

3-D ANIMATION AS AN EFFECTIVE LEARNING TOOL

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Abstract - The aim of this research paper is to study the importance of 3-D Animation in learning environment. There are so many varieties of ICT tools and approaches are applied in the educational field to enhance the students' exam performances as well as students' learning experiences. ICT tools are enhanced by the support of 3-D Animation clips with proper explanations, attractive colors and sound effects. Furthermore, 3-D Animation can be also included in World Wide Web, E-Learning, CD ROM, Interactive Video, Mobile Devices, Social Media, etc. The advancement of 3-D Animation software such as Auto desk Maya, 3-D Studio Max, Cinema 4-D and Soft image has led to the development of many innovative learning 3-D animated materials for the students which can be easily downloaded from the web and creatively combined with Multimedia learning system. Even though, many multimedia learning materials is available for the secondary level school students and school subjects like Mathematics, Chemistry, Physics, English, and Biology, yet educators need good 3-D Animation learning material to attract adult learners to pursue their higher education and skill training. One of the main difficulties in developing 3-D Animation material is their software and technical requirement.

Key Words: 3-D Animation, Learning, ICT tools, Multimedia learning System, 3-D Animation material, E-Learning system, Learning experiences, etc

1. INTRODUCTION

Quiet frequently these days' educators talk of Information Communication Technology, Digital Revolution and 3-D animation both in academic institution and industries. Several Information and Communication Technology research studies are undertaken and accomplished year after year. But in most cases very little attention is paid to an important dimension relating to ICT; namely that of 3-D animation. The result is that much of research, particularly in Information and Communication Technology studies, contains endless-word spinning and too many quotations. Thus a great deal of Information and Communication research tends to the ineffective solutions. It may be noted; in the context of planning and development, that the significance of research lies in its quality and not in quantity. The need, therefore, is for those concerned with ICT research to pay due attention to designing and adhering to the new Digital Medium and methodology throughout for improving the quality of ICT research. The main objective of the education is to impart knowledge and skills to learners. The impact learning skills can be evaluated in terms of long-term and short-term performance. Active

learning process' needs an effective communication between the teachers (sender) and the learners (receiver). Learners' feedbacks, reactions, expressions, actions and comments are very essential to analyze understanding levels. Immediate feedback is helpful for effective communication in the educational set ups. This kind of feedback and evaluation has a long-term impact. The short-term effect of learning communication is evaluated by the change it has produced in learners' attitude, behavior and skill. The long-term effect of learning communication is assessed by a learners' performance and actions. There is a high probability of learning information being processed and used if the learning information is relevant with the learners' attitudes, beliefs and individuality. Questions related to learning effects are evaluated at three stages: a) transmission stage, b) semantics stage, and c) stage of effectiveness. The ultimate aim of the learning process is to motivate the learner to take permanent behavior changes or skills development through the knowledge gained from the content.

2. REVIEW OF LITERATURE

So many related research papers are available in IEEE Xplore, ACM and International journals. Many of the research papers deals with the visual perception, graphics, multimedia learning system, 3-D animation, visual communication and intelligent quotient concepts. The related research works and evidences for this research works are discussed in detail in the following research studies.

Ann McNamara et al (2011) investigated the perception of graphics, visualization, virtual environments and animation. They found the application of animation and graphics in algorithm design and display technology design.

According to Riaza Mohd Rias et al (2009), multimedia learning aid using 3-D animation helps the students to learn memory concepts. It also develops more interest and more clarity among the students.

Yu Zhang et al (2010) investigated the technologies including teaching design and multimedia teaching resources development.

Li Chengbiao et al (2009) found out the evaluation indicator system of the quality of multimedia teaching in higher educational institutions in China.

Vive Kumar et al (2009) discussed the open instructional design methods. He presented a paper on instructional design, instructional design model, self-regulated learning and learning interaction.

LIANG Yu-bao (2010) investigated and discussed the methods to improve the quality and effect of computer-aided instruction's application in classroom teaching in institutes of higher education. He found out the effect of multimedia teaching, discussed the well-designed components of teaching process and used multimedia courseware in classroom teaching as the core material for learning.

Ahmad et al (2010) discussed the effects of segmentation of instructional animation in facilitating learning of IT subjects in Malaysia. He discussed the different animation materials and its impact. He investigated more than hundred students doing diploma in information technology (polytechnic level) in Malaysia. He elaborately discussed the animation materials and its application in IT subjects. He did not investigate the difference between the 2-D animated materials and 3-D animated materials in the learning environment.

Miller, Scott et al (2011) conducted a research on the effect of animations within PowerPoint presentations on learning introductory astronomy. They discussed the effect of animation materials in studying astronomy subject. But they did not explain 3-D animated material and its impact.

M. Taylor et al (2010) investigated the use of animation in teaching the higher education to support students with dyslexia. The aforementioned research examined the details about the usefulness of animated learning materials in supporting students with dyslexia in a UK higher education setting. Research has not been conducted to study its impact in Indian education system on students with and without dyslexia.

Cathy J. Pearman et al (2010) investigated the relationships between the impact CD-ROM story books and young readers. They found out that formats like electronic, interactive texts, CD-ROM storybooks increase vocabulary, fluency, comprehension among them. They also concluded that supplementary features such as word pronunciations, definitions and animations aid readers in improving in the vocabulary.

S. Shyam et al (2004) discussed the arousal, memory, impression-formation effects of animation speed in Web advertising. The above-mentioned research found out the relationship between the animation speed and attention and also the perception level in Web advertisements.

3. SCOPE OF THE STUDY

There is a great need for innovations in the learning tools, educational system, curriculum, learning strategies, instructional technology and methods (Mee, 2010). Electronic University (e.g. Asia electronic University), Virtual University (e.g. Tamil Virtual University), Floating University (e.g. S.S. Universe) and Multimedia University (e.g. Malaysia Multimedia University) are the results of divergent thinking and innovation.

4. NEED OF THE STUDY

For the past 5 years there is a tremendous growth and awareness in the Indian Higher education system. Education and ICT is the backbone of the current Indian economic growth. The animation industry is growing by leaps and bounds and offers diverse career opportunities particularly for the youngsters and for those with a creative mind. Plentiful job opportunities are available in India as well as abroad in the exciting field of 3-D animation. According to the recent FICCI-KPMG report, the estimated size of the Indian animation industry is currently valued around Rs. 1,740 crore and is expected to reach Rs. 3,900 crore by 2013 with a CAGR of 17.8 per cent. The number of professionals joining the animation industry has been growing at a compound annual growth rate (CAGR) of 18.2 per cent and is expected to grow at the same rate.

5. CONCLUSION

Currently, most available learning material has been developed by graphic designers and content writers with the supervision of educators. Content writers and content developers of the learning material have to consider all the attributes such as text, colour, sound (multimedia materials) and graphics information. The content writers, designers and content developers have to follow communication principles, design principles and user interface design principles and to ensure that the learning material associated with the learning platform satisfy learners' requirements. The learner's personal factors and the learning materials' characteristics should be correlated in order to achieve the overall aim of learning. Similarly, while developing learning material for higher education, the instructional designer has to follow the rules and regulations of the learning strategy. The designing process and content developing process of good learning material require technical, software skills and subject knowledge. Thus, 3-D Animation can be utilized in the learning environment as an effective tool to educate.

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