COMPUTER ANIMATION DESIGN: A TOOL FOR DEVELOPING EFFECTIVE TEACHING SKILLS IN EARLY CARE CHILDHOOD EDUCATION (ECCE)

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Abstract

Early childhood education is a conscious integral part of the entire human education. It negates the perception that a child is ripe for education only at the age of five or six. Today developments are built upon a deliberate intention to promote training of a child early enough. These innovations primarily focus on the teacher who will play a pivotal role in the exercise. In a technological driven society, teachers are becoming customized in the use of 'tech-tools' to enhance their activities in relation to the child. Computer being the fastest growing tool plays this important role in the building of special animations for the use of both teachers and early child. This is embedded in the concept called computer animation design which is a process used for generating animated images by using computer graphics. The researchers saw the need for early child care educators to be schooled in Computer Animation both in application and design- more importantly the design. The paper enumerates the need for the teachers to be trained and schooled in graphics designs, the facilities involved and equally the technicalities of computer animation. Conclusively, the work encourage every early child educator not to panic but appreciate the need to be involved in computer animation.

Keywords: Animations, Graphics, Images, Educators and Teachers

Barnett and Jason, (2003) and Pascopella, (2004) described Early Care Childhood Education as consisting of activities and/or experiences that are intended to effect developmental changes in children prior to their entry into elementary school. They further described it as programs which may include any type of educational program that serves children in the preschool years and is designed to improve later school performance. Henniger, (2010) defines Early Care Childhood Education (ECCE) as a branch of education theory which relates to the teaching of young children (formally and informally) up until the age of about eight. Infant/toddler education, a subset of early childhood education, denotes the education of children from birth to age two.

Early childhood education is a broad term used to describe any type of educational program that serves children in their preschool years, before they are of legal age to enter kindergarten. Early childhood education may consist of any number of activities and experiences designed to aid in the cognitive and social development of preschoolers before they enter elementary school (http://www.preschoolteacher.org/what-is-early-childhood-education/ (2016). Early care childhood education is made up of two major elements; these are 'care' and 'education'. Over the years there have been much debate on what type of program qualifies as simply care and what type of program qualifies as education. Relatively, concern of today's early childhood education programs is ensuring that they are of high quality.

In http://www.preschoolteacher.org/ (2016) stated that The National Education Association recognizes that a high-quality early childhood program includes five, critical components:

- Provides a well-rounded curriculum that supports all areas of development
- Addresses child health, nutrition, and family needs as part of a comprehensive service network
- Assesses children to enhance student learning and identify concerns
- Employs well-educated, adequately paid teachers
- Provides small class sizes and low teacher-child ratios

These listed components require a more achievable platform to bring into reality. Technology had always played a key role in transformation leading to great achievement in all facets with education inclusive. This article is a close looks at animation technology as a tool capable of improving and closing up in assisting the teacher's goal in education especially early childhood kind.

Desai, (2016) made a statement as quoted "We are always looking for new and better ways to educate the young. Research Suggests when children are having fun, they tend to learn better. It's even scientifically proven that retention of information is higher when it is communicated using both visual and verbal communication. I feel animation as a training medium offers exciting possibilities for meeting the needs of 21st century learners. The use of animation instruction can significantly enhance student learning if properly designed and implemented."

In concert with the statement, animations seem to fulfill a cognitive function in a child. Here, animations are intended to support child's cognitive processes that ultimately result in understanding the subject matter. The scholar Desai agrees that animation can be used to make very exciting and fun tech-tools with which education and training can easily be incorporated. It is believed that teachers can also use animation to demonstrate things and concepts visually exactly how they want to since they have control of every aspect of the animation. On the other hand animation is an affective learning tool that attracts attention, engages the learner, and sustains motivation. Such affective animation training is not focused on facilitating comprehension of any academic subject matter itself but often portrays activities that are interactive, creative, fun and motivational.

The writers agree that children are fascinated by animation and animated stories and they enjoy the opportunity to create their own. The creative potential of animation is enormous, and integrating animation activities into the school curriculum offers the possibility of tapping this potential to meet a range of educational objectives.

Theoretical Review

Weitz (2000) classified animation as a Learning Strategy in a Classical Control Theory. Classical Control Theory (CCT) is one of the general education courses for many university engineering curricula. Course contents usually have deep theoretical definitions, high level of abstraction, computationally intensive procedures and demand students with a solid mathematical background.

Scholars especially educationists have rightly relate animation as type of multimedia control. Here Zoabi, Sabag, and Gero (2012) described cognitive theory of multimedia learning as one of the most comprehensive theories dealing with multimedia based learning in general and instructional animations in particular. The basic assumption of this theory is the dual coding hypothesis. It assumes that information is processed through two separate but interconnected channels: a channel processing verbal information and another channel processing visual information. When knowledge is encoded in both verbal and non-verbal modes, learners are allowed to build dual representations in their brains and to make referential

connections between those representations O'Donnell, (2006). As a result, transfer of knowledge occurs in an efficient and robust way compared with any other technique that does not involve dual coding.

According to O'Donnell, (2006) another learning theory related with animation is epistemic fidelity. It focuses attention on the fidelity of an external display with respect to an expert's mental model. The theory assumes that transfer of knowledge can be improved when the external representation describes the expert mental model as closely as possible. If the external representation portrays the expert's mental model with high fidelity and clarity, and with less ambiguity, the viewer of the visualization decodes and internalizes knowledge in a robust and efficient way.

Convincingly, other studies Tversky, Morrison and Betrancourt, (2002) have shown that graphics, and particularly animations, can facilitate comprehension and learning only if they are appropriate and carefully designed.

The Teacher and Teaching Strategies in ECCE

Provision of education for early child is quite a sensitive activity in that quality cannot be compromised. In achieving high quality output in ECCE,strategies in teaching forms the cardinal point. Therefore, Preschool teachers may use a number of strategies for teaching the above skills while they nurture their students' natural curiosity and their zest for learning. Morgan, (2014) and http://www.preschoolteacher.org/(2016) , highlighted that the Preschool teachers can accomplish their teaching goals by:

- Building children's background knowledge and thinking skills
- Checking children's progress
- Communicating with parents and caregivers
- Creating a learning environment for young children
- Helping children develop listening and speaking skills
- Reading aloud to children
- Teaching children about books
- Teaching children about letters
- Teaching children about numbers and counting
- Teaching children about print
- Teaching children about the sounds of spoken language

These listed goals remain a must to every early child or preschool teacher. Therefore, the need to employ every means possible to achieve these goals lies with the teacher. Also the strategies needed are very paramount in the heart of the teacher.

It is so obvious that the teacher will largely relay on teaching aids of various kinds and select the best appropriate ones for a particular activity. The use of teaching aids here remains the suggestive idea of a teacher in relation to the kind of children, environment, and possibly the classroom activity for the day.

In developing these teaching materials, the writers saw it fit to introduce the use of technology as a useful measure. But the most important questions are, is it a tested and approved opportunity? Is this technology in use? Is it a new teaching method or an improvement on the existing one? This article worked curiously in line with these questions.

Technology in Teaching ECCE

Computer animation, popularly called Computer Generated Imagery (CGI) animation, is the process used for generating animated images by using computer graphics. The more general term computer-generated imagery encompasses both static scenes and dynamic images while computer animation only refers to moving images.Roos, (2013) technically puts it that to animate means "to give life to". An animator's job is to take a static image or object and literally bring it to life by giving it movement and personality. In computer animation, animators use software to draw, model and animate objects and characters in vast digital landscapes.

Modern computer animation usually uses 3D (3 Dimensional) computer graphics, although 2D (2 Dimensional) computer graphics are still used for stylistic, low bandwidth, and faster real-time renderings. Sometimes, the target of the animation is the computer itself, but sometimes the target is another medium, such as film.

Computer animation is essentially a digital successor to the stop motion techniques used in traditional animation with 3D models and frame-by-frame animation of 2D illustrations. Computer-generated animations are more controllable than other more physically based processes, such as constructing miniatures for effects shots or hiring extras for crowd scenes, and because it allows the creation of images that would not be feasible using any other technology. It can also allow a single graphic artist to produce such content without the use of actors, expensive set pieces, or props Wikipedia, (2015).

In teaching, especially early children, there are very good reasons for teaching with animation. In http://www.animwork.dk/twa/ (2014), the article outline reasons why using animation to teach children is very good. Some reasons outlined are;

- Animation is a simple but powerful way of teaching different subjects, which may appeal to learners with different backgrounds and abilities. It is a tool for teaching

and learning that can easily be acquired by anybody who is willing to learn the basic techniques.

- It is a tool for offering the learner a media-based way of learning which can motivate and engage the learners in producing their own animations based on their ideas and imaginations, which can be used across subjects and curriculum.

- Some children cannot easily use the written or spoken words to communicate their thoughts and feelings due to learning difficulties or dyslexia. In nearly every class there are children who are not successful readers, who lags behind and are hard to motivate, but may have other types of abilities.

- Learners with special needs who are dyslexic tend to think in images rather than in words – some of these learners may find it very helpful and motivating to be able to express themselves visually through animations rather than verbally. Animation can provide these children with an opportunity to be included and valued by the group and to share their perceptions. Thus animation is considered to be Inclusion whereby children who have different abilities and backgrounds can work together.

- It does not matter whether the animation is made as a film, a video tape, or is on a computer file, because the available medium is not that important. What matters is that the final production motivates children to work together, to recognize each other¹s varied strengths, to plan their work, and to observe and understand their world and the subject of their film.

- Working with Animation can be a magical process, and when the magicians are children in a classroom it becomes an enjoyable but purposeful teaching aid for many subjects. Therefore it can be classified as fascinating, working, magical, fun - while having fun, it is motivating

- The concentrated group effort required to produce animation not only encourages imaginative teamwork, it requires an understanding of the subject matter before a coherent animation can be planned. Deciding which point the teacher is trying to clarify about the subject and letting the children explore ways of communicating this point clearly will help them understand it more thoroughly.

- The final animation can possess a visual novelty which helps to make a subject more appealing, but it also has the power to distil the concepts being taught because animation is itself a symbolic distillation of reality.

- The final animation can further increase the children's self-esteem by being shown on the internet or in festivals or even by being used as a direct teaching aid in other classrooms or schools.These greatly assist in developing multimodal literacy, meaning learning by doing and sharing expression.

- **Learner-Centered Education:** The learning starts within the projects which the learners create and find important Self-directed processes where the teacher is coach.

- **Imaginative Learning:** Involving exploration of imaginative spaces.

- **Developing Creativity:** Developing innovation, new attitudes and ways of expression: The students often make a big effort and put extra time into the project therefore, it motivates the students to be responsible for their own projects.

- Animation helps one understand behavior as animation techniques integrates multiple subjectsbecause to animate an object one have to understand how it behaves.

Animation is a form of film making and is part of our world's visual culture. A study of the history of its development and application can be used to reveal aspects of science and social history. A study of its compositional and editorial form can be related to other aspects of visual culture, like live action film making, political cartoons, and fine arts. As stories, processes, and the histories of living forms, cultures, and individuals unfold, they have one thing in common with the technique of animation; change over time.

Now because of the production process it embraces varied skills including writing, drawing, sculpting, music, audio-visual design, and computer literacy, it can also provide the teachers with an opportunity to explore their individual strengths and interests.

Preparing Teaching Animations Using Computer

Sillat, (2015) stated that majority of the use of technology in a classroom depends on the teachers as it is evitable that the educators themselves are digitally literate and can use technology to enhance the learning process. The ability and confidence to use technology tools offers new opportunities as well as it can generate interest in children and excitement towards learning activities. Using animation as a form of studying can only be sufficient if the teacher is fluent in using technology

tools as implementing subject based tasks into digital storytelling might be difficult enough.(Kollom, 2014).

The article has articulate ways in which a teacher can develop good animations as a preparation for classroom activity. As earlier stated by Sillat, the basic step is for the teacher to be computer literate. After being literate in the use of computer, the teacher is expected to have the following as a smooth guide to his or her ability in building good animations fit for teaching;

i. **Computer System:** The teacher must know how to select a good system that will be able to run animation software. At least Pentium IV and above are quite appropriate and recommended.

ii. **Software:** The software is the most important thing the teacher is require to have and know. It could be an application which is an already designed package or a programming language which the teacher will need to first generate a source codes before use. Using an application is much easierand does not require mush technicalities like the use of a programming language. But some teachers who are basically computer science inclined may prefer to develop their own applications using a language of their choice. Some already made applications are very much available for download even for free. Examples of some applications developedfor animation design are Anasazi, MonkeyJam, Animator DV, ABC Videoroll, Movie Maker etc.

In this article, the writers adapt some few examples and steps to demonstrate how teachers can design their own animations. In this demonstration, an application called AnimatorDV is used because is compatible with all operating systems like Windows (XP, Vista, Win 7,8 and 10), Mac, Linux etc and quite simple and easy to understand. To use AnimatorDVthe following steps could be used;

- Download the application from the internet. Is free and very easy, type the following link on the browser;http://animatordv.wmmedia.com/
- After the download is complete, it will prompt to install. Click yes and followthe guide throughout the installation.
- Once the installation is done, it is now ready to exploreAnimatorDV application software.
- The environment is made up of tools which one can use to draw any object(s) of choice, or snap an object(s), or even scan an object(s).
- The following is the basic steps to use AnimatorDV application. It is a general principles in using animation software
    1. Open the PROGRAM …
    2. SET UP the animation SEQUENCE …
    3. GRAB the images! ...

4. MOVE the object …
5. Move the CAMERA if panning …
6. Make MOVIE from sequence …
7. Control what have done …
8. And the OUTCOME is: …

An example; to teach the pupils on objects that 'Fly'. The teacher may be willing to demonstrate what flying is but it will be difficult to bring a life fly, life bird or aero plane to class. But in using AnimatorDV application it is easy by following these steps;

1. A picture of a fly, bird or aeroplane can easily be placed on the table then snappedusing camera connected to the computer system.
2. Move the still object to a new position.
3. Snap multiple pictures by moving the drawn object from one point to another and changing the position of some parts like wings. This could be repeated over and over until the object seems to be sitting on a tree or is into the sky or cloud. The pictures snapped are stored in frames.
4. These multiple frames are now played in a quick succession which results into seeing the stationary object as though having life or moving from one point to another, thus flying.

This will demonstrate to the pupils what flying means. Also non-flying objects could be made to fly in other to help the child identify which objects are real flying objects in true life and those that are non-flying objects in real life.

Summary and Conclusion

In this article, a clear understanding of Early Care Childhood Education is no more in doubt that it is almost a compulsory requirement to be given a child for a better future education. It is the foundation and bedrock for building a successful and stress less classroom activity. Having the technology at the other hand affords a limitless opportunity for this success. This work focused on computer animation. As earlier stated, the word animation comes from the Latin word "Animare", which means to give life or to give soul. Learning animation is like learning a new language – the language of new media and the language of modern life. The language relates to the Internet, games and films and it plays a significant part in the lives of children and young people of today.

In teaching, learning computer animation helps teachers to explore and be acquainted with the technological and audiovisual communication, specific resources of animation techniques and use them in the classroom. The article aimed at providing a teacher, with good reasons if possible a tool that will make one capable of teaching by the use of animation.

The work further gave a step by step guide to do mainly computer-assisted animation and everything needed to get one started to teach with animation.

Conclusively the writers gave short descriptions and practical examples of some few animation techniques and how to choose software and apply them. This out rightly gives teaching a new flavor and improve significantly from the traditional classroom method of teaching, especially on the early child.

Recommendations

Having made a credible search on how the modern technology is capable of transforming the teaching and learning of Early Care Childhood Education. And being specific on recommending the use of computer animation for ECCE teachers, the writers wish to recommend as follows;

- Use of computer should be intensified among teachers, especially in the developing countries where a laisser faire attitude has been developed towards the use of computer in teaching and learning.
- Computer trainings on how teachers will develop their creativity in teaching should be made available. Bearing in mind that today's children are digitally oriented hence the need for digital age teachers is enormous.
- Teachers should be encouraged to develop their own teaching aids like animations by themselves rather than going to places for experts to do it for them. They most agree that designing animation is quite a simple work and not complex.
- School proprietors should make available computer systems, software and other accessoriesto aid the teachers especially those designated to handling early child.

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