Using Video-Assisted Learning in Teaching Camera Tracking to Visual Effects Students in Malaysia – A Review

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Abstract. This study is on the effectiveness of using video-assisted learning to teach camera tracking for visual effects students in Malaysia. The present research aims to acquire student's perceptions on using Video Assisted Learning to learn camera tracking in a Malaysian classroom. There are still much documentation need on the use and effects of Video Assisted Learning as a teaching and learning strategy in the Visual Effects education in Malaysia. Thus, this research review paper highlight analysis of past studies relate towards camera tracking using video assisted learning approach. The review also accumulates wider information utilization of video assisted learning for visual effects educators in the area of academic.

Keywords: Video Assisted Learning · Visual Effects education · Camera Tracking · Qualitative Analysis

1 Introduction

Students are over reliant on lecturers and are discouraged from questioning what they have learnt with previously acquired knowledge. This is a result of traditional educational ways whereby students on learn the surface of a particular subject [1]. Video based learning is a supplementary teaching strategy that helps to develop the technical skills. It also helps students to fully acquire the necessary skills and understand the theory [2]. As one of the key areas of the visual effects pipeline is camera tracking and one of the jobs that occurs early in the production stage, the researcher proposes the use of Video Assisted Learning as a methodology for teaching Camera Tracking to visual effects students in higher learning institutions in Malaysia. This paper explores the experience of implementing Video Assisted Learning as a supplementary teaching and learning tool for the education of Visual effects students in Malaysia. It provides a platform to evaluate to what extent Video Assisted Learning can help students learn Camera Tracking. The research paper also explained the use of Video Assisted Learning

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to identify the students' perceptions of their understandings, capacities and executions while using Video Assisted Learning to learn camera tracking in a Malaysian classroom.

Visual Effects (VFX) education system is exam oriented and the content lacks quality [1]. New methods of access and knowledge are required for creative learning and innovative teaching. These include curricula, pedagogies and assessments, teacher's education, digital media, and educational culture and leadership [3].

The effective use of video assisted learning in higher education is the primary focus of this research. It is believed that a fourth distinct generation in education technology is emerging. It includes 'distributed and digitally shaped technologies: adaptive learning, distributed infrastructures and competency models' [4]. By allowing the learners to control their chosen toolsets, the process of 'stitching' together distributed interactions' will be given more emphasis. The role of the video assisted learning within education which is one of the elements of 'distributed interactions' & how that role develops will be explored further [5].

A variety of devices can used to stream, store or deliver live a digitally recorded content with proper sound & motion. This statement clearly defines the essence of a video assisted learning. A demonstration or an animated film can be included whereby a lecturer may or may not be visible.

Video improvised learning zone with its uses like sound and motion to present simple illustrations; verbal descriptions or talking alone, and also act as for educational barriers. For instance students with low reading skills can learn more easily from video with as long with the visual effects [6]. Students in higher learning institution should be competent and have acquired crucial survival skills in the real working environment. The visual effects learning process in the classroom is not sufficient for the students' developments anymore; academia alone is not enough to survive in a stressful and competitive environment [7].

Therefore new methods of access and knowledge are required for creative learning and innovative teaching. Few researches indicates that, there were still inexistence of research for video assisted learning for visual effects students [2, 5, 8, 9]. Therefore author in this research approached a research on video – assisted learning in teaching camera tracking to visual effects for students in Malaysia.

1.1 Related Work

1.1.1 Camera Tracking

Camera tracking process is the crucial task and one of the first to be performed in the visual effects pipeline. According to [10] stated that camera tracking is essential, whereby its able to convincingly composite Computer Generated (CG) images onto live-action footage, by ensuring that the virtual camera in a render matches the movement (hence, 'match–move') of the real camera. In addition with camera tracking still takes a significant amount of time in the visual effects pipeline, and is processes that require a large amount of human involvement [10].

In addition with, camera tracking takes a significant amount of time in the visual effects pipeline, and is a process that requires a large amount of human involvement. Figure 1 shows the percentage of time dedicated to various tasks of VFX production over

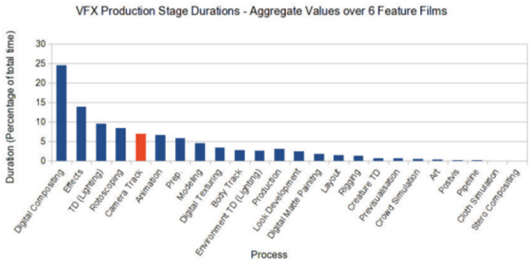

Fig. 1. Duration of various visual effects pipeline process, with Camera Tracking has been highlighted.

six feature film projects completed over the 2014–2016 time frame whereby duration and time measurement in this work refer to 'man-hours'[10]. Author of this research mainly concern with camera tracking as the process of determining 3D orientation and movement of a camera using 2D images tracks along with additional information such as set surveys, camera meta–data and on -set notes- and it is this process which refer as Matchmoving.

The data above taken from an aggregate of the total times taken over the production of 6 feature length films, with the company acting as either sole or a major Visual Effects vendor [10].

1.1.2 The Use of Camera Tracking Education

According to Cinematography field, camera tracking is a visual effects, cinematic technique which allows the insertion of computer graphics into live-action footage with correct position, scale, orientation, and motion relative to the photographed objects in the shot [11].

In addition with, camera tracking approach widely use for street crime prevention tool across public and private areas [12]. Herewith, tracking the same object within different camera's view is essential in many surveillances applications [12].

Camera Tracking is essentially used to track the movement of a camera through the shot. There were various published reports [2, 4, 13, 14] have indicated the benefits of Video Assisted Learning which the researcher has found to go hand in hand with the needs of Camera Tracking modules in visual effects education [2]. Hence, this research will adopt the use of Video Assisted Learning into the teaching and learning of Camera Tracking modules for visual effects students. Other areas of expertise like health science, computer science and information technology have successfully used Video Assisted Learning to overcome the traditional method of teaching and learning [1].

According to Lee et al., (2013), there are five technical requirements derived in teaching and learning. They are content authoring, T-learning system, edutainment system, video conference system and camera tracking system [15]. In the smart learning environment, students' engagement in learning can be decrease. Therefore, there is necessity to increase their interest in learning. Edutainment system is an effective way to foster learners' interest in class work. A video conference system should be supported with a variety of multimedia elements. Add on, the video conference system allows participants

to communicate multimedia information such as video, text, sound and graphics in real time with use of network that connects two or more locations [15].

Camera tracking system applied to construct for organic interactions among learner or between instructor and learners. Apparently, the camera tracking system which is mainly used in the school lecture rooms or corporate training rooms allows the camera to track an instructor and learners automatically without user invention [15].

1.1.3 Camera Tracking Education for Tomorrow – Video Assisted Learning Approach

Video is the technology of electricity capturing, recording, processing transmitting, storing, and reconstructing a sequence of still images representing scenes in motion. Video improvised learning zone with its uses like sound and motion to present simple illustrations; verbal descriptions or talking alone, and also act as for educational barriers. For instance students with low reading skills can learn more easily from video with as long with the visual effects [6].

Video Assisted Learning is quite common in many areas but using it to teach 3D Camera Tracking in Institute of Higher Learning is quite new [5]. According to Kaltura (2015), video is permeating our educational institutions, transforming the way we teach, learn, study, communicate, and work. Harnessing the power of video to achieve improved outcomes is becoming an essential skill. A key pillar in the drive towards improved digital literacy, video brings considerable benefits to educational institutions: streamlined admissions, increased retention, and improved learning outcomes [16].

Effectiveness of Video Based Learning has received a great deal of attention from academic scientist; 33% of the studies reviewed on their paper examined the effectiveness of Video Based Learning. Most of the reviewed case studies asserted the effectiveness of Video Based Learning as a powerful medium to be used in education [2].

1.1.4 Concept of Video Assisted Learning

The concept of teaching 'via' video can also be called 'Video Teaching' or 'Video Assisted Learning'. This method is described as video teaching in which the lecturer has an active role, is visible and heard, is recorded, and the teacher's screen presence is an integral part of the didactic process [4]. Digital literacy is defined as "the ability to locate, organize, interpret, evaluate, analyze, produce, and share knowledge using digital technologies" in the twenty-first century, and the concept anticipates that the lecturer's job will shift from "lecturers to facilitators of active learning" [4].

1.1.4.1 Benefits of Video Assisted Learning

There are a number of possible advantages to adopting video teaching for the process of learning. Some benefits are supported by research, while others are merely ideas or beliefs that need to be investigated further [4]. When experts find added benefit in using video teaching, they advise certain criteria such as (large class size, students not able to attend for valid reasons, students looking for flexibility, and students who are non-native speakers to the language of instruction) [4]. They also offer scenarios in which these formats are inappropriate, such as where face-to-face teaching is required for problem-solving, when copyright issues may be present, or where the lecture content is sensitive

or unpleasant [4]. A research of 67 peer-reviewed publications published between 2003 to 2013 that focus on (what they refer to as) video-based learning found that using video in teaching can enhance academic achievement and satisfaction for the better [4].

Furthermore, Woolfitt (2015) said another study discovered evidence that studying recorded lectures during examination period enhanced the likelihood of students passing the exam, while the article indicates that these findings could be due to more active students studying the web lectures. Following that, it is claimed that two-thirds of the lecturers polled believed that using web lectures greatly improved student progress and understanding [4]. Another interesting finding from a study is that 76% of the students polled said the video format (Web Based Learning Technology) improved their learning and made it easier to understand. Over 90% of students at Manchester University believed that watching taped lectures would help them do better on exams. There was a considerable favorable difference in exam outcomes for one specific subject where the sole variation from the previous year was the availability of lectures on line [4].

1.1.4.2 Benefits to the Teachers

Students' interest can be considerably improved by using videos, which can help them achieve more. If the students are interested, they will quickly adapt and remember the information easing the educator's job [5]. Pausing and skipping undesired information in the full video is possible, as well as having class debates or review along with teachers and students. They assist teachers in setting up a flipped classroom using advanced learning technology [5].

Furthermore, the videos are beneficial to teachers who teach in traditional classroom settings. Digital videos allow students to learn from afar, bringing together students and teachers from all over the world without any restrictions. With the use of internet tools, teachers can also check and monitor their students' attendance. Corporate such as "Next" additionally provide solutions for analyzing the effectiveness of a video by providing statistics on how many people have seen it and for how long [5]. The use of video continues providing possibilities for student feedback and support. Students who are unable to attend classes or who require tutoring or refresher sessions would benefit from this [5].

1.1.4.3 Benefits to the Institutions

Videos have the potential to boost advertising and communications. Advanced recordings can help you expand your audience by bringing in a larger number of people. These can be put on your foundation's website, linked in an email or advanced campaign, or shared through social media [5]. It is gradually flexible in terms of personnel and staff preparation. It is frequently difficult for schools to gather all of its people and staff at the same time, resulting in data collection that is fragmented. Using sophisticated recordings as a method of data delivery ensures that all of your people and staff have equal access to the information [5].

Offering this option not only improves the maintenance and evaluation of an institution, but it also serves as a file that can be audited at any time. Grounds events can be recorded for live or on-demand viewing. Attendees will feel more a part of your institution, increasing the likelihood of positive suggestions and commitment from new and previous understudies [5]. When parents, students, and graduates are more informed

about what is going on at your school, they will feel more involved, which will increase the likelihood of positive comments and commitment from new and existing students.

Capacity to increase contributions to online courses [5]. Because of the diverse understudy populations, online college programs are extremely well-known. Expanding your foundation's online program might help gain a lot more interest from potential online understudies. Having the ability to efficiently move video clasps to your LMS gives understudies and educators an additional benefit. Expanding grounds accessibility through recordings instils a good advertising mindset in guardians, possible understudies, and the graduating class [5].

This can attract potential understudies and is an excellent selection tool. When they view your institution, they will feel more a part of it, increasing the likelihood of good ideas and commitment from new and previous understudies. In those foundations that use a device to quantify it, the use of recordings in training demonstrates an extraordinary return on investment (ROI). This includes better ratings announced when video audit modules are available and seen prior to examinations [5].

2 Discussion

Overall review show that almost few of the scholars done research on video assisted learning in several of field. A video assisted learning can be divides into three distinct parts. First, there is a facilitator who guides the discussion; second, the videos that contains consistent current information; third, handouts for the participants so they can be actively involved in the process. Add on, video with visual effects (VFX) also brings more attention to students in education system. But unfortunately, Visual Effects (VFX) through education system more towards exam oriented and lack of quality in the content; students' performance more towards examination results [17].

Camera Tracking is primarily used to track the movement of a camera through shot so an identical virtual camera move can be reproduced in a 3D animation program. In cinematography, camera tracking is a visual effect, cinematic technique that allows the insertion of computer graphics into live-action footage with correct position, scale, orientation, and motion relative to the photographed objects in the shot. In addition with, Industrial Light & Magic (2017) have stated that skills are required for 3D Camera Tracking & Match moving artist for a strong 2D tracking and camera matchmove solving skills, ability to deal with manually nudging difficult 2D tracks and setting manual keys to help solver along; ability to use survey and photogrammetric for improving, extending or modifying sets for both solver issues and shadow casting geometry.

In a nutshell, author in this research proposed a method to teach 3D Camera Tracking and Matchmoving with Video Assisted Learning. Moreover, since a proper syllabus and approach to teach VFX students are still lacking in the current syllabus. Students may need proper video tutorials to assist them in learning this area as it is a highly cover technical subject to learn. Kraft (2012) claimed that videos introduced students to the topic at a fast pace, emphasize key features, use simple "visual effects" and aim to entertain, rather than normal Powerpoint presentation-style lecture. Hence author in this research recommended Video Assisted Learning to teach Camera Tracking for VFX students in Malaysia.

3 Conclusion

Current trends in the use of video assisted learning in area of Camera Tracking will be examined to see if it can benefit Higher Learning Institutions, lecturers and students.

With this outcome in mind, author of this research explore the broader implications to teach Camera Tracking with the hope that it will better prepare the students for the workforce. Therefore the Higher learning institutions in Malaysia should keep up with the advancement of the current technologies in order to test the students and lecturers with new creative and advanced learning methods.

The recommended video assisted contents could be searched through key-word search, heading or time-location. This would help users to focus on the areas of interest and skip those areas that they are already familiar with. This front and back search is use for revision and intensive practice reviews and also very time efficient. The recommended system also incorporates Automated Speech Recognition (ASR) and Optical Character recognition technologies; and also to enhance the learning and user experience in this research.

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