



Animation Use as an Educational Material and Animation Techniques

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ABSTRACT

The developments in technology affect the learning-teaching processes as it has been in every fields of life. Increase in the quantity of the information, complexity of the content, increase in the request of education, increase in the number of the students and requesting to benefit from the educational situations can be accepted as the basic reasons of using educational technologies at school. Educational technology provides meaningful learning by using more than one sense organ of the students. One of the most technological systems used in educational technology is computer which has been used as one of the most effective and individual communication device in education. The students can intensify the subjects they learnt by the help of computer supported education and can learn more effectively. The most important part of learning is provided by the lives gained by visual and audio ways. Only technology using has not been enough to increase the quality of the technology in education, the methods used in computer supported education are differentiated. Because of this reason, graphics, sound, shapes, PowerPoint, presentation and animation in education have been accepted as beneficial with the increase of sense organs participating in educational process. When the developments in educational technology and graphics design products have been mixed up, they serve for the development of potential learning and teaching. In other words, knowledge integration between the disciplines is provided by combining education and new Technologies. Animation production techniques have been explained in the frame of sustainability of animation usage in education in this research. It has been thought that this study will be beneficial for the researchers and appliers in the context of educational material and animation techniques.

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ANIMATION TECHNIQUES

We know that when animation techniques have been examined, there are several varieties technologically with the increase in technical opportunities in the historical process. The artists who understood the nature of the movement have been in effort of explaining movement with different methods. Because of this reason, free animation techniques have been born out both free from each other and which have been extension of each other.

1. TRADITIONAL ANIMATION

The technique known as traditional animation (classic animation, cel animation) or the one drawn with hand is a technique developed by drawing every square one by one by hand. This technique has been used actively since the development of computer animation. The reason for recognizing it as cell animation is that its basis equipment has been acetate leaves. Acetate can be used more than once in cell animation as it can be cleanable (Benice, 2000, s.25).

1.1. Character Animation

Character animation is a technique born out at the result of using statement, physical movement in addition to artistic worries generally in feature length films. The movements are smooth, realistic and perfect in this kind of animation. The best examples of character animation are Walt Disney's feature length films. Animator should dominate the instrument to be used during character animation. These can be paper, pencil, mud, fabric, metal or computer. The difference between character animation and animation can be thought as the difference between stage play and ballet. A stage play focuses on play, lines and performance and the audience enjoys from form, movement and music relationship. (Wellins, 2005, s.348).



Figure 1. Character Animation



1.2. Limited Animation

It is a common used technique and made by using short ways relevant to classic animation techniques in low budget productions. The cost of the feature length films of Walt Disney in 1930 and 1940's with elegant details in every square of it has been very high. In limited animations, the aim is to create the same effect with less drawing and with low costs (http://www.princeton.edu/~achaney/tmve/wiki100k/docs/Limited_animation.html).

1.3. Rotoscoping

Rotoscope is an animation form where the lively movement has been monitored and the movement has been transferred from 2D view frame to the frame. (Wellins, 2005, s.352). In other words, it is a film technique where movement references have been taken from real filming views (Kaba, 2001).

Rotoscope is one of the traditional animation methods invented by Max Fleischer in 1915. Max Fleischer increased the visual aesthetics of cinema with the invention he has made in early period animation cinema. Rotoscope is drawn on actors and current film length in animation. Traditionally the lively movement will be printed on the frame and it will be recorded. In another part, it will be located over lively movement prints later and the movement will be drawn as frame by using a light box. The result seems like hand drawing but movement is as lively as taking too much attention. (<http://vfxhelper.blogspot.com/2008/02/history-of-rotoscoping.html>).



Figure 2. Rotoscope Animation

2. STOP-MOTION ANIMATION

Stop-motion animation is the procedure of photographing every object in squares following each other and fictionalization it as completing each other. In this technique, many object views are set up as digitally or opposite to the camera as analogue. The views taken have been montage and then the view has been formed. Stop motion



animation is formed of streaming puppet and many similar Picture squares. (Yıldız, 2005, s.1).

2. 1. Puppet Animation

Puppets are used puppet animation as it can be understood from its name. The puppets are designed to stand on their own feet and to shoot on location from every angle. The puppets should have loose joints to sustain their motion and to stand in the location they have been on. (Hünerli, 2002, s. 937)

2. 2. Clay Animation

It is one of the several animation kinds whose basic logic has been stop motion. The characters are created with clay or plastic paste named as plastilin. The basic principle is to change the place of the objects which can be given shape easily . In this technique, the most lived problem is whether there has been a problem from the light source coming from the equipment during filming (Tezcan, 1990, s.15; Benice, 2000, s.26).



Figure 3. Clay Animation

2.3. Silhouette Animation

Silhouette Animation is again a type of working used by the puppets, but instead of puppets the silhouettes are moved. The puppets are made of metal plaques or black cartoons. Every part is connected with strings to be moved by cutting separately. As the figures of the puppets have been small, the movement of the object can be given in the form of natural movement. After the puppets have been prepared in silhouette animation, the decors and location arrangements are drawn where puppets will be moved. The background is cut from transparent paper to give a component style to the



location in this animation method based on movement of puppet silhouettes formed of black cartoon or metal plaques. (Şenler, 1995, s. 106).

2.4. Object Animation

Object animation is a kind of stop animation including animation movements of unshaped objects as toys and blocks. In this technique, objects in the form of solid are used, a human or animal character cannot be used. If we concrete that object animation in an animation technique that does not need drawing, it can be told that you can make an animation like this by moving the objects of the room you have been living. (Kaba, 2001).

2.5. Brickfilm Animation

Brickfilm is a stop motion animation kind used by LEGO toys or similar plastic production toys (Kaba, 2001). CGI traditional animation and live action films carrying the properties of plastic production toys are taken as brickfilm. Brickfilm term has been found by Jason Rowoldt, founder of Brickfilms.com. It is a stop motion animation kind made by using Legotoys.



Figure 4. Brickfilm LEGO

The first known brickfilm is *The Magic Portal* in 1980 and 1989. It is known the leader of modern brickfilms and mixes stop motion animation and live action. It is recorded in 16 mm films and shows animation LEGO, plastic, card characters and objects.

2.6. Pixilation Animation

Pixilation is a stop motion technique where lively actors have been used as a frame, while filming a frame one pose is reviewed again and the pose is changed slowly while passing to another frame. The actor becomes a kind of lively stop motion puppet. This technique is used to mix the actors with animation figures in a film.



Figure 5. Pixilation animation

3. COMPUTER ANIMATION

Computer animation means to form action series of static views formed as square by square by the way of programs in the computer. It is applied on the screen with stylus, mouse, and keyboard different from the classical animation. (Ursavaş, 1997, s.15). Computer animation formed by the way of two dimension and three dimension different graphics programs is relevant to making creative studies.

3.1. 2d Animation

These are the designs formed in the computer by using 2D Animation, 2d vector graphics and 2d bitmap graphics. There are many application areas as 2D animation, analog computer animation, flash animation. The objects moving horizontally and vertically in 2dimensional animations have been developed with Cartesian coordinate system. There is not depth in two dimensional animations. The movement of the objects realizes in a field including width and length. It includes computer version of traditional computer techniques. 2 dimensional animations is an animation kind formed by drawing in squares, providing animation without drawing of a drawing, realizing the given commands by the computer automatically, orienting from one transition to another and following the writing and colors each other. (Demircioğlu, 1994, s.44). 2d animation kinds Analog computer animation, Flash animation, Onion Skinning,

3.2. 3d Animation

It is important to design the physical and skeleton structure of the movement in 3D animation. The movement mechanism of the character should be designed as realizing every kind of movement that the movement makes. The characters should be supported by using mimics in emotional transfer (Çalışkan, 2011, s.10). 3D animation is a system

of digital modeling and manipulation system. 3D animation forms an external network to be processed, a skeleton form is given inside of it and the design forms views processing it with mathematical calculations in this form. Three dimensional animation is creating three dimensional models in spatial location on the computer with the principle of making a series of two dimensional drawings creating depth illusion provided by painting the acted models. (Doyle, 1992, s.16). 3D Animation techniques, Cel-shaded/Toon Shading animation, Morph target animation, Motion Capture Animation, Skeletal animation.

4. OTHER ANIMATION TECHNIQUES

Other animation techniques are Paint-on-glass animation, Pinscreen Animation, Drawn On Film Animation, Sand Animation.



Figure 6. Flash Animation

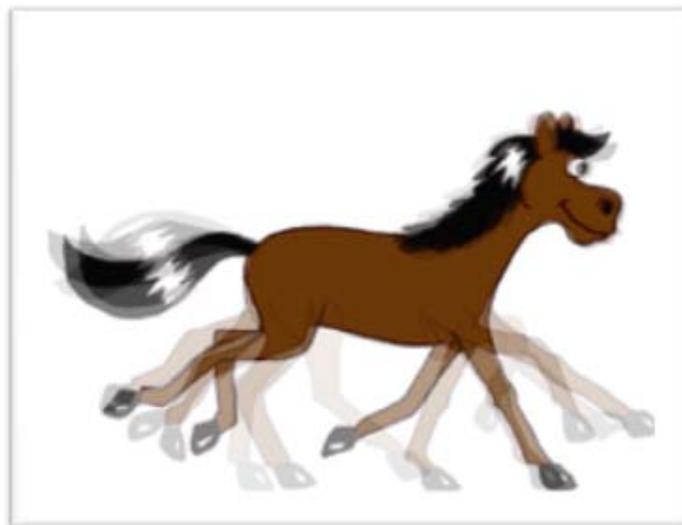


Figure 7. Onion Skinning

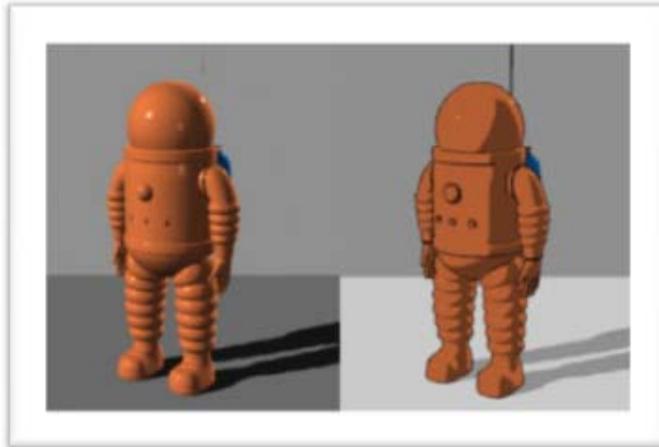


Figure 8. 2Dimension effect Animation



Figure 9. Morpha Target Animation

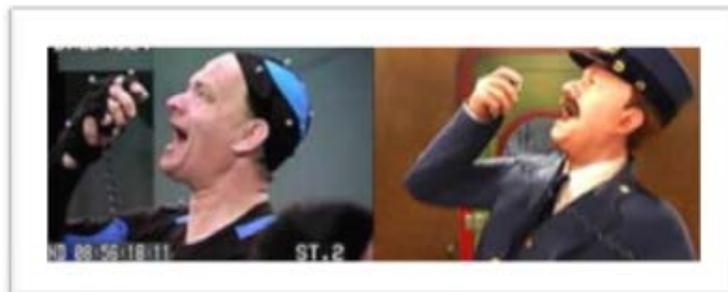


Figure 10. Motion Capture Animation

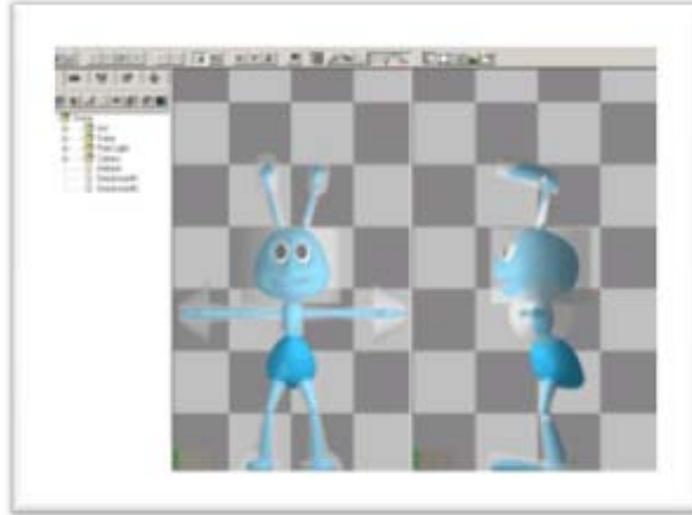


Figure 11. Skeletal Animation



Figure 12. Paint-on-glass animation



Figure 13. Pinscreen Animation



Figure 14. Drawn On Film Animation



Figure 15. Sand Animation

CONCLUSION

New methods related to increasing the quality of education started to be used by the quantity of and complexity of the knowledge learned. Only technology using is not enough to increase the quality of education with the structuring in education, the methods differentiate with computer supported education. Animation production methods and their kinds which have been one of the methods making visual and audible learning effective are being explained in this research. We are confronted with a new structure as an education material as the animation becomes an instrument of vacation which has been its first definition. On the contrary that it has been known, animation has many kinds except cell animation or computer animation. There are different animation designs in every animation technique. It has been thought that educators and the ones interested with animation will have information about animation methods and techniques and provide increase about awareness on this subject with this research.

REFERENCES

- Benice Ateş. (2000). Animation Tecniqe, *Anadolu Üniversitesi Art Mag dergisi*. 16, 25-29.
- Çalışkan Sabahattin(2011). Canlandırma Sanatında Oyunculuk, *Türk Sanatları Araştırma Dergisi*, 2(1), 1-13.
- Demircioğlu, Nurşen (1994). *Multimedia kapsamında animasyon*. Yayınlanmamış Yüksek Lisans Tezi. Anadolu Üniversitesi, Sosyal Bilimler Enstitüsü, Eskişehir.
- Doyle, Claire. (1992). Getting Started İn Computer Graphics. *Government Military Video*, vol:2 No:10, 1992, s.16.
- Hünerli ,s. (2002). Developmet Of Animation in Turkey. Selçuk Üniveristesi İletişim Fakültesi Dergisi: Web:



- http://www.iletisim.selcuk.edu.tr/dergi/gs/cilt2_sayi3_temmuz2002.pdf.
Adresinden 10 Kasım 2012 Tarihinde alınmıştır.
- Kaba, Fethi, (2001) Çizgi Film Teknikleri, Ppt Sunu.
- Şenler, F. (2005). Animasyon Tarihi, Teknikleri ve Türkiye'deki Yansımaları, *Hacettepe Üniversitesi Türkiyat Araştırmaları Dergisi*. 3; 99-114.
- Tezcan, Gülçin.(1990). *Animasyon Üretim Tekniklerinin Deneysel Analizi Üzerine Bir Araştırma*. Yayınlanmamış Sanatta Yeterlik Eseri, Hacettepe Üniversitesi, Sosyal Bilimler Enstitüsü, Uygulamalı Sanatlar ,Grafik Ana Sanat Dalı, Ankara.
- Ursavaş, Abdullah (1997). *Bilgisayar Animasyon ve Uygulama Alanları*. Yayınlanmamış Yüksek Lisans Tezi. Gazi Üniversitesi, Sosyal Bilimler Enstitüsü, Ankara.
- Wellins Mike(2005). *Story telling through animation*. Newyork, America: Charles River Media publish.
- Yıldız M. (2005), *Animasyon Amaçlı Kukla*, Yayınlanmamış Yüksek Lisans Tezi, Mimar Sinan Güzel Sanatlar Üniversitesi, Sosyal Bilimler Enstitüsü, Sahne Dekorları Ve Kostümü Ana Sanat Dalı, Dekor ve Kostüm Tasarımı Programı, İstanbul.
- <http://vfxhelper.blogspot.com/2008/02/history-of-rotoscoping.html> adresinden 10 aralık 2012 tarihinde alınmıştır.
- http://www.princeton.edu/~achaney/tmve/wiki100k/docs/Limited_animation.html adresinden 1 ocak 2013 tarihinde alınmıştır.