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3-D ANIMATION FOR EFFECTIVE MEMORY

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Abstract – ***The main aim of this paper is to analyze the impact of 3-D Animation for effective memory among the visual communication learners and it focuses the enhancement of 3-D Animation software learning. 3-D Animation helps the visual communication learners' exam performance by improving the short term memory and long term memory. 3-D Animation materials with narrations and explanations enhance the memory by developing the retention and recalling ability among the visual communication learners. 3-D Animation clips in the Multimedia materials enhance the capability to understand the visual concepts. 3-D Animation aids the right side of the brains' activities to visualize the learning concepts. Learning multimedia software's' applications such as modeling, texturing, lighting, dynamics, rigging, Animation, visual effects, etc., are easier due to the effective information, 3-D Animation and Graphics. 3-D Animation clips in the multimedia materials gives clues to recall the difficult concepts in learning. It has significant impact among the learners' memory but connectivity between the 3-D Animation clips and study concepts needs proper explanations by the trainer. This research also discusses the attributes and its' impact of DVD tutorials with more 3-D Animation.***

Key Words: *3-D Animation, Effective memory, Visual communication, Multimedia materials, Brain activities, Software learning, DVD tutorials, Communication effectiveness*

1. INTRODUCTION

Due to the rapid development in digital devices such as smart phones, tablet PCs, interactive TVs, interactive projectors, IPad, game consoles, e-readers, etc., skilled young people in 3-D Animation is the need of the hour to fill the gap between the employability and education. Even though, India produces more than 3, 50, 000 engineers per year, this digital industry needs more skilled persons with specific digital skill and knowledge. The development of Smart Cities, Digital India and Make in India strategies requires more digital knowledge society and workforce. The 53 Billion Young population of India needs digital literacy and proper skills in order to excel. Vast number of unemployed graduates and engineers has limited digital knowledge in India. The gap between the requirement and skilled human resources is widening every day. Furthermore, the growing Indian economy needs a large number of youths with a range of digital skills such as multimedia programming, android platform programming, 3-D Animation scripting, digital devices manufacturing and maintenance.

Even though, the Indian educational system has been developing over the past few years, still there is a need to adopt new technologies and new teaching methodologies to attract the young population for higher studies. Many of today's colleges and Universities does not have enough infrastructure in terms of digital tools and software.

2. RELATED WORKS

Rias et al. (2009) conducted experiment using multimedia learning aid with 3-Dimentional animation. They found the instructional value and user satisfaction of the multimedia learning system constructed by them [1]. Aravinthan et al. (2010) conducted research in civil engineering subject learning through animation. They used animation as a tool to enhance the learning experience among the civil engineering learners. They found the differences in learning between textual based course materials and animation based course materials. They used animations in teaching for the two courses named geology and geo mechanics and they evaluated the students' exam performance. They compared the differences and arrived a decision [2]. Fang et al. (2010) found the interconnections between mental models and learning abstract mathematics among the elementary school students. They explained the importance of mental models, animations and learners' interest. They arrived a decision through systematic way of teaching through animations among the mathematics learners [3]. Kamsin et al. (2006) developed an interactive multimedia learning tool with 3-D animations to teach the biology students. They found the courseware MLTB which was effective to understand and effective to stimulate the interest among

the biology course learners. They framed the Multimedia Learning Tool in Biology-Skeleton, MLTB with text, 3-D animations, image, video and audio. They successfully implemented the MLTB tool in teaching human biological system [4]. Korsh et al. (1998) used simple animation programs to teach computer science subjects such as algorithms and data structures. They found the use of animation to enhance the understanding capability of the computer science students. They studied animation usage in laboratory and classroom set ups [5]. According to Reuther et al. (2002) 'multimedia learning materials provides materials and courses in the form of lessons on many different topics which enhances the interest level among the students [6]. According to shikhar et al. (2010) 'social anxiety has negative impact on college students' stress and mental health which reduces the learning performance' [7]. According to Taylor et al. (2007) 'animated learning material supports the learning and understanding process among the students with dyslexia- a learning disorder' [8]. According to Mayer et al (2002) 'animation with proper narration is the very useful method to teach the students'. They discussed the visual and verbal aspect of narrated animation learning material. It supported the dual-coding learning theory [9]. Scott T. Miller et al. (2011) studied the effect of power point presentations with animation clips on learning astronomy studies. They conducted the survey and found the links between animated PowerPoint slides and effective learning astronomy studies [10].

3. MEMORY-RETENTION AND RECALLING

Studying memory processes are important to understand and important to develop the learning process. Memory has three different stages in processing. They are sensory memory, short term memory and long term memory. Through sensory organs the external stimuli reaches to the brain. It register in the short term memory. When the short term memory compares and analyses the information with the long term memory, it stores in the brain which leads to long term effect. The subjects learned is not always easily retrievable by the learner. Some visual information like 3-D animation and attractive visuals are easily remembered and retrievable. Different levels of memory occurs due to the learners' personal differences such as attitude, interest, motivation, knowledge, etc. Short term memory is longer than sensory memory which is limited. Long term memory is permanent. Information stored in the Long term memory can be retrieved successfully with the effective keys and clues. 3-D animation clips act as a key and clue to retrieve the stored information in the brain.

4. RESEARCH METHOD

To analyze the impact of 3-D Animation clips' effectiveness, a set of available 3-D Animation tutorials were compared in terms of its communication effectiveness and its design aspects. The trainer taught basics of Autodesk Maya software, 3-D modelling, texturing, dynamics, lighting and animation using projector, DVD materials which had more 3-D animation clips and narrations. After the teaching process over, the visual communication learners were tested to study the effect of 3-D animation clips and narrations. Three types of 3-D animated DVD tutorials were compared and the students' opinion were noted to find the effective element in the 3-D animated material.

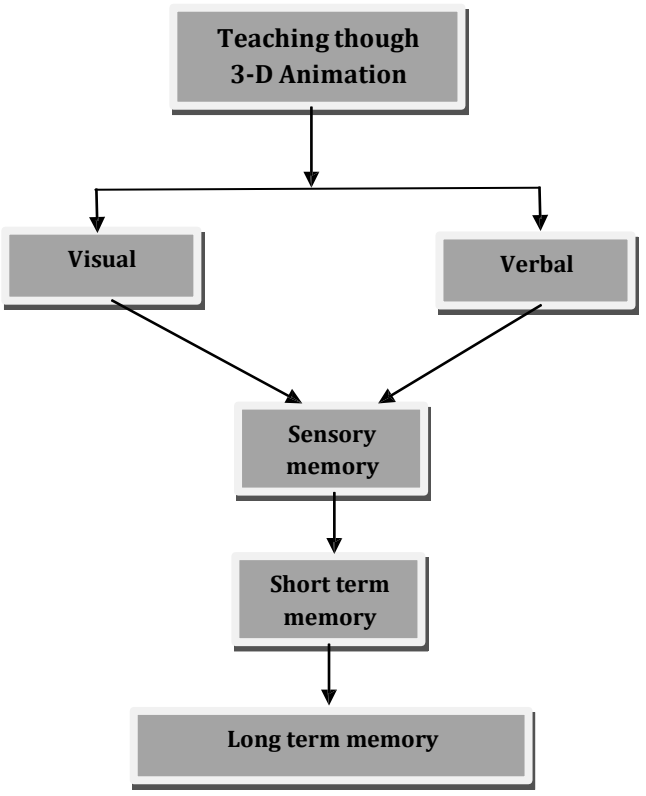

Figure 1: Process of memory and retention

5. SAMPLING

To study the impact of 3-D animation material, 30 students were selected randomly from the visual communication software learners in an 'A' grade college. Their short term memory tested after showing the 3-D animation clips among the visual communication learner during the class hour. To study the long term memory, a test was conducted after 24 hours in the class room set up. Even though the learner forget the concepts, the visual clues associated with the 3-D animation helps to recall the information. Students' opinion about the animation

materials' attributes such as color, links, narrations, and design collected to study the differences among the DVD tutorials.

6. RESEARCH FINDINGS

- Most of the students are of opinion that the trainers adopt these 3-D animation techniques so as to develop the interest among the visual communication learners.
- The study revealed that the visual communication learners are attracted to the new 3-D animated techniques.
- This study also emphasized the necessity for 3-D animated materials and new DVD tutorials.
- The most effective method of teaching visual communication software is 3-D animated materials since students and youngsters are the most important target for educators.
- The students wants the trainer to be technically advanced.
- Students supports the development of 3-D DVD tutorials.

7. CONCLUSIONS

The educators should develop a good 3-D animated materials for animation software teaching among the visual communication learners. They have to develop the interest among the learners to go for the higher studies in Digital media courses. This will develop the digitally skilled workforce to cater the need of the nation. This research conclude that focus must be on learning material innovation to educate the young new generation. Learners are no longer interested in traditional way of face to face teaching techniques. An innovative technique impacts positively the learners and stimulates them to go for higher studies in media. To develop the effective 3-D animated materials, attributes such as color, design, composition, links, menu placements, music, sound, narrations, etc. plays a vital role. Future researchers should consider the attributes and its impacts for effective teaching-learning strategy.

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