4.2 Theme 2: Animated Cartoons and sound capture

There was a need to generate animated cartoons for sounds of Arabic alphabets for Early Childhood Education which helps to pass lessons across ECE as well as improving the teaching of sounds for Arabic language. Autodesk Maya, Adobe Photoshop extended, Premier Pro and Adobe Aftereffect CS6 Software were used in the development of the animated cartoon character. The developed animated cartoon helped to satisfy some basic criteria expected of such alphabet sounds and pronunciation with the intention to cover the ECE syllabus in Arabic language and other people to learn more from their local and foreign languages.

4.2.1 Animated Cartoon Design and Implementation

Since a studio based qualitative approach was used, the use of the following computer aided programs; Auto desk Maya, Adobe illustrator, Adobe InDesign, after effects, Adobe premiere pro, Microsoft word to generate animated cartoons for sounds of Arabic alphabets in ECE was effected. The researcher borrowed Andy B. (2002)'s formula of; the3D animation production pipeline which was designed as a car assembly line. Each person does a job in a sequential order to create the entire car in an efficient, affordable, and timely way. The result is an effective manufacturing process and at a lower cost of the final product. The task in the 3D animation production pipeline, can consist of 200 people and more or as few as two. Every artist working on a 3D animation production pipeline will eventually have to hand off work to a different artist to work on. It is important that each artist's work do not affect the next few steps in the production pipeline.

Figure 6, starts by describing the stages of the assembly line and how they are linked to one another. Then followed by a more detailed explanation of how each particular production stage was practically executed for this study.

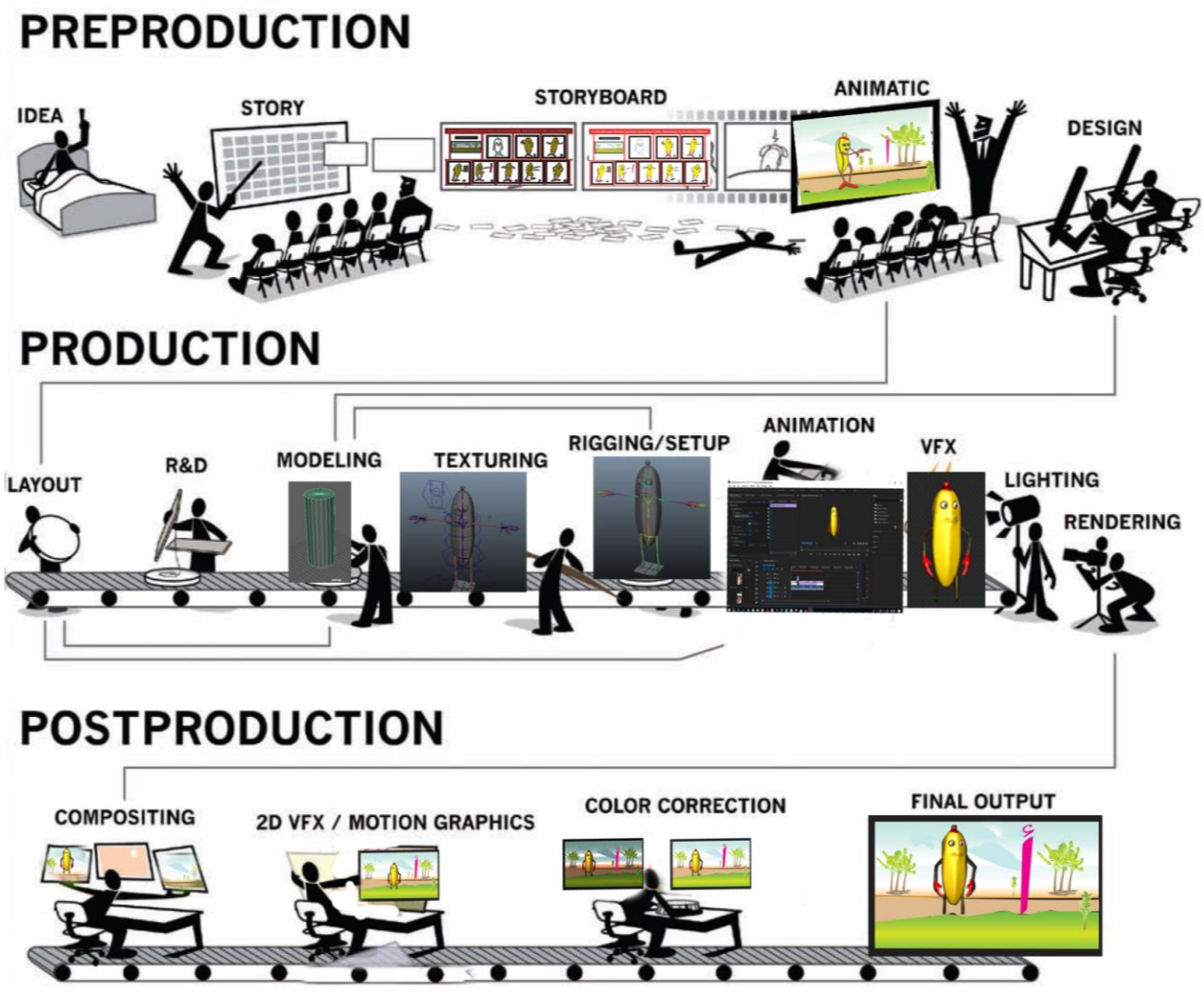


Figure 6: The 3D animation production pipeline

4.2.1 Idea/Story

An idea is an impression for any project that can come from just about anywhere and from almost anything. According to the situation analysed by the researcher at Husma Kids School which aimed at teaching both theology and secular, the methods used to teach Arabic were not friendly to the young children because advanced and complicated books that are written in only Arabic language were mostly used for teaching. The textbook used were too advanced to enable early childhood learning of Arabic language. This sparked the brain to develop an idea of generating animated cartoon from banana fruit (Bogoya) that aimed to solve this problem since cartoons are of great fun to children. Banana fruit is too sweet and its yellow colour is very appealing to children.

4.2.2 Script writing

The script writing; is the formal written form of the final story. Scripts were written to guide the character movements, environment, time, actions, and dialogue that were used to design a story board. The script must describe what will be seen and heard onscreen for different production to know what will be created. The script is the written backbone structure for the rest of the production. The table 3 outlines scenes, indicating scripts of the character and activities involved in relation to Yasarna attributes

Table 3: Script writing

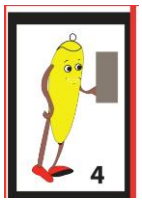
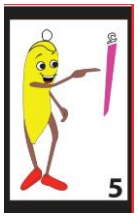
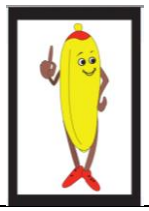
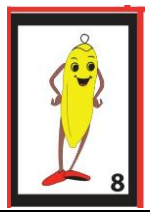
No.	**Yasarna attributes**	**SCENE** (providing clear explanation of alphabets of Arabic sounds configured by the animation	**CHARACTER ACTIVITY** **(Animation vs Yasarna attribute)**
1		Introducing; Greeting the audience	Cartoon appears
2	ا	Sounds **"ALFU"** the alphabet come out from the character's mouth **(ا)**	Cartoon appears
3	ب	Sounds **"BA-U"** the alphabet come out from the character's mouth **(ب)**	Cartoon appears
4	ت	Sounds **"TA-U"** the alphabet come out from the character's mouth (ت)	Cartoon appears
5	ث	Sounds **"THA-U"** the alphabet come out from the character's mouth (ث)	Cartoon appears

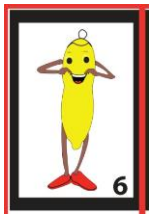
4.2.3 Storyboard

The storyboard is the visual story form of the scriptwriting. It can be used as a comic book of the script. A storyboard is also the first visual representation of the entire story. It includes early ideas of camera staging, early representations of possible visual effects, and some key character poses or scene events that will be in the project. Each image in a storyboard visually depicts a story beat, or moment, from the script. It is made of sequence of drawing of each scene in the form of a comic

strip. This is the most important aspect in creating any animation. It gives the director, modeller and animator the foreknowledge on how the scenes are going to look like. This process ensure that the story have been thought through and to give the general overview of the story. This stage also gives room for necessary revisions such as adding or removing from the story before going on with the other processes. Sequence of drawing of each scene in the form of a comic strip is done directly using Adobe Illustrator. The basic tool used in the Illustrator is the pen tool which functions like the pencil.

Table 4: indicates scenes, characters and activities involved in a story board.

SCENE	CHARACTER	ACTIVITY
1		Introducing; Greeting the pupils There are 28 Arabic alphabets.
2		ا **“ALFU”**
3		ب **“BA-U”**
4		ت **“TA-U”**

5		ث **“TA-U”**

4.2.4 Animatic

This is a composed form of the storyboard created to illustrate mainly the timing, visual effects and the camera movements together with the soundtrack and voiceover. Animatic is a quick demonstration of the animation with the aim of showing the timing and sound. Animatic was done in Adobe Photoshop extended software which has the capability to show time frames. The animatic was done in the timeline panel with an arrangement of pictures in frames. There were 23 frames per second and required to change up to 25 frames per second in the timing before the real animation, adjustments were done.

4.2.5 Character Design and Environment Layout

In the design component, the final look of the project is decided. During this process, the character, costumes, and environment are designed based on the drawings made during the previous (story board) stage. The researcher /designer used pencils, coloured pencils, and poster colours as medium to create the conceptual art. He scanned the art work to a computer and used software such as Adobe Photoshop, Adobe Illustrator to develop them. This is also the time to consider the color of choice for the design.

4.2.6 Choice of inspirational objects

The researcher began with the identification of banana fruits refer to figure 7 as an inspirational objects targeting the interest of learners at early childhood education level. It is attractive to these children because of its sweetness and yellow colour.

Figure 7: Photograph of Bogoya (Yellow bananas)

The choice of bananas necessitated studies on the structure, colour and texture of this inspiration refer to figure 8.

Figure 8: More drawings of a Banana fruit finger

More studies of the banana fruit finger in view of distortion of shapes and form were made for motion.

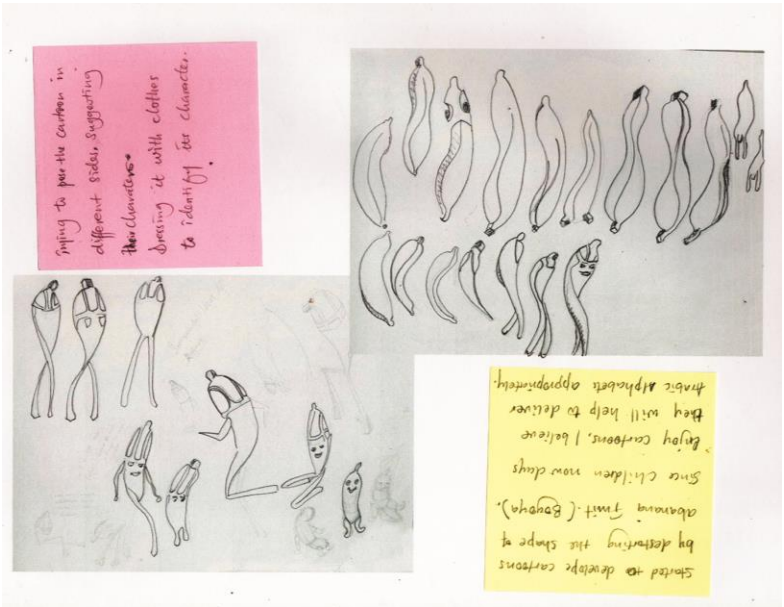


Figure 9: Distortion sketches of hand drawn cartoons (abstract)

The exploration through drawing was further made leading to formations of cartoons based on alphabetic letters.

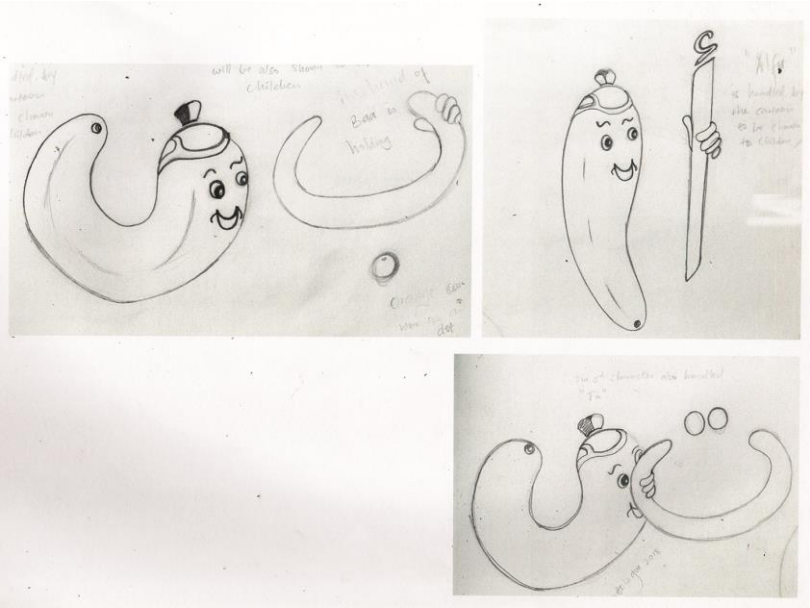


Figure 10; Distortion of the hand drawn cartoon with Arabic alphabets (Realism)

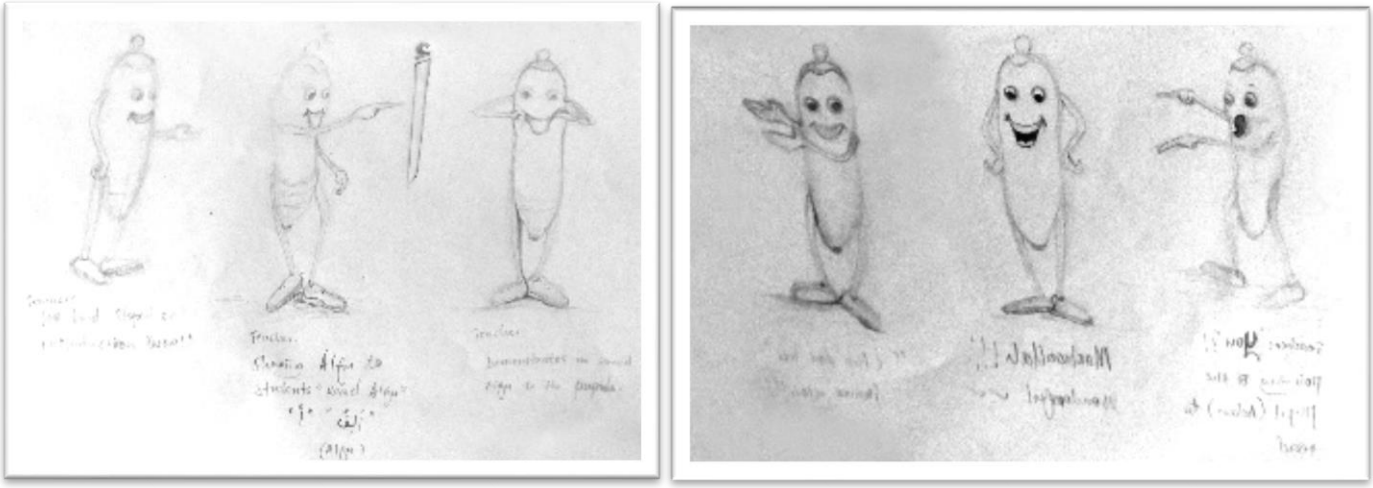


Figure 11: Sketches of a hand drawn story board

In the pursuit of the cartoon from a banana fruit figure, hand drawn studies of figure 13 were translated and further redrawn with a computer using adobe Illustrator program, refer to figures 13-14.

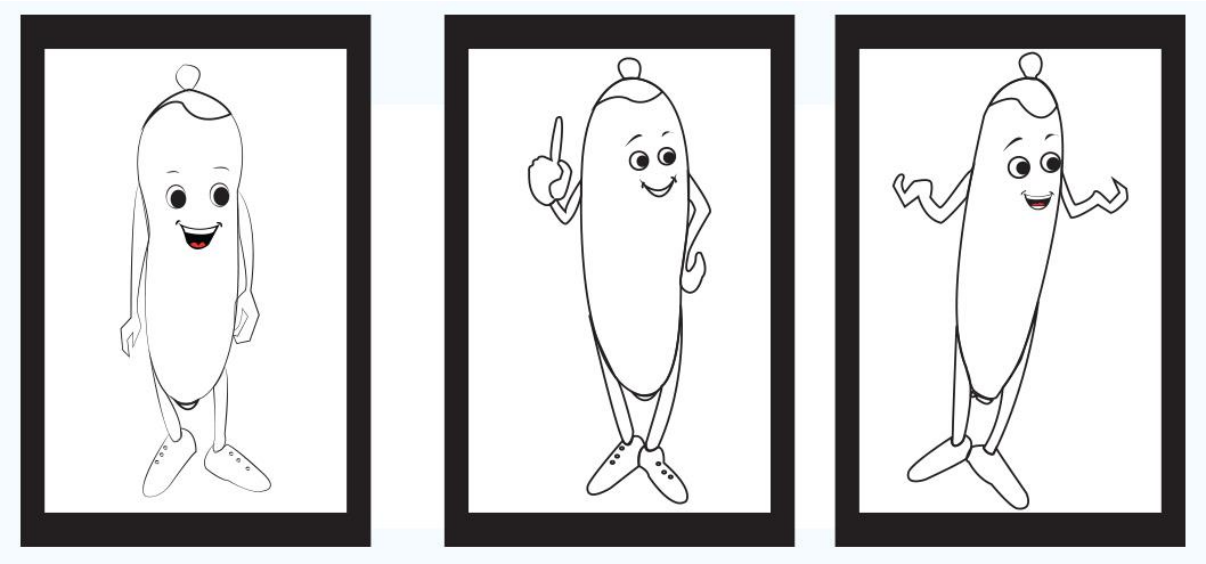


Figure 12:Computer drawn characters in black and white

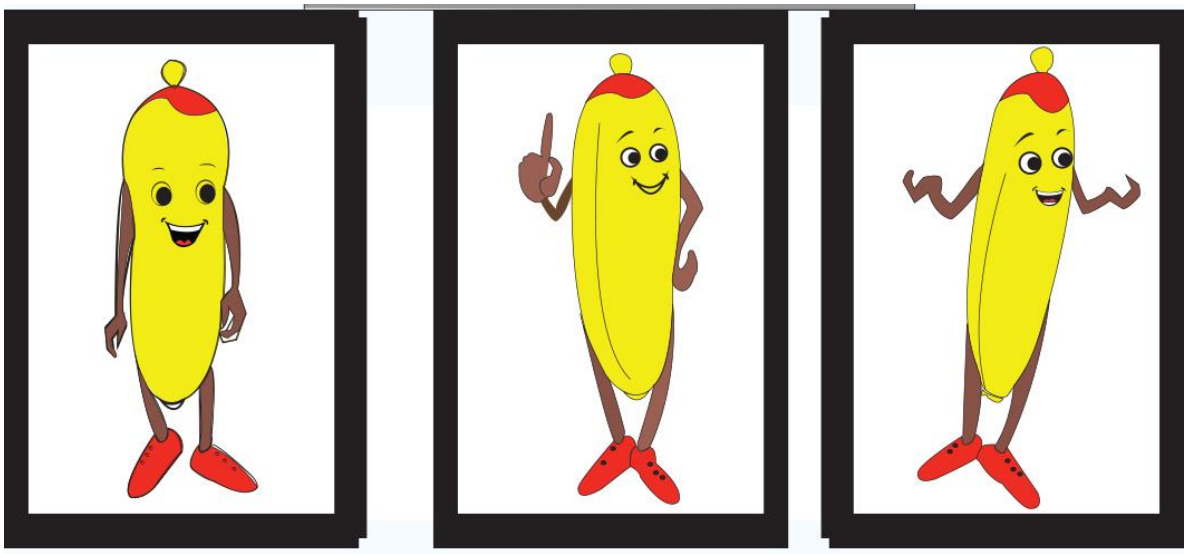


Figure 13: Computer drawn characters in colour

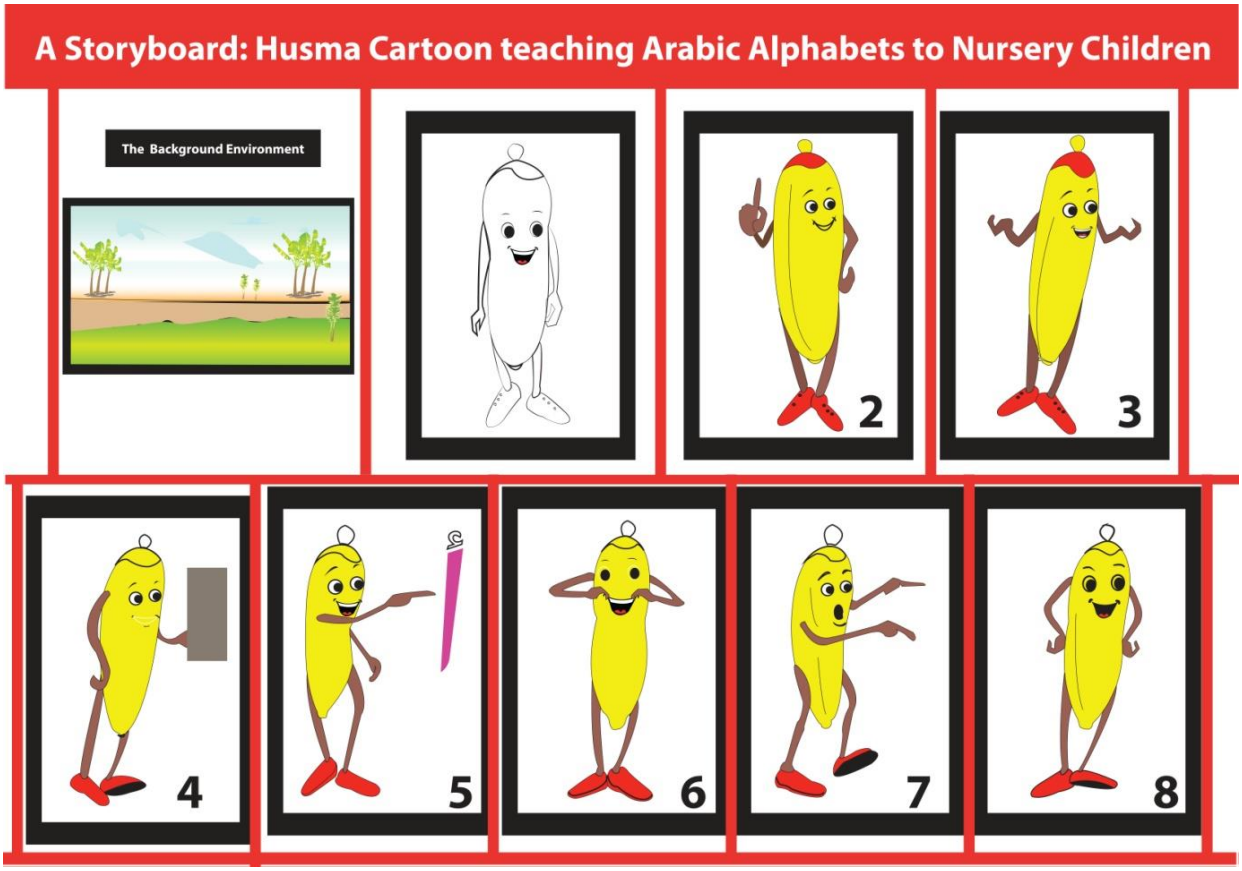


Figure 14: Sketches of a story board designed using Adobe Illustrator

Using Adobe Photoshop and Illustrator programmes, experimentation on colours and inclusion of background environment were made as shown in figures 15 -16.

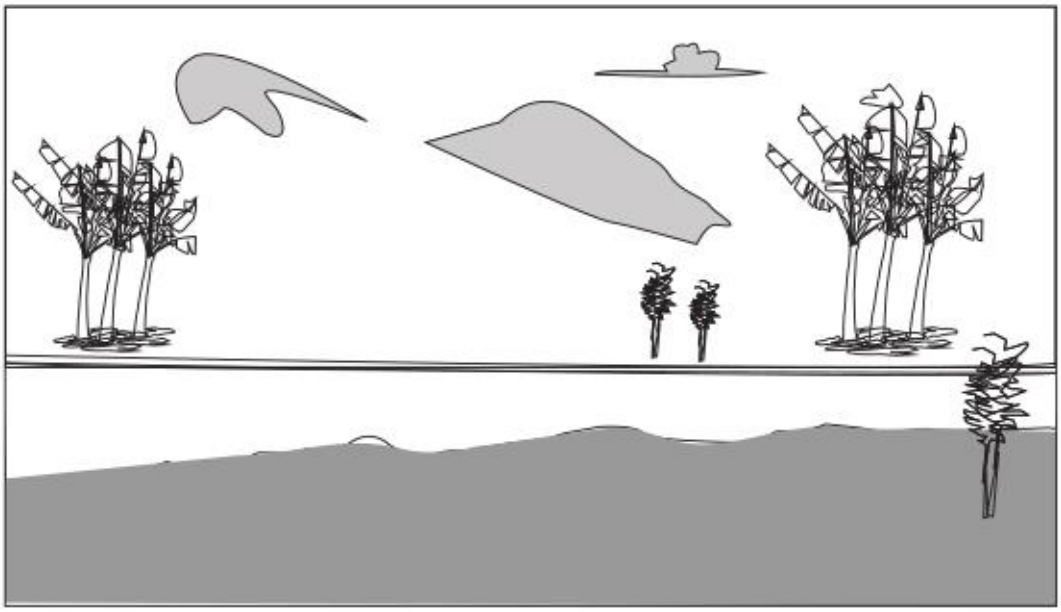


Figure 15: Sketch of environment designed in Adobe Illustrator in black and white

Figure 16: Sketch of environment designed in Adobe Illustrator in Colours

4.2.7 Production of a 3DAnimation

The researcher made the budgets, created plans, and 3D production artists was consulted. Then the production stage started. At this stage, he implemented most of his planning and decisions from the preproduction stage. All of the preproduction material and designs were handed off to the appropriate artist for the final 3D character. After completing the preproduction stage well, the production stage became much easier. The goal of the preproduction stage is to foresee as many problems and make as many design decisions possible. The researcher guided the 3D producer for every stage to be produced. Programs used to produce the animated cartoons were Auto Desk Maya 2015 version 3.12.1.12, Adobe Illustrator, Photoshop, Adobe after effects and premier pro.

The production stage includes the following components:

1. Layout (presentation)
2. Research and development (R&D) (contents gathered)
3. Modelling (generating)
4. Texturing (Colouring)
5. Rigging/setup (Skeleton)

6. Animation (Illusion of movements)
7. 3D visual effects (VFX)
8. Lighting/rendering

4.2.8 Layout

In a layout the researcher took basic information such as the character's shape, size, and environment then begins simple animation of the character.

4.2.9 Research and Development

Research and development (R&D) is a component that also spans the entire 3D animation pipeline, from preproduction to postproduction. In R&D, a 3D generator worked with the Arabic teacher, recorded the sounds of Arabic alphabets used in the project.

4.2.10 Modelling

A model is a geometric surface representation of an object that can be rotated and viewed in a 3D-animation software package. The researcher created a model of a cartoon character using Autodesk Maya software. A3D cartoon character was developed using Auto desk Maya.

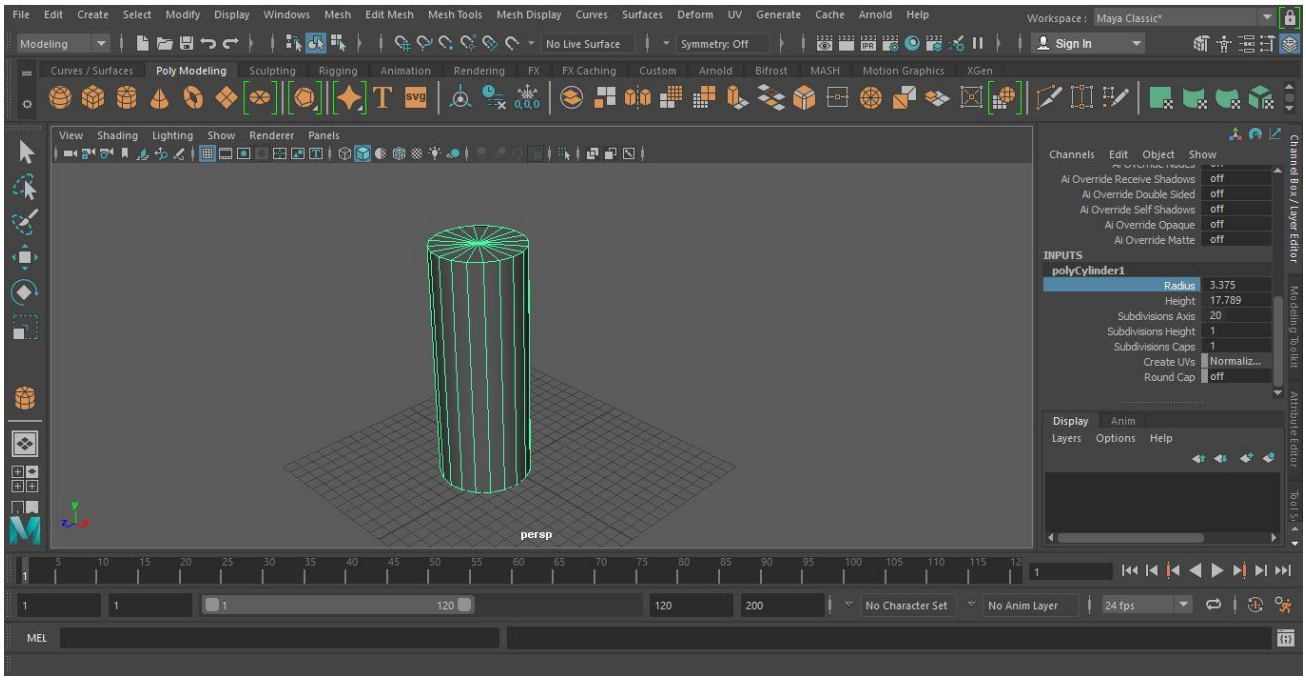


Figure 17: Modeling a polygon cylinder

In this process the researcher used Autodesk Maya where a polygon cylinder whose sides reduced to get a desired number of faces (subdivision axis are reduced, redius were 12 to 8 verticle axis).

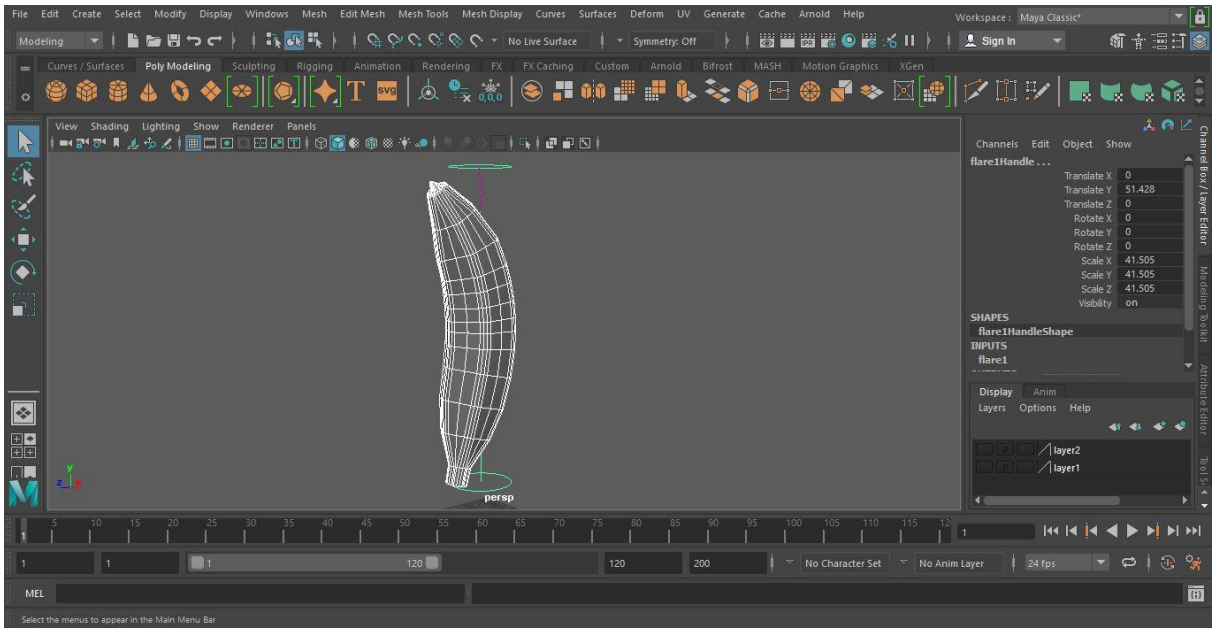


Figure 18: Wire frame

The Wire frame of the model in figure 18 was formed by the edges which were pushed and pulled to acquire the desired shape of a banana.

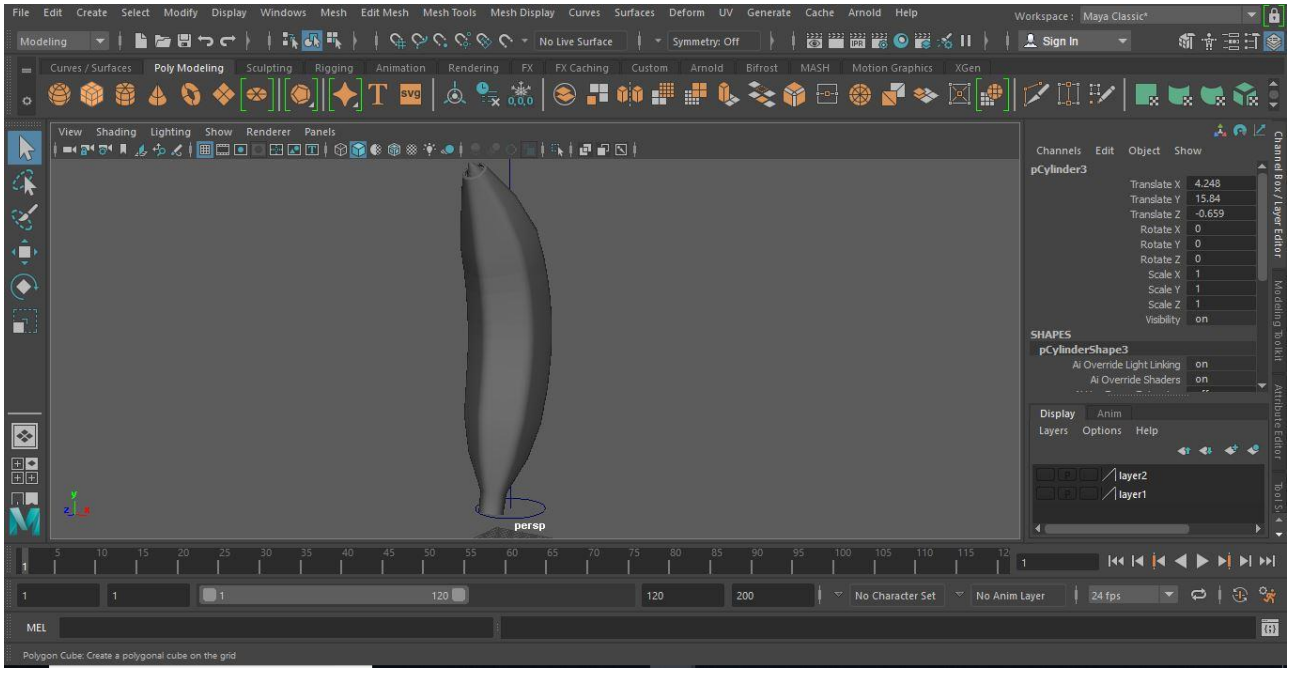


Figure 19: a Clay model

A Clay model in figure 19 of the complete banana was modified to acquire the shape of the model character.

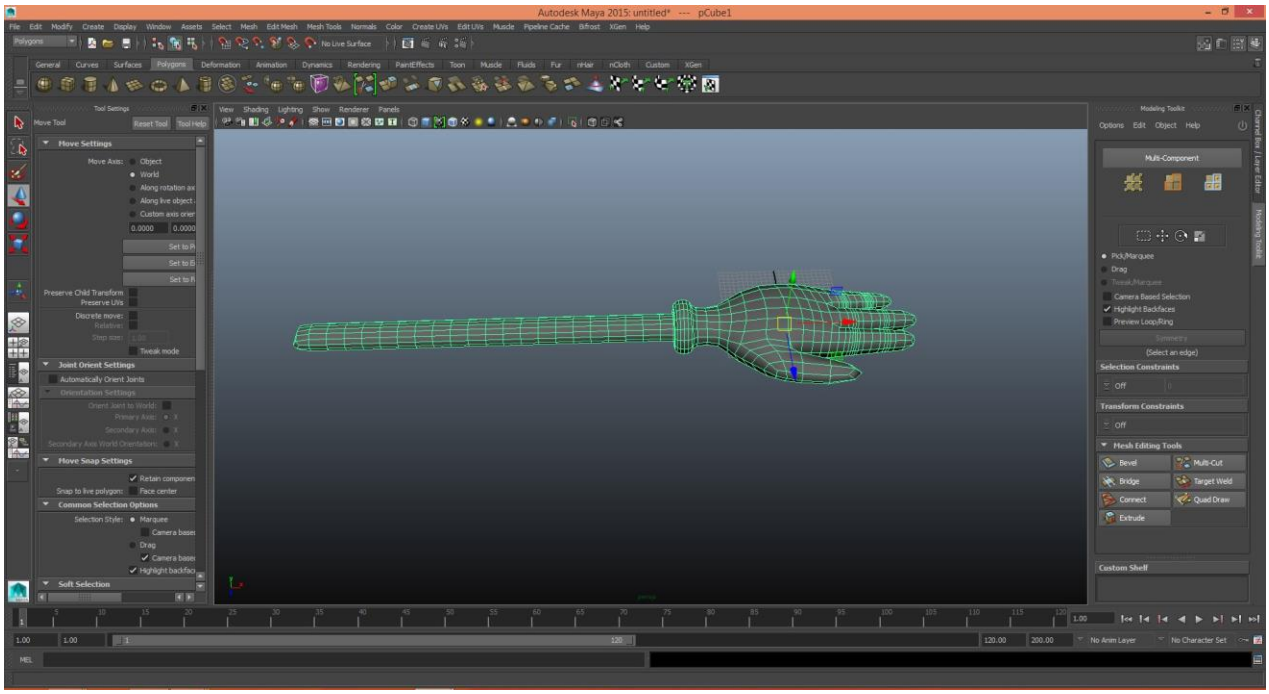


Figure 20: Modeling the arm

The arm was modeled in figure 20 and later attatched to the cartoon character.

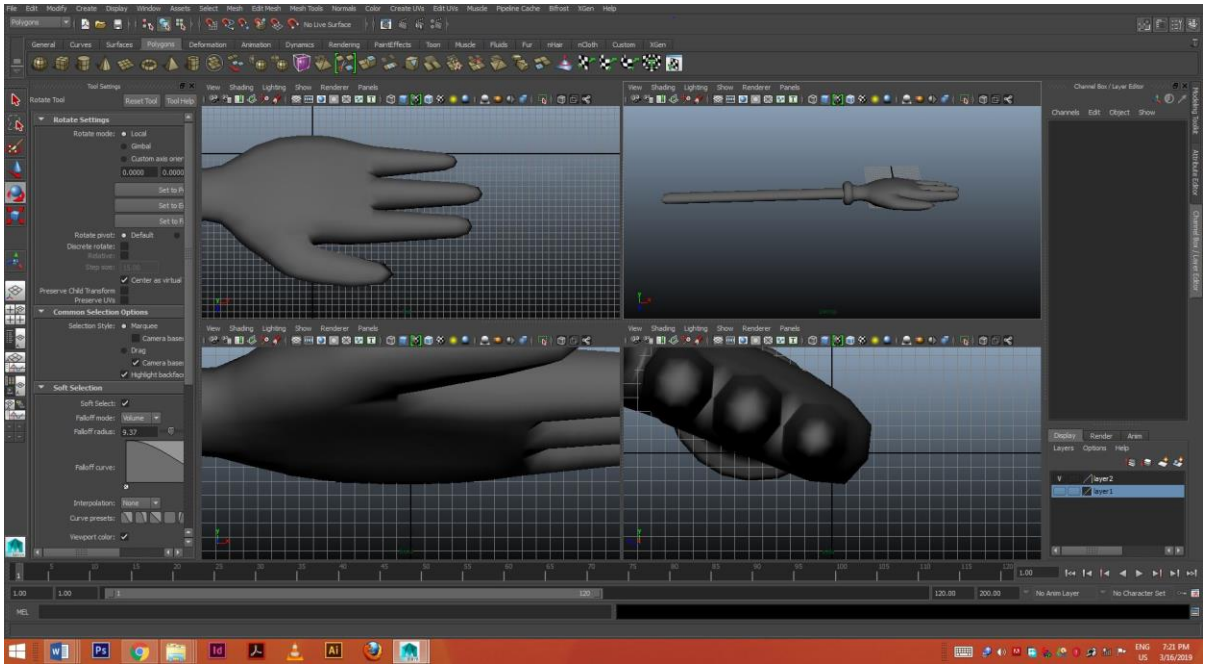


Figure 21: A four model view

A four model view of the arm in figure21 aimed at showing the top view (top left), front view (top right), perspective view and the bottom view of the hand to achieve it, press space bar when using Auto desk Maya.

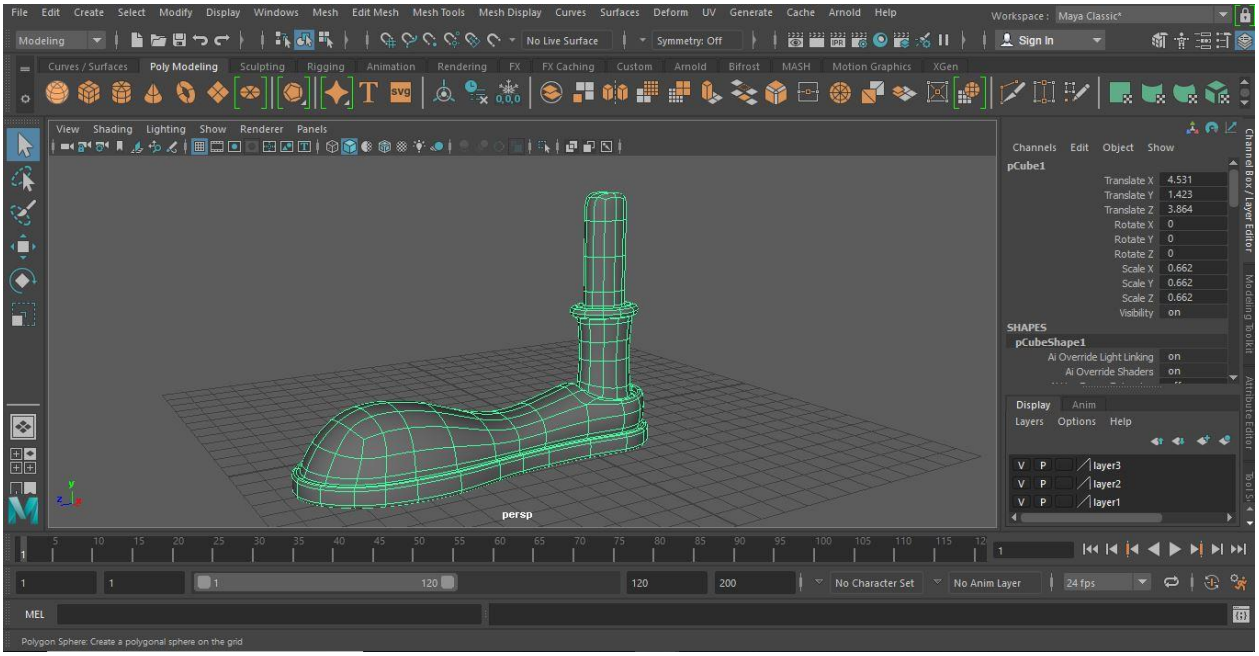


Figure 22: the Shoe model

Shoe model in figure 22 was modeled and later attatched on the character.

Figure 23: the body of the character

The body of the character in figure 23 had been modified from the banana model.

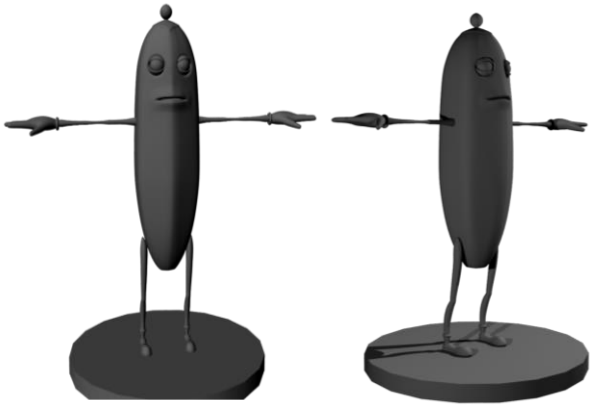


Figure 24: a complete cartoon character.

Different body parts were brought together to form a complete cartoon character in figure 24.

4.2.11 Texturing

Texture mapping is a method for defining high frequency detail, surface texture, or color information on a computer-generated graphic or 3D model, (Catmull, 1974). During the texturing component, the researcher applied colour and surface properties to the cartoon model. Since the model inspirational was from banana fruit (Bogoya), all effort made, the model when rendered looks like the banana the source of inspiration. The researcher imported the model character in Adobe Photoshop, paint directly on the 3D object.

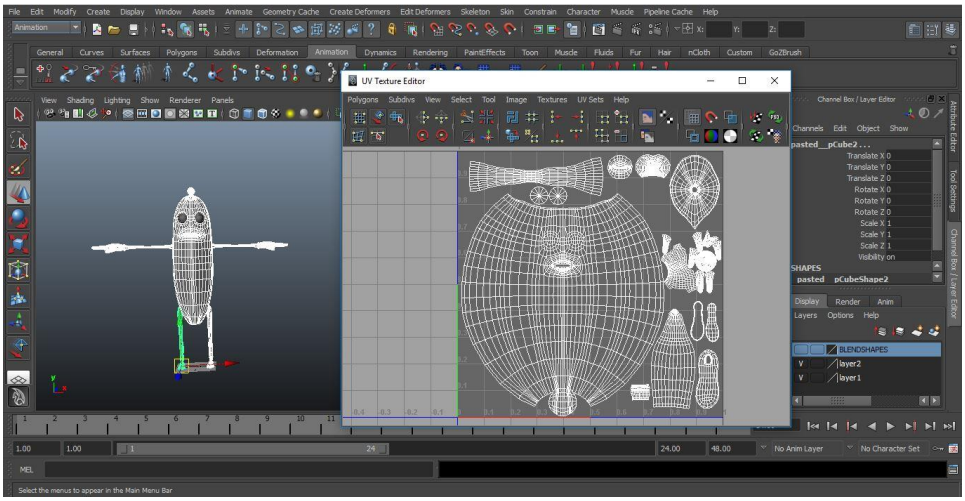


Figure 25**:** Texturing of a shoe, cap, and the model body in progress

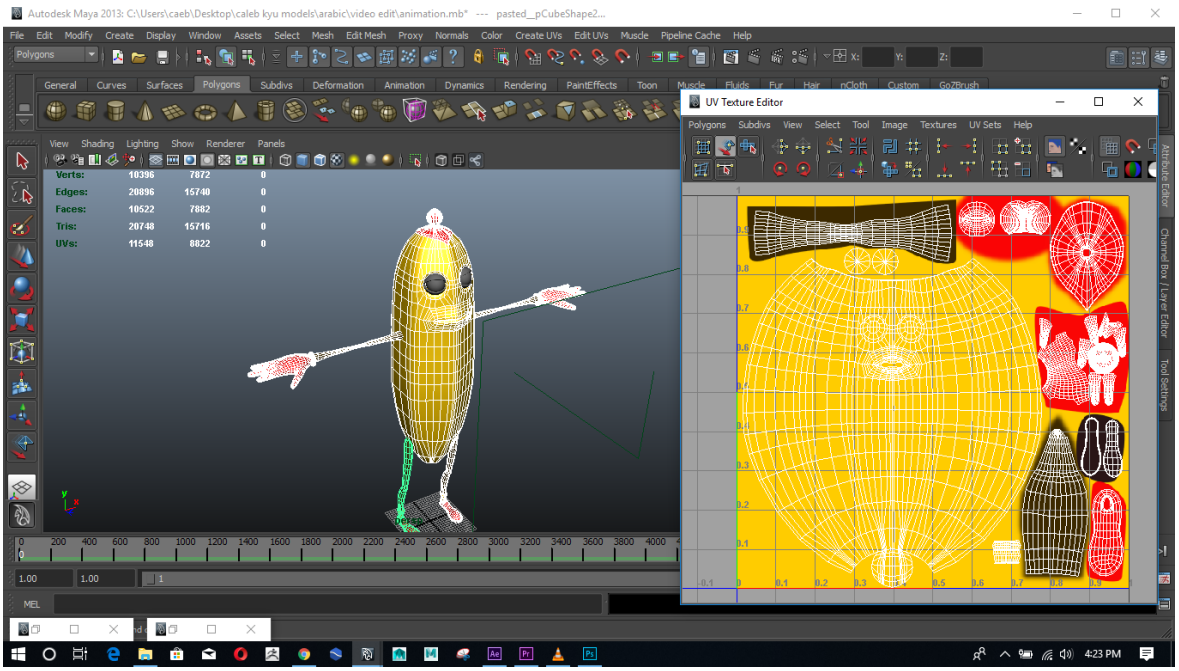


Figure 26: The model character after texturing a model, shoe and a cap

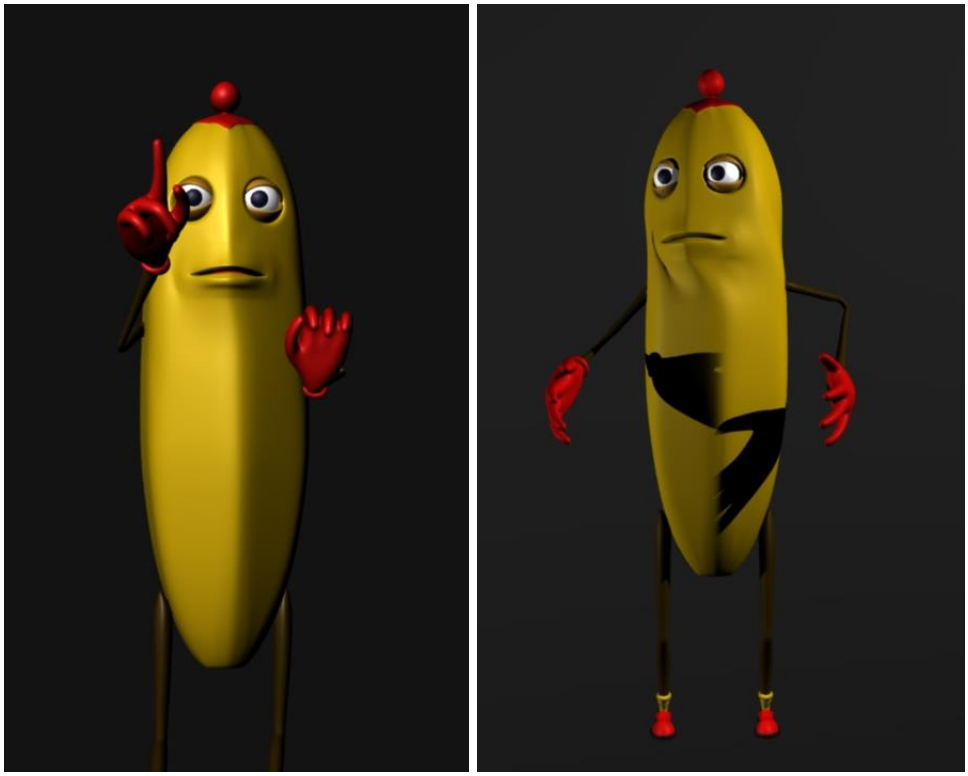


Figure 27: Ready produced model characters after texturing

4.2.12 Rigging

Rigging is the component of the production pipeline during which a control rig is put into a geometric object so the animators can move that object as indicated in figure 28. It is the rigger's job to aid the animators by creating a system of controls that allow the animators to work as quickly and efficiently as possible. Every object that moves in any 3D animation project will have some kind of system to control it. This control system can range from a simple parent/child hierarchy to a very complex character rig including joints, controllers, skinning/enveloping, a muscle system, and a floating GUI (Graphical User Interface) in the work view to aid the animator's selections and key framing. If you have no idea about the meaning of any of the terms in the preceding sentence, refer to explanation of terms. This component is quite technical and requires consultation of the researcher.

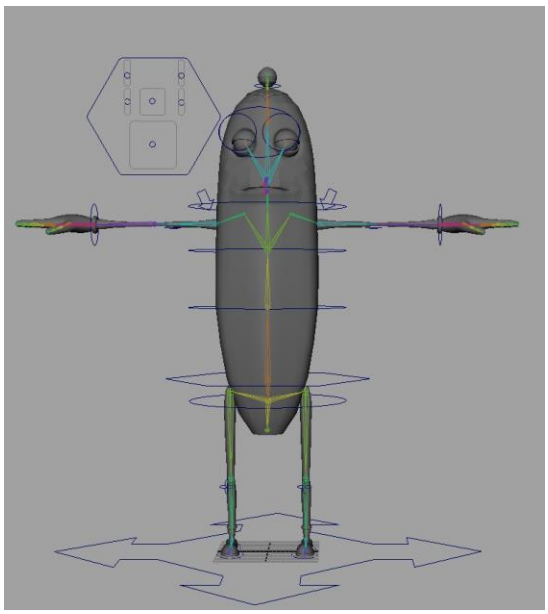


Figure 28: Control rigs

The character model in figure 28, with its Control rigs that help the animator / researcher to select when moving the model.

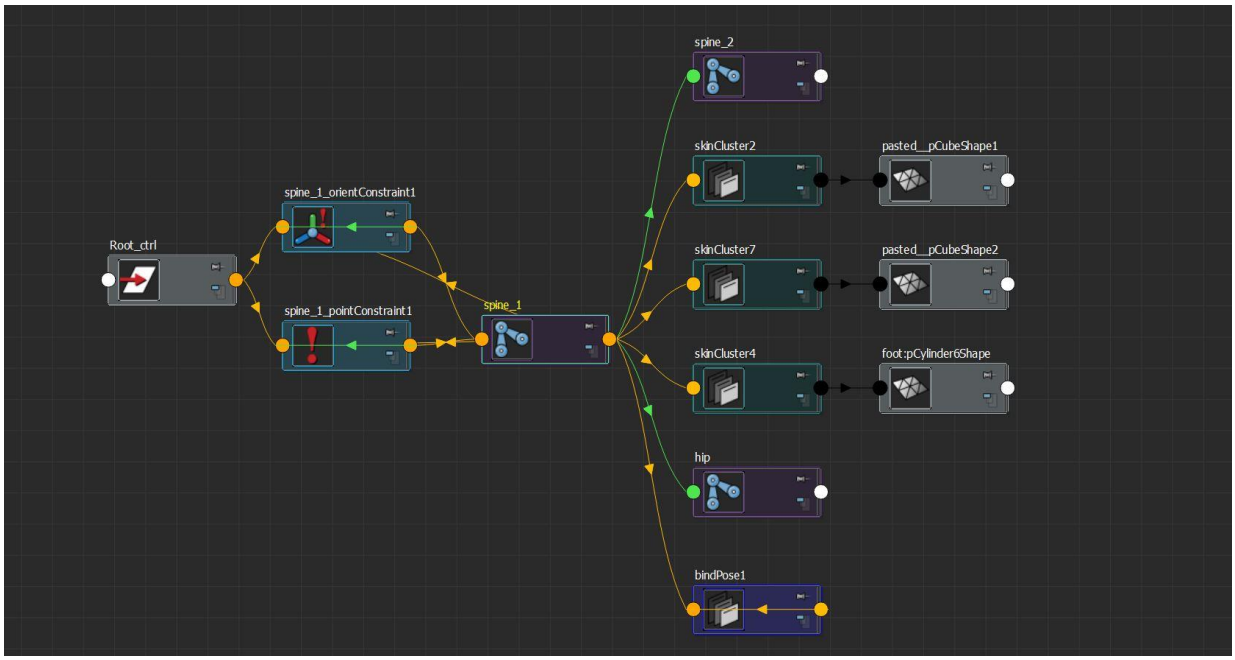


Figure 29: Outliner showing joint arrangement

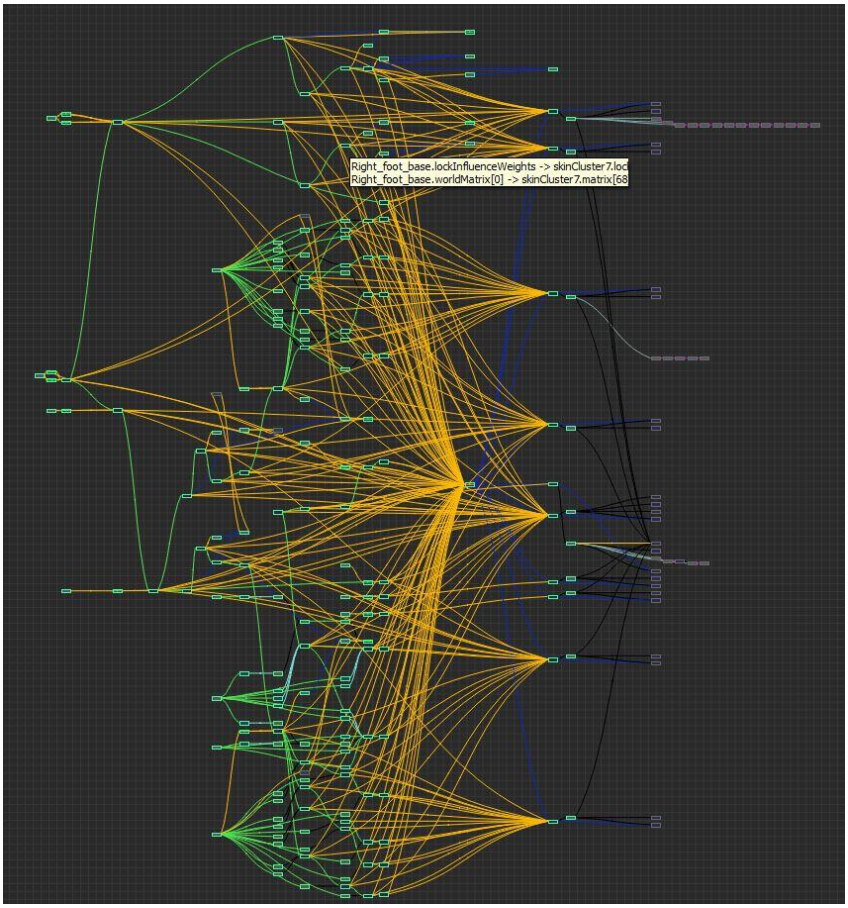


Figure 30: Nubs Controls

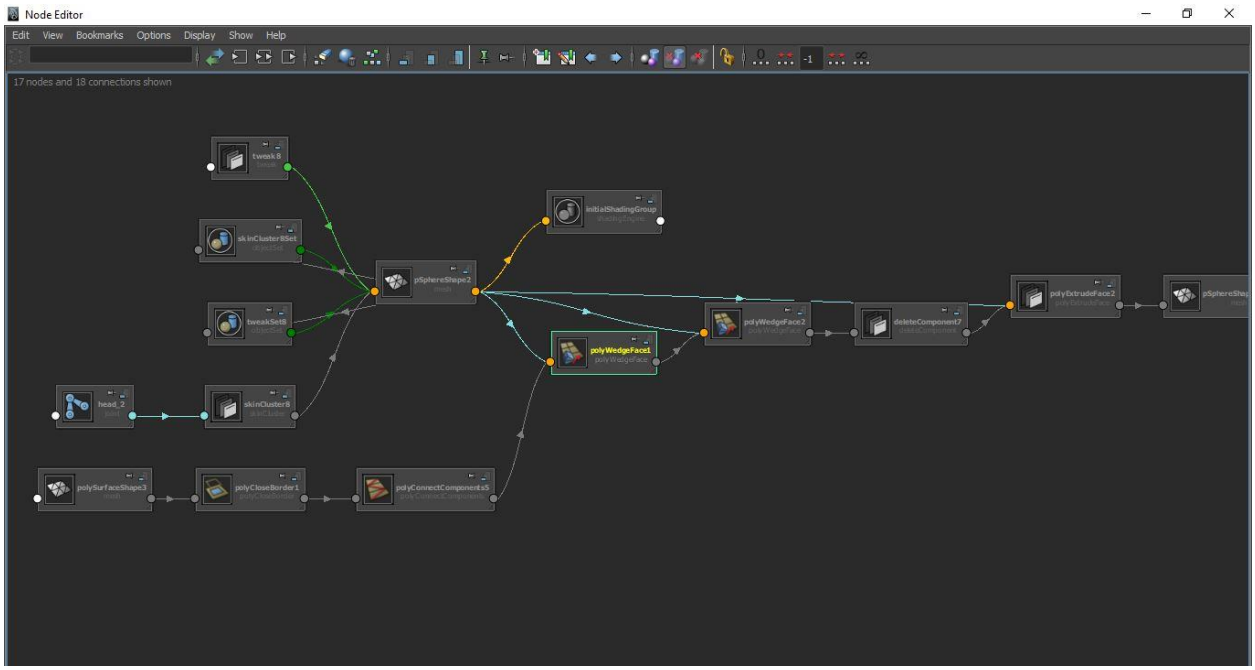


Figure 31: Node Editor

The node systems in figure 31 are used in character rigging (creating a skeleton system for the character which enables it to be easily animated it is done after modeling the character.

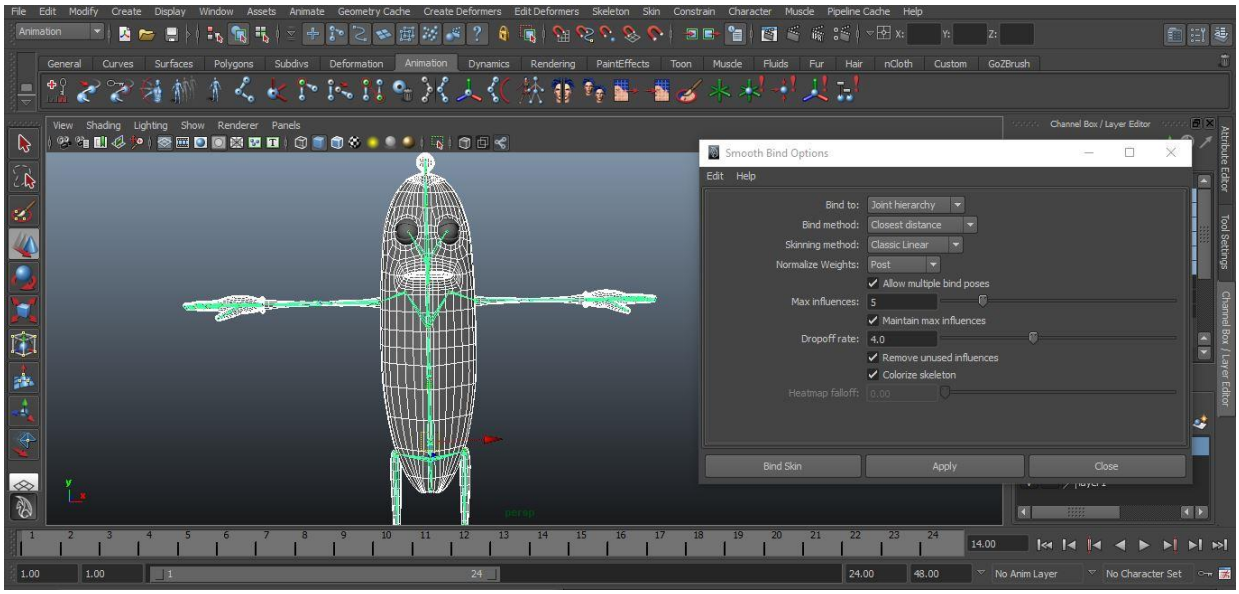


Figure 32: Wireframe of the model

Wireframe of the model in figure 32 can easily be formed by the ridges with joints, ready to be skin bounded.

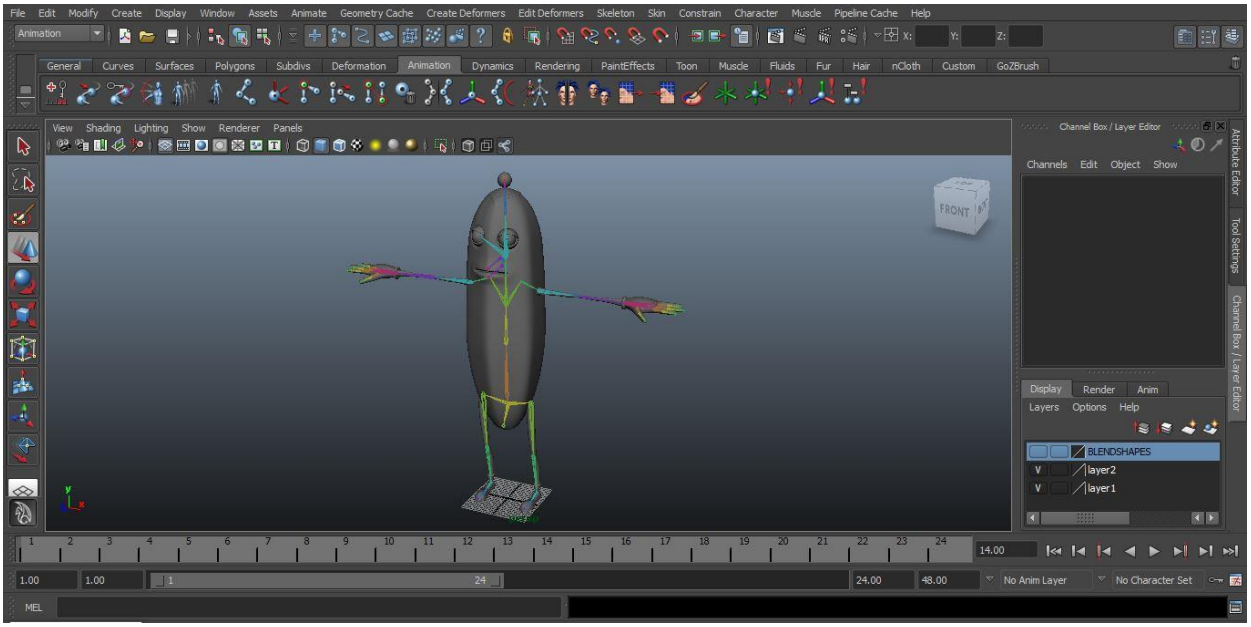


Figure 33: joints after skin bounded the character.

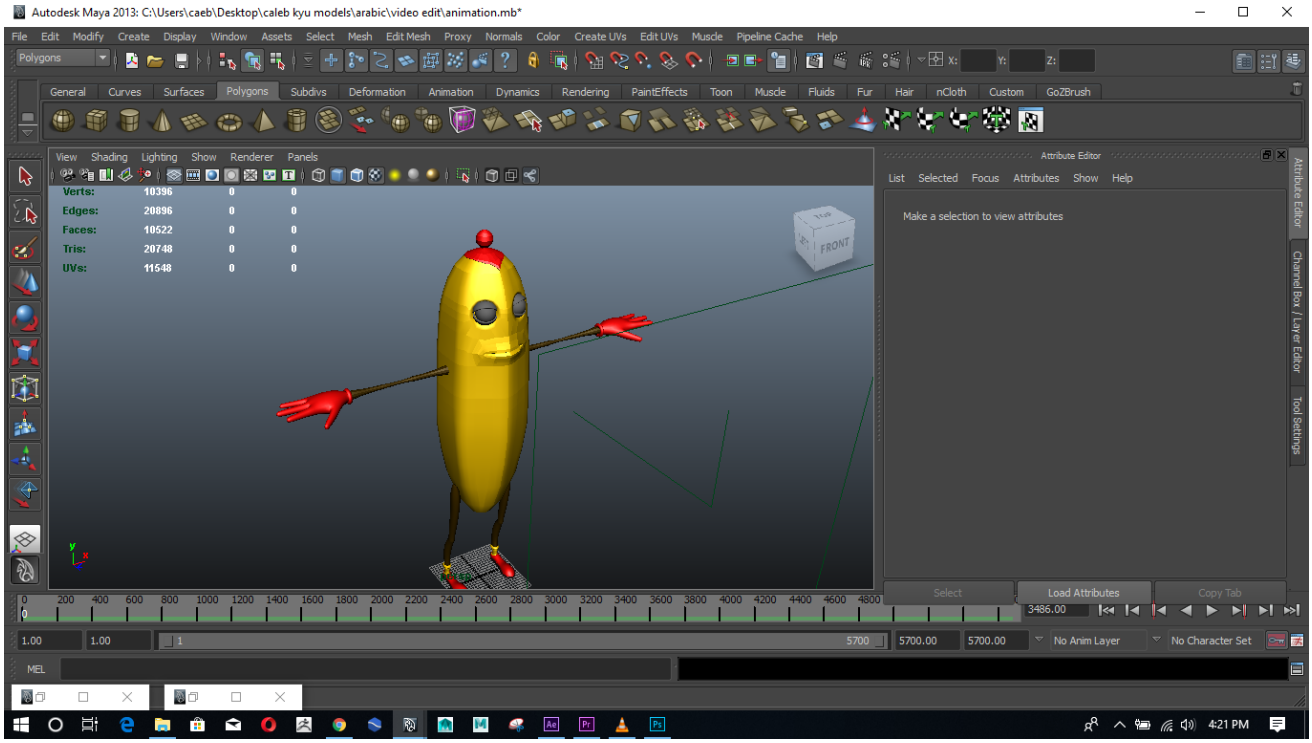


Figure 34: The final character after modeling, riging, textuering

4.3 Theme 3: Production of Animated Cartoons

The third objective was clustered under the theme of production of animated cartoons. Under this theme the researcher worked on the process of using the computer to animate the developed characters in theme 2.

4.3.1 Animation

Animation is the bringing onscreen characters or objects to life. Animation occurs when a group of still images that are slightly different from one another are shown in a sequential order and at a sufficient speed that our eyes believe something is moving. In this study, the standard frame rate is 25 frames per second. So the researcher was responsible to control the movements of our characters through the space 25 times per second to create the good performances. For instance a 90-minute film has 129,600 frames, and each frame is touched, studied, and analysed to make sure it is perfect. This is why animation is so time consuming. So the animator must be able to make the 3D characters move frame by frame and in a way that the audience believes the inanimate 3D objects on still frames are alive.

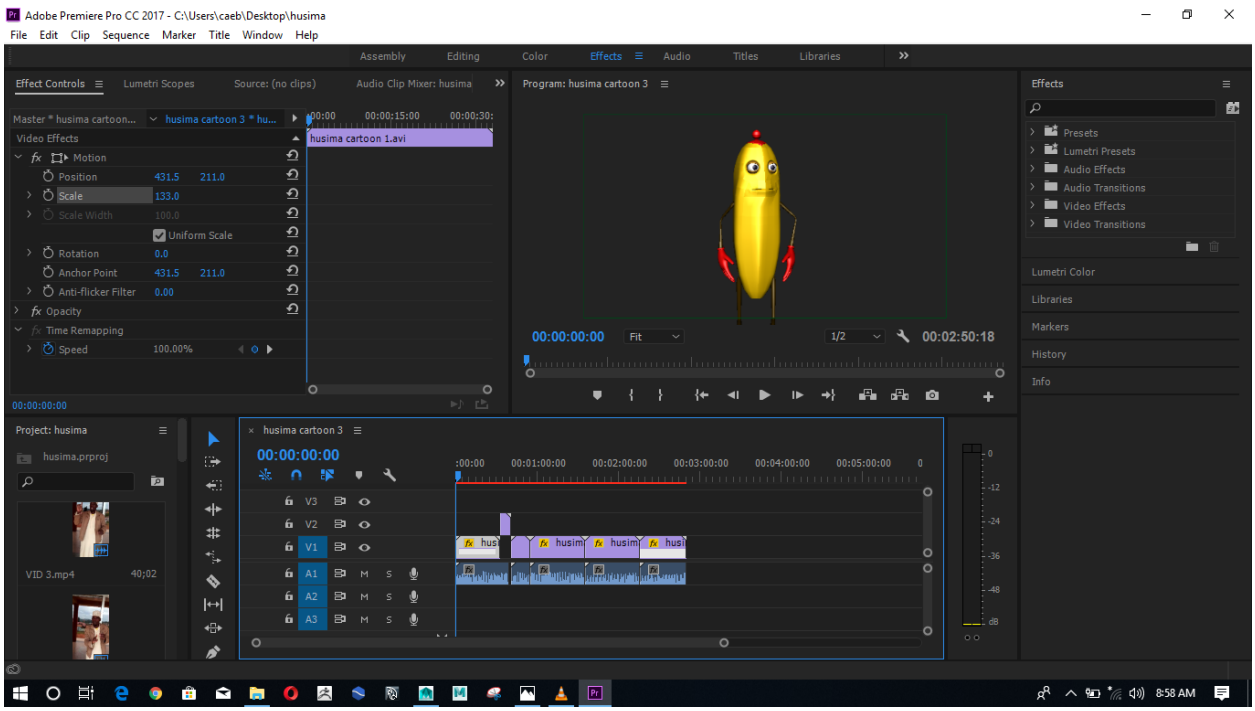


Figure 36: Voicing the animated cartoon character

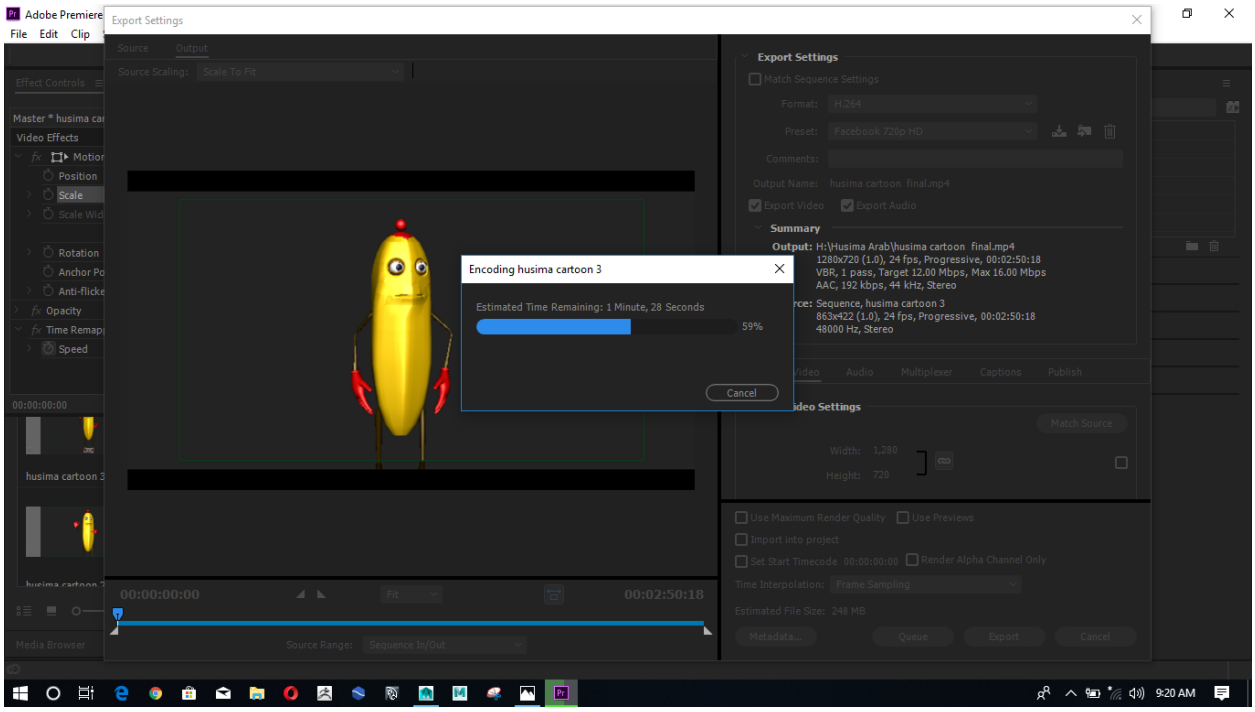


Figure 37: A final animated cartoon character

4.3.1 Creating Visual Effects

WILEY J. (2012), 3D visual effects (VFX) artists are jack-of-all-trades because they are called upon to create difficult effects like smoke, water or hair or non- traditional 3D animation like falling objects from an explosion and tree leaves blowing in the wind. Most visual effects can be created in 2D software, but some cannot be created easily in these programs for instance, hair, fur, and destructive shattering. 3D VFX artists also create all of the animation that is not hand key framed or motion-captured. These types of animations are typically elements such as dust, smoke, fire, rain, hair, fur, fluids, cloth, and explosions. Usually the animations are created by a physics-simulation system that takes into account factors including gravity, wind, and other field conditions. 3D VFX artists must have a firm understanding of all other 3D animation job roles (modelling, texturing, rigging, animation, lighting, and rendering), because they will need all of these skill sets to aid in their day-to-day tasks of creating visual effects. The simulations that 3D VFX artists create are

complex and require a lot of data to complete. Because of this large amount of data, these effects are difficult to manipulate and control and take a lot of time to preview. Recently (in the past five years or so) 3D VFX has become more accessible to more artists and studios as computers have become more powerful and able to handle more and more information.

4.3.2 Lighting

Light was set up to show a key object and establish mood of the cartoon character. Lightening is very important to create atmosphere and mood in a shot or sequence. A good product lighting must create to best show every detail of an object without making it look flat and boring. Consistent lighting scheme was created across a longer project such as a film or television show. Lighting is especially important to a 3D animation project, because lighting must not only convey the narrative and mood of a shot but also visually show the location, time of day, and even the weather realistically.

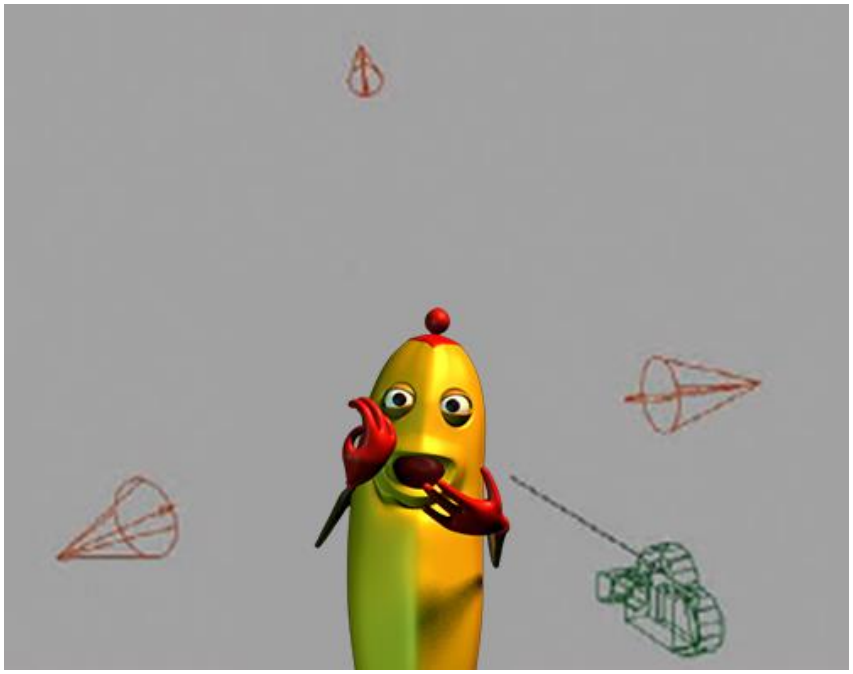


Figure 38: Lighting

First the intensity and direction of the light was created and adds colour needed. Then manipulated the shadow properties to match the light-source type. A stage spotlight casts a very intense light with a sharp shadow, for example, but a lamp with a shade creates soft light with blurry shadows. The researcher worked with one light at a time to increase efficiency of render times. After all the lights were in place, the scene was broken into render passes to aid in the rendering process and compositing stage. These render passes were to allow for faster render times and give more control to the lighter in the compositing stage by breaking the scene into smaller pieces that can be individually controlled. For example, the background can be rendered separately from the foreground to color-correct the background as needed. After lighting, the cartoon character was rendered.

4.3.3 Rendering

Rendering, the final stage of the production pipeline, takes the 3D models, rigs, animation, shades, textures, 3D VFX, and lighting, and renders them into 2D video or still images. These renders are then given to the postproduction team for final production and output. A render engines that are used include a 3D software package's proprietary render engine, a plug-in that will work within the 3D animation software, or a stand-alone software package that can work without a 3D animation software package. Render engines such as Unreal and Unity Engine also include real-time video game software. A heavy computer therefore was used to render this project of animated cartoons for sounds of Arabic alphabets in ECE in this study.

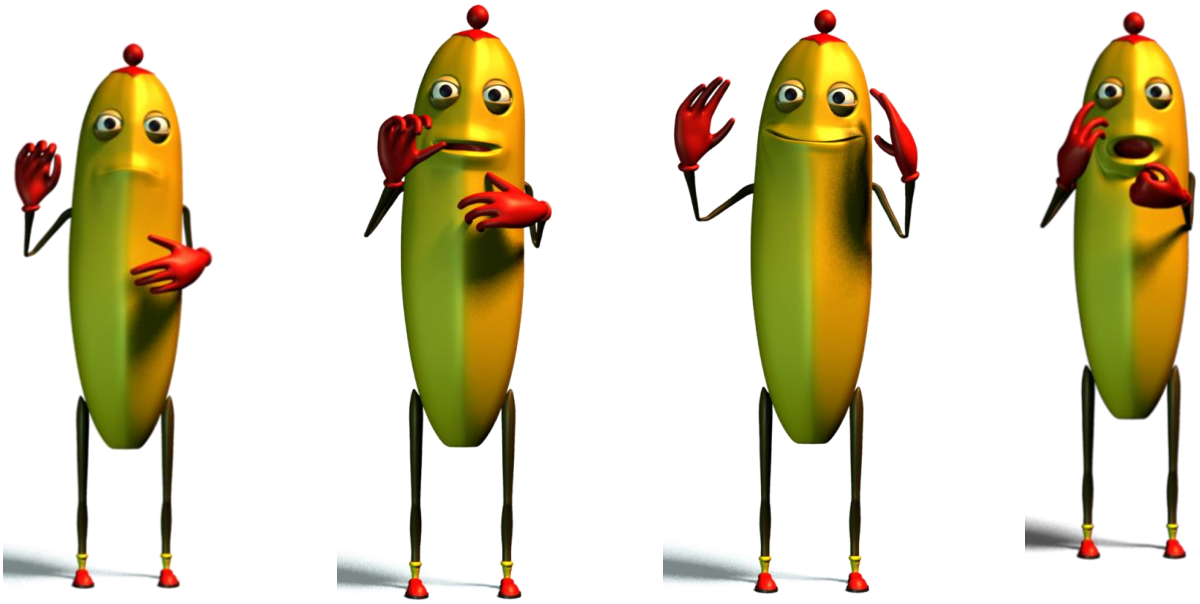


Figure **38**: Rendered cartoon characters

The rendered cartoon character in figure 38 portrays different talking postures and hand gestures.

After rendering, the character was exported to adobe after effects for animation process, as in figure 40 below.

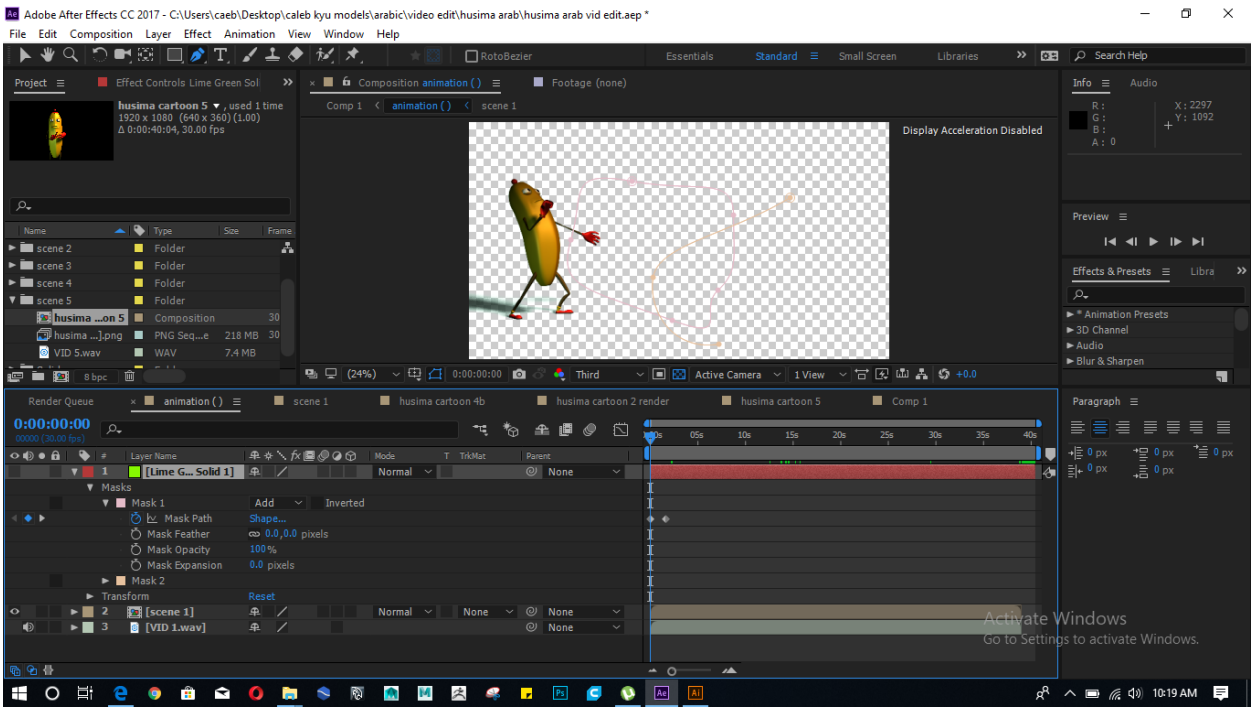


Figure 39: Compositing of the character after rendering and then animating the character

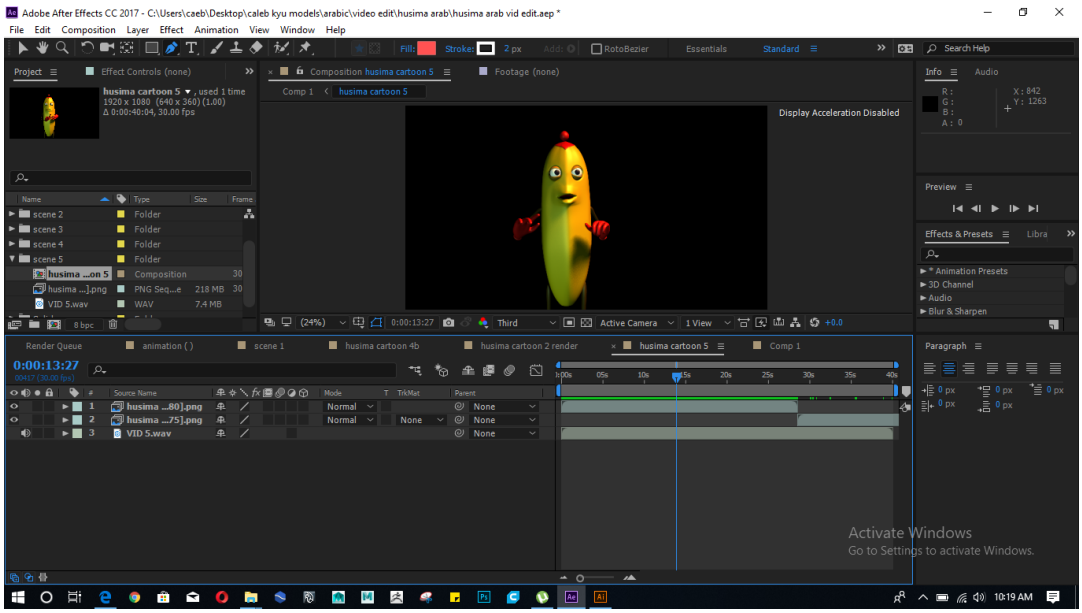


Figure 40: Compositing of the character after animation.

Compositing: is the combination of 2D and 3D to form a video. In compositing, all images created are layered and filmed to make a final output image. This layering can be a simple task with only a few layers to manage, or it can become a complex task with hundreds of layers matched together. The imagery can be all 3D generated images; 3D and 2D graphics mixed; or 3D, 2D, and live-action film plates.

CHAPTER FIVE: SUMMARY, CONCLUSSION AND RECOMMENDATION

5.0 Introduction

This chapter presents summary, conclusion and recommendation on the findings guided by the objectives of the study:

5.1.1 Summary of Findings

The teaching methods and styles used in the Arabic sound classes at Husma Kids School were used to understand Arabic sound teaching. At the school, teaching was conducted with three different groups of pupils in cooperation with the teachers. First, pupils were taught using a traditional method of chalk and talk as pupils copied content from what was written on the blackboard and the use of text books which were written in only Arabic. The Second group was taught with only visual learning material (charts) and assessment was done and the third group was taught with the video of animated cartoon on a computer combined with teacher's instructions and was assessed the level of pupil's ability to understand the content.

This was intended to; 1) evaluate the integration of visual animated cartoons with verbal instructions by a teacher, 2) to study the different approaches used in the three scenarios so as to inform possible animation methods. Using the blended mode greatly promoted learners ability of acquire of knowledge and skills. Learner's response and perception were very positive towards the cartoon method as compared to the other two methods. However the teacher's expressions richly informed the process of developing animation characters. Understanding sounds in Arabic alphabets taught was difficult because of the text book, chalk and talk methods used which were not friendly to pupils. From observation children tend to understand better any message being sent through visual means than those sent through text or sound because not everyone can read or hear but everyone can understand and interpret whatever they see. Ultimately, this cartoon leaning

system strongly was an appropriate method for ECE.

There was a need to generate animated cartoons for Arabic alphabets for ECE which helps to pass lessons across ECE as well as improving the teaching of sounds for Arabic language. Autodesk Maya, Adobe Photoshop extended, Premier Pro and Adobe Aftereffect CS6 Software were used in the development of the animated cartoon character. The developed animated cartoon helped to satisfy some basic criteria expected of such alphabet sounds and pronunciation with the intention to cover the ECE syllabus in Arabic language and other people to learn more from their local and foreign languages.

The animated cartoons were successfully made. Quality checks like Image quality, whether it can be viewed from different devices, Voice & image harmonization, the sound matches with the actions of the character, Background noise, weather it allows learning, Character Impression were all aligned in relation to pupil's learning habits.

5.2 Conclusion

In conclusion the study findings revealed that there is need to understand the methods that humans use in teaching children as a basis for developing characters for cartons that can be used to teach young children. The teacher was able to model for the animation process and this enriched the final character. The methods that the animation characters use to teach can further be improved through observing more teachers.

The study findings further revealed that production process of cartons for teaching young children is a rich a virgin area that can be used to enrich the teaching and learning process. The observations of these processes in relation to real teaching made the studio process very practical.

The cartoons have been developed using different software programmes including Autodesk Maya software, Adobe Illustrator, Adobe Photoshop, Microsoft word, and Adobe after effect. Animated

cartoons were developed in form of a video for learners in Early Childhood Education from a familiar fruit, the yellow banana (locally known as Bogoya in Luganda) as a source of inspiration, it is very likely by children since it is sweet with its attractive yellow colour. Similar content was taught in three different ways to three dissimilar groups of children at the centre of the study: in one group children were taught using the traditional ***chalk and talk*** method; another group was taught using only chats as visual learning aids and; the third group was taught using the video of animated cartoons under the teacher's guidance. For all the three groups children's achievement of set competences was tested using the same questionnaire. Findings revealed that the animated cartoon method of teaching greatly promoted children's learning of sounds of Arabic Alphabets. Both teachers and children responded more positively towards the animated cartoon method than the other two methods. The study concludes therefore that the animated cartoon teaching method is a more appropriate method for teaching the sounds of Arabic alphabet and perhaps other concepts to children in ECE. Finally this cartoon was finally produced.

5.2 Recommendation

The researcher recommends the following:

There is a need to investigate whether the generated animated cartoons for sounds of Arabic alphabets in ECE can be implemented as a teaching method to satisfy the target group in Wakiso District, National wide and internationally.

A concerted effort leading the researcher, teachers of the Arabic language and other stake holders like the ministry of Education, the National Curriculum Development Centre, ECD Centres and ESA to collaborate and implement the outcome of this research for improvement is highly needed.

The idea need to be embraced by the broadcasting agencies, the Ministry of Technology and other ICT bodies in order to graduate it to an international level.

The Uganda government being a member country of the Organization of Islamic Conference-OIC should sell the idea to the secretariat of that body for financing and implementation.

REFERENCES

Blackwell, C. K, Alexis R, L, and Ellen W (2014) "Cartoon versus Traditional Self-Study Handouts for Medical Students: CARTOON Randomized Controlled Trial." *Computers & Education* 77: 82–90. https://doi.org/https://doi.org/10.1016/j.compedu.2014.04.013.

Development, Office of Early Childhood, and Virginia Department of Social Services. (2013). "Milestones of Child Development A Guide to Young Children's Learning and Development from Birth to Kindergarten." Virginia. http://va.gapitc.org/wp-content/uploads/2014/03/Milestones_Revised2014.pdf.

Adeyanju, I.A., Babalola, C.T. Salaudeen K. B. and Oyediran B.D, (2015) "3D-Computer Animation For a Yoruba Native Folktale." *International Journal of Computer Graphics & Animation* 5 (3): 19–27. https://doi.org/10.5121/ijcga.2015.5302.

Islam, M. B, M. Kabirul I, Arif A, and Abu K. S. (2014) "Interactive Digital Learning Materials for Kindergarten Students in Bangladesh." *International Journal of Trends in Computer Science* 2 (11): 1–5. http://arxiv.org/abs/1411.2075.

Jamous, R, and Abdul R. C. (2012) "Teaching Arabic for Cultural Purposes: A Case Study of Francophone Program of Arabic at Aleppo University." *Procedia - Social and Behavioral Sciences* 66: 37–45. https://doi.org/10.1016/j.sbspro.2012.11.245.

Jylhä-Laide, J. (1994) "Learning by Viewing: Cartoons as Foreign Language Learning Material for Children--a Case Study." *Journal of Educational Television*, 20 (2): 93–109. https://doi.org/10.1080/0260741940200204.

Maxos, H. (2016) *The Arabic Idioms*. http://hmaxos.com/.

Esposito, John L. (2011). What Everyone Needs to Know about Islam. Oxford University Press. pp. 14–15. ISBN 9780199794133.

Rippin, A, (2013) *APPROACHES TO THE HISTORY OF THE INTERPRETATION OF THE QUR'ĀN*. Gorgias Press. Available at https://www.gorgiaspress.com/approaches-to-the-history-of-the-interpretation-of-the-quran.

Selim, N, (2018) "Arabic, Grammar, and Teaching: An Islamic Historical Perspective." *International Journal of Islamic Thought* 13 (1). https://doi.org/10.24035/ijit.06.2018.008.

Shah, M, (2008) "THE ARABIC LANGUAGE." In *THE ARABIC LANGUAGE*, 255–71. Available at https://eprints.soas.ac.uk/5814/1/Shah.pdf.

Srinivasalu, Girija N. 2016. "USING CARTOONS AS EFFECTIVE TOOLS IN TEACHING LEARNING PROCESS OF SOCIAL SCIENCE." *Scholarly Research Journal for Interdisciplinary Studies* 3: 1898–1905. http://www.srjis.com/pages/pdfFiles/146245615534 Girja.pdf.

Sun, Y, and Qi Dong. (2004) "An Experiment on Supporting Children's English Vocabulary Learning in Multimedia Context." *Computer Assisted Language Learning* 17 (2): 131–47. https://doi.org/10.1080/0958822042000334217.

Wyatt, A.(2010) "The Complete Digital Animation Course: The Principles, Practice, and Techniques of Successful Digital Animation."

Wyk, M.M. (2011) "The Use of Cartoons as a Teaching Tool to Enhance Student Learning in Economics Education." *Journal of Social Sciences* 26 (2): 117–30. https://doi.org/10.1080/09718923.2011.11892888.

Young, R. (2008) "Using Technology Tools in the Public School Classroom." University of

Wisconsin. http://www2.uwstout.edu/content/lib/thesis/2008/2008youngr.pdf.

Najjuma, 2011, www. Books.google.co.ug.

Butler E (2018) "Report on transforming learning: meeting the skills demand to achieve the SDGs in the Asia Pacific". UNESCO's 4th Asia-Pacific meeting on education 2030.

Muhumuza N. (2017/2018), "The Constitutionality of Religious Education in Uganda", the Global Campus Africa.

Rasha Soliman (University of Leeds) Melissa Towler (University of Leeds) Emma Snowden (Goldsmiths, University of London) ,(2016) "Teaching Arabic as a Foreign Language in the UK", Strand 1 Research: How Arabic is being taught in schools Review commissioned by the British Council November 2016

Jiing-Yih, Tsung-Chien, Phothong, W. Wang, Chao-Yaug and Ju-Yi L. (2018), A High-Resolution Texture Mapping Technique for 3D Textured Model, http://www.mdpi.com/journal/applsci

APPENDICES

Appendix 1: Map of Husma Kids School where the case study took place

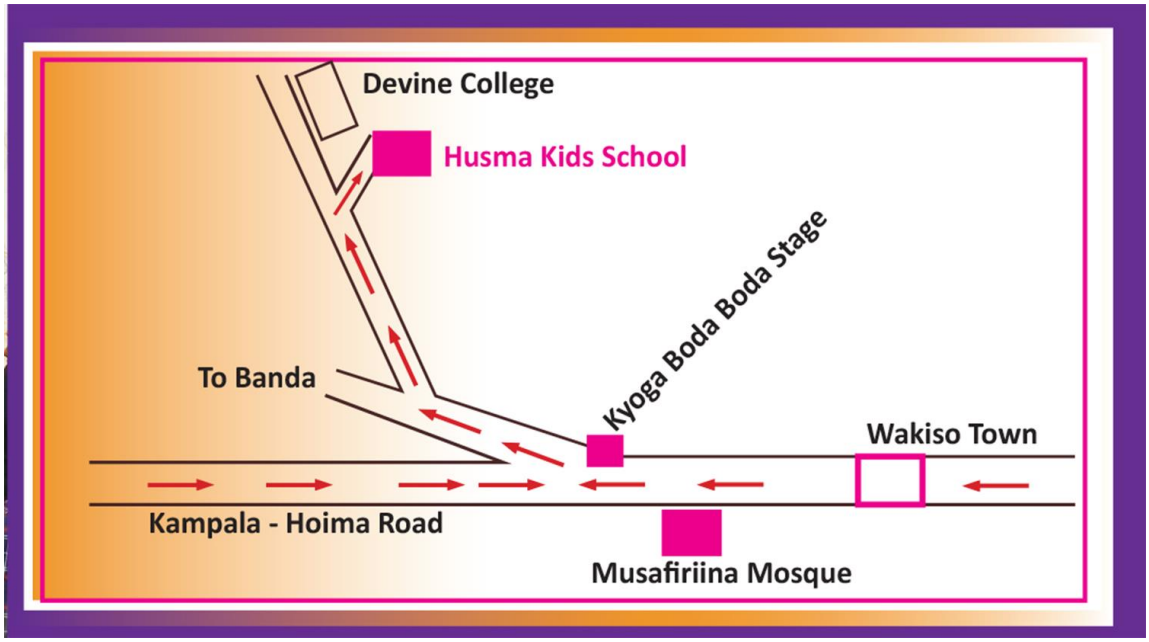


Figure 41: Location of Husma Kids School

Appendix 2: An Introduction letter to the respondents

Dear Respondent,

This is an academic research; it will help in the scholarly studies on the topic;

GENERATING ANIMATED CARTOONS OF ARABIC ALPHABETS FOR EARLY CHILDHOOD EDUCATION IN UGANDA; A case of Husma Kids School, Wakiso District

Kindly respond to the following questions by giving sincere and reliable information.

All information shall be confidentially handled. Thank you for a positive response.

Interview Guide

The following guiding questions constituted the interview guide;

1. How do the methods used in teaching Arabic sounds aid the development of animation methods for Early Childhood Education?
2. What processes are involved in the studio process to aid the development of animated cartoons?
3. How can cartoons that can be used in the teaching of the Arabic alphabet sounds to learners in Early Childhood Education be developed?

Table 5: The assessment of produced animated cartoons that will be used in the teaching sounds of Arabic alphabet in ECE.

No.	Criteria	Excellent (5)	Very good (4)	Good (3)	Fair (2)	Poor (1)
1	Image quality; whether it can be viewed from most devices	8	2	-	-	-
2	Voice & image harmonization; the sound matches with the actions of the character	6	2	2	-	-
3	Background noise, weather it allows learning	6	3	1	1	-
4	Character Impression in relation to pupil's learning.	6	3	1	-	-
5	Voice quality; pupils can hear the sound clearly	6	3	-	1	-
6	Video Impression; pupils are very excited with animated cartoon	6	3	1	-	-
7	General assessment of the animated cartoon; the purpose of generating animated cartoon for sounds in Arabic alphabets is achieved	6	3	1	-	-

Table 3 indicates that out of ten participants consulted, the Image quality was highly rated with 8 participants rating the animation as excellent and 2 very good. Similarly, 6 participants liked the impression of character with no user rating it as fair or poor. The other five (voice and image harmonisation, background noise, video impression, voice quality and general assessment) had a few users rating them as fair; this shows that our animation character can be improved further in these areas. However, none of the users rated any criterion as poor indicating that our animation

character is above average. Video Impression; pupils were very excited with animated cartoon, voice quality and general assessment of the animated cartoon. Ten participants were requested to watch the animation and thereafter complete the questionnaire.

Therefore, ten user responses were received; then results of data analysis of animated cartoon for teaching Arabic alphabets in ECE were presented according to 10 of participants consulted as in Table 3 in appendix 3.