IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A STUDY - IMPACT OF ANIMATION ROLES IN EDUCATION SYSTEM

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Abstract

This essay will analyze the importance and usage of animation in education using only modern curricula, software, and several different animation techniques. Animation is fun for kids, but it also benefits students because of its psychological benefits. Thanks to animation, the education sector has undergone a new transformation. This change made students smarter and more resourceful. A topic that is very difficult for children to understand has been made easier through the use of animation, as the entire animation is based on audio and visual bubbles. Computer-based education may benefit from outdated animation techniques.

Introduction

The technique of taking sequential photos of drawings, models, or even puppets to simulate movement is called animation. Our eyes can only hold an image for about a tenth of a second, so when numerous images emerge quickly one after the other, the brain combines them into one moving image. Traditionally, animation involves painting or drawing images on sheets of transparent celluloid that are then photographed. While there are still some early cartoons in existence, the majority of animated films produced nowadays use computer-generated imagery, or CGI. The frame rate, or the number of consecutive images displayed per second, is taken into consideration to give the impression of seamless motion from these painted, drawn, or computer-generated images. Typically, moving characters are captured "on twos," which refers to a single image.

Traditional

This is one of the oldest types of animation in film. It is also called cell animation. Traditional animation involves drawing objects on transparent celluloid paper. To create an animated sequence, an animator must draw each frame. This works the same way as a flip book, only on a larger scale.

"Traditional" is most commonly 2D animation. Aladdin, The Lion King, and other previous animated films are the best examples of this.

Figure 1 - Traditional Animation

Anime

Technically, anime can be considered a subgenre of traditional animation. But anime simply refers to any type of animation originating from Japan. Akira, one of the most famous animated films of all time. Japan has become an animation powerhouse and anime has had a huge influence around the world.

One of its most prominent features is that anime usually has animations longer than 3 seconds, meaning there is a new frame every three frames, instead of in the United States where most animations have two images .

Figure 2 - Anime

2D (Vector)

2D animation can be considered traditional animation like most of the early Disney animations such as Pinocchio and Beauty and the Beast. In the case of vector-based animation, the motion is controlled by vectors instead of pixels. Images such as JPG, GIF and BMP are pixel images. These images cannot be magnified or compressed without affecting the quality of the image. In vector graphics, there is no need to worry about the resolution.

The vector is characterized by pathways with different start and end points. The lines connecting the start and end points build the graphic. The shape can be created to create a character or another image. The mathematical values are used to resize images in vector-based animation.

Figure 3 - 2D Vector

3D

3D animation, also known as computer animation, is the most popular form of animation today. However, the fact that the computer has replaced drawing does not make 3D animation any easier. In reality, computer animation is just another tool used by the animator to move the character's body parts around.

The animator will set the digital frames once all of the body parts have been set in the correct positions. This will be done for every frame. Then, the computer will calculate the motion from each frame. After that, the animators will adjust and change the curve and movement of their characters all over the movie. 3D animation has dominated the animation industry ever since Toy Story came out in 1995.

Figure 4 – 3D Animation

Uses of Early Animation Devices

The whole time history, there have been many devices and toys that have been able to present active scenes of animated characters, people, objects and events:

1. **Magic lantern**: The magic lantern was an image projection device developed in 1603. The device used a mirror behind a light source (originally a candle) to direct light through long panes of glass, project illustrations from that glass plate. Putting the slides together creates a movement, making the magic lantern the first instance of a "moving picture".

Figure 5 – Magic Lantern

2. **Thaumatrope**: The Thaumatrope was a 19th-century optical toy that had an image disc held by two strings. As the strings rotate, they rotate the disc, moving the images on both sides of the disc into one image through "persistent vision," an optical illusion that tricks the eye into seeing movement long after it has stopped.

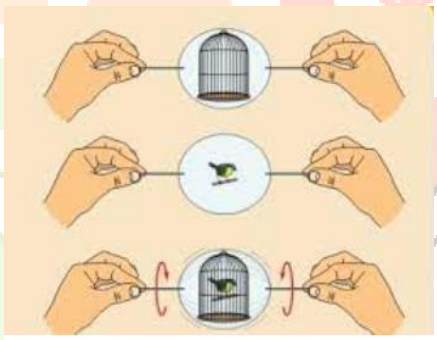


Figure 6 - Thaumatrope

3. **Phenakistoscope**: The Phenakistoscope, also called Fantascope and sometimes spelled “Phenakistoscope,” came onto the market around 1833 and consisted of painted, rotating cardboard discs that were reflected in mirrors, creating the illusion of movement. Only one viewer at a time could enjoy the innovative experience of the phenakistoscope.

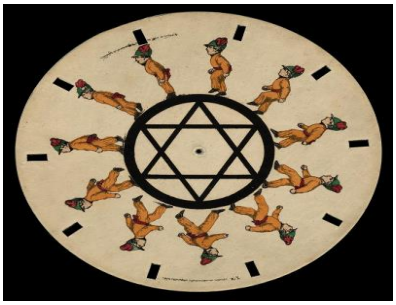


Figure 7 - Phenakistoscope

4. **Zoetrope**: The phenakistoscope's successor, the zoetrope, was a rotating cylindrical version that presented images in successive stages of motion that could be seen by multiple viewers simultaneously. The cylinder contained several vertical slits that provided the eye with a mechanism to avoid blurring due to the rotation of moving photos.

Figure 8 - zoetrope

5. **Kineograph**: A cinegraph (known as a flip book), the Latin word for "moving picture," came onto the market in 1868. A cinegraph is a small book of drawings in which each page shows a different form of movement, so that when you flip through the pages they resemble each other. They are shot quickly and one after the other, this enlivens the scene.

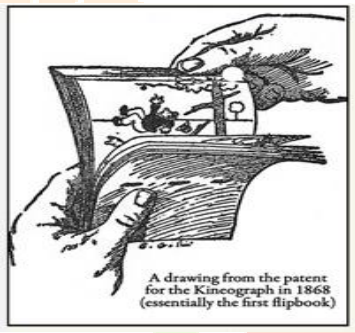
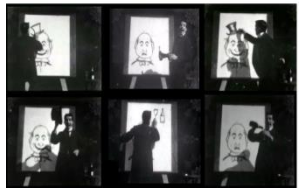


Figure 9 - Kineograph

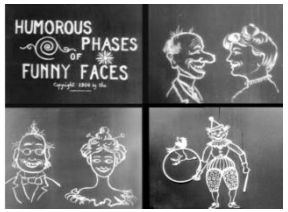
6. **Praxinoscope:**In 1877, the praxinoscope replaced the zoetrope, replacing its narrow vertical slits with an inner circle of diagonal mirrors. These angled mirrors provided clearer and more vivid animations than viewing moving artwork through slits.

Figure 10 - praxinoscope

EvolutionChart of Animation



1900 - *The Enchanted Drawing*

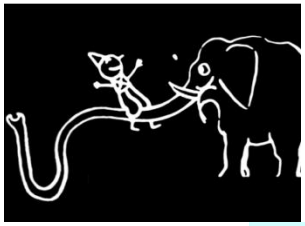


1906 - Humorous Phases of Funny Faces

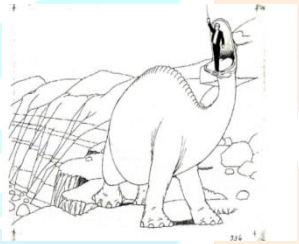
1930 - Dizzy Dishes

1932 - Flowers and Trees

1985 - The Adventures of Mark Twain



1908 - Fantasmagorie



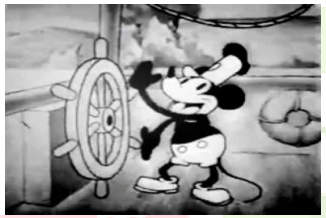
1914 - Gertie the Dinosaur

1933 - King Kong

1937 - Snow White and the Seven Dwarfs

1988 - *Who Framed Roger Rabbit*

1919 - Felix the Cat



1922 - Steamboat Willie

1960 - The Flintstones

1961 - One Hundred and One Dalmatians

1993 - Jurassic Park

1995 - *Toy Story*

2002 - *Lord of the Rings: The Two Towers*

2009 - *Avatar*

2012 – *ParaNorman*

Classic (conventional) and Digital animation

• Traditional animators require a lot of stationery such as cellophane paper, collages, colored pencils and many other equipment to create an animation.	• In this case computer animators only need a laptop that can fully support the programs
• In Traditional various tools are required to use in productions	• Software applications are available for using tools for production
• Pencil work is an major tool	• Still Pencil also use in computers
• In contrast to the traditional method, the error rate is slightly larger.	• With digital animation, it's easy to correct mistakes
• With this animation technique, each image is hand-drawn onto a physical medium.	• With the development of software like Maya or 3D Max, 3D animation has become user friendly.
• This animation technique is achieved using a series of drawings on transparent pages.	• Unlike traditional animation, 3D animation does not require frame-by-frame animation.
• The storyboard shows the recording sequences with camera angles and image detail..	• The 3D character or model shows all the features and depth.

Computer Animation in Language Learning / The effect of animation on education

Well-planned animations grant permission help students determine faster and smooth. They are likewise excellent aid to lecturers when it meets expectations disclosing difficult matters. The trouble of issues may stand on account of the difficulty of mathematics or insight. For instance, the energetic current is hidden. The operation of energetic circuits is troublesome for undergraduates to understand at first. With the aid of calculating animations, education and education might enhance smooth, faster and entertaining.

Figure 11 - Animation in School Education

Some studies have also shown that learning is facilitated because animations create a positive attitude in students, leading to positive learning outcomes.

- **V.M. Williamson and M.R. Abraham**, discussed that animation helps students learn in two ways. It makes easy the creation of intellectualillustrations of conceptions, experience, and procedures and it also substitutescomplicated cognitive processes (e.g. abstraction, imagination).

- **Roger et al**., discussed that computer-assisted learning system that responds to students' actions by presenting content such as text, graphics, animation, video and audio, etc.,
- **N. Kittidachanupap et al.,**. discussed that Animation can help children acquire English vocabulary and achieve a higher average score at a statistically significant level than children who use normal vocabulary.

- **Md. Baharul Islam et. al.,** announced that the teacher should use computer-based learning such as animations and graphics as it is very helpful in creating a quality learning environment unlike

traditional technological teaching which is not helpful in modern times. It is a great tool to improve our education system. Students still show interest in animated films.

- **Weiss**discussed that Animation-based education technique creates the education attractive by demonstration students' concentration to the facts they are studying and thereforeencouraging them.

- **Berna DİNCER,** discussed3D animation education, which was developed for nursing students and designed to evaluate respiration on knowledge level of students.

- **Catrambone**, discussed how animation help students to acquire knowledge of computeralgorithms.

- **HakanCevahir,** discussed in his research that with animation utilization how students perform well as compared to traditional education system.

- **Chiou, C.,** discussed that by using animation how analytical results show that learning achievement, learning satisfaction, and learning retention of the MAMCM group were better than those of the MCM group.

- **Daşdemir, İ., &Doymuş, K.,** discussed that that the use of animation in the basic education 8th grade science and technology course in the unit of division of cells had positive effects on the academic achievements of the students, retention of this achievement, and the development of scientific process skills

Applications utilisation in Computer Animation

2 Dimension (X & Y) (Length and Width)	3 Dimension (X,Y & Z) Length, Width & Height		4 Dimension (X,Y & Z) Length, Width, Height & Time
• Character Animator & Synfig	• Blender & Animaker	• Autodesk Maya 3D	• Virtual Reality
• Pencil2D & Adobe Animate	• K-3D & Open Toonz	• Adobe Character Animation	• Motion Seats & Wind
• Toonz & Toon Boom Harmony	• Adobe after effects & Make Human	• Cartoon Animator 4	• Simulated - Snow

Education with Animation :

Animation becomes a valuable teaching tool that helps explain and illustrate important learning content and develop understanding. The popularity of animation has increased significantly as more people are visual learners and have short attention spans. This makes it a great tool for teaching as the audience becomes more interested in what is being shown to them. The approach of using animations as a learning style has proven to be very effective in many areas such as training and online courses as it meets the needs of everyone involved. Below are some of the key benefits of using animation as a learning tool.

- Using animation allows you to show the story instead of telling it. This makes it easier to convey what you want to explain because graphics and images can tell the story for you.

- Animations can make your teaching style more interesting because you choose colorful images that hold people's attention longer and make it much easier for them to implement your ideas.

- Animation Video animations are an excellent source of audio visual knowledge, the brain can process visual information faster and more efficiently, and people are more likely to remember information in an image than in text

- Images are processed in the brain 60,000 times faster than text. Therefore, learning with animations can be great when people are pressed for time and need to learn information quickly.

- Traditional learning methods have become boring, people can read for hours without understanding anything. Animations help students participate better because they are a more entertaining way of learning.

- 40% of people respond better to visual information because it's fun to look at and a great way to engage students by giving them a different way to learn.

In today's fast-paced world, where attention spans are short and students are exposed to a plethora of digital media, teachers are constantly looking for innovative ways to engage students and enhance their learning experience. Animation is such a powerful tool. Animations in education have proven to be an effective way to stimulate students' imagination, stimulate creativity and facilitate the understanding of complex concepts. The role of animation in education and offers teachers some practical tips and tricks on how to make the most of this dynamic teaching tool.

Conclusion

This study can summarize that using computer animation as teaching material has great importance and benefits. However, depending on the suitability of the subject and the student's background knowledge, certain restrictions may apply. In this case, teachers have an important role in determining the best and most appropriate teaching methods as well as effective teaching that can help improve students' visualization and understanding skills. found positive opinions about teaching and learning.

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