



Basic 3D Animation Online Learning Model for Multimedia Student

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ABSTRACT

This study aims to obtain an ideal concept structure for the online learning model for the practicum category, especially those related to animation learning with 3-dimensional (3D)-based assets. The research was carried out through methodological steps which included collecting data through literature studies and observing online learning assets, specifically in the practicum category and in the field of multimedia design. The design of the selected learning assets is audio-visual learning assets as the most relevant model for online practicum learning. From the results of tests carried out with the user (student) satisfaction test model, in 4 classes of 3D Animation courses at Institut Bisnis dan Teknologi Indonesia (INSTIKI), it was found that the level of student satisfaction with the implementation of 3D Animation online practicum lectures was in the Average grade. The level of student satisfaction illustrates that the 3D Animation practicum model course with all its shortcomings can still run quite well even though it has not reached the ideal level.

INTRODUCTION

The COVID-19 pandemic has pushed conventional learning that was originally held in the classroom to be outside the classroom, offline to online, the on-site face-to-face learning model to virtual face-to-face (Smart & Cappel, 2006). From the evaluations obtained in several online lectures, this adaptation of learning models was eventually accepted by students, however, courses that are specifically in the practicum category still require complex adjustments (Adnan & Anwar, 2020; Irwanto & Farhanto, 2021; Ni, 2013). This study selects the object of research or case studies at the Institut Bisnis dan Teknologi Indonesia (INSTIKI) campus, Bali, Indonesia, which organizes online lectures for 3D Animation practicum courses in the 2021-2022 Odd semester. In the 3D Animation course, students try a work procedure or technical instruction with hardware and software instruments that are in accordance with the material or sub-learning. There are several adjustments and special simulations that need to be done in the online model practicum lecture so that the learning objectives can be achieved. In this study, the design of online learning assets for 3D Animation courses was carried out with the appropriate concept for learning 3D animation at the basic level.

The goal is to get an ideal concept structure for the online learning model for the practicum category, especially those related to animation learning with 3 dimensional (3D) based assets. As an overview or summary of this research, the things that were carried out in this study were disclosed: (1) Literature studies and observations were carried out in the initial data collection stage to find a strategy for delivering material for a good 3D animation course, then; (2) Formulation of online learning concepts for 3D animation courses which include strategies for the method and flow of material delivery, case study delivery and case study practice tutorials; (3) Making learning assets which include video tutorials, modules, and assignment sheets/documents; (4) At the final stage, trials are conducted on classes consisting of at least 30 participants after the learning assets are completed. These materials are presented in this article in the following order: In Section 2, related existing works are disclosed. The material and the proposed method are presented in section 3. In section 4, the results of this study are explained along with the disclosure of important matters as the findings discussed in the discussion. In section 5, the conclusions of this study are revealed.

THEORETICAL REVIEW

Rustaman's research (Rustaman, 2020) has relevance to this study in terms of similar discussions about online lectures for practicum category courses. The difference between Rustaman's research and this research is in the subjects discussed as research objects. Rustaman's research has the aim of knowing the level of student understanding in using the Edmodo application as a media for attendance and accessing materials, Google Meet as a practicum media and assistance and Instagram as a medium for displaying works in online learning for Graphic Design 1 courses. Research by Irwanto and Farhanto revealed the level of student anxiety when attending practicum lectures with an online learning system in the medium category so that the

online learning process can be carried out but must pay attention to the availability of learning support facilities (Irwanto & Farhanto, 2021).

Irwanto and Farhanto's article is very relevant to this research because the animation course is a practical course that is closely related to facilities in the form of the availability of a laptop or Personal Computer (PC) with standard specifications that are capable of supporting practicum. Rahmanto and Bunyamin's research evaluated the effectiveness of Google Classroom as a learning medium (Rahmanto & Bunyamin, 2020). The results of this study are that Google classroom is effectively used in educational administration practicum subjects because students and lecturers are easy to access according to lecture needs. The effectiveness of Educational Administration Practicum Lectures can be seen from student learning outcomes which are increasing every day through assignments and quizzes. This research is relevant to research that will be carried out in terms of using classroom media and focuses on practicum courses.

METHODOLOGY

This research was carried out by carrying out methodological steps which included: (1) Literature studies and observations were carried out in the initial data collection stage to find a strategy for delivering material for a good 3D animation course, then; (2) Develop online learning concepts for 3D animation courses which include communication strategies and material delivery flow, case study delivery and case study practice tutorials; (3) Making learning assets which include video tutorials, modules, and assignment sheets/documents; (4) At the final stage, trials are conducted on classes consisting of at least 30 participants after the learning assets are completed. The trial in question is a test of student satisfaction in undergoing online practicum lectures. The aspects that are assessed are the clarity of the material, facilities, and the teaching ability of the lecturers.

Research Data

The success of conducting online lectures in general is very dependent on the quality of internet access (Irwanto & Farhanto, 2021; Rustaman, 2020). Online lecture media facilities or services generally use Edmodo and Google Classroom services as media for material distribution, monitoring and evaluation, supported also by Google Drive, YouTube for sharing audio-visual content with large file sizes (more than 20mb) (Alpert et al., 2016; Rustaman, 2020). Alternative communication media commonly used are Google Meet or Zoom for webinars or online sessions, and Whatsapp or other chat facilities such as Telegram, LINE to the Facebook messenger application which can also support direct communication with lecturers (Friedman & Friedman, 2013; Murray et al., 2014). Practicum model online lectures require the creativity of lecturers and students, who need to pay attention to the synergy of supporting aspects in the learning process such as infrastructure, software and hardware that are easily realized and accessed (Aditama et al., 2021; Yusa et al., 2017).

Lecturers also need to discover and explore both the abilities and potentials of students and their own (lecturer's) potential, especially in the

ability to communicate and motivate students (Kemp & Grieve, 2014; Kentnor, 2015). The 3D Animation course held at the Institut Bisnis dan Teknologi Indonesia (INSTIKI) campus has unique characteristics because students are led to complete 3-dimensional (3D) asset-based animation projects which are discussed in only one course in one semester (Nguyen, 2015). Such conditions have their own challenges, especially if the 3D Animation course actually intersects with the 2D animation and game development courses (Yusa, Anggara, et al., 2021; Yusa, Pandawana, et al., 2021). Submission of material in online lectures with a practicum model is more relevant if using audio-visual media with the delivery of material that is traced and well-structured (Keengwe & Georgina, 2012). There is also a need for monitoring and evaluation mechanisms and procedures that have good standards so that the assessment of students meets the element of fairness which really prioritizes the evaluation of student competencies (Kauffman, 2015).

Basic Level 3D Animation Online Learning Concept

There are 16 meetings in online learning at the INSTIKI Campus including the Mid-Semester Examination (UTS) and the Final Semester Examination (UAS). For practicum model courses, lectures are arranged using video tutorials that require students to listen to the video tutorial, then try to follow the practical instructions given in the video. One aspect of the assessment is taken from the evaluation of the suitability between the work produced by students and the practical material presented in the video tutorial. The dominant learning model is project based where practical learning leads to the creation of a work, in this case the work in question is an animated video based on 3 Dimensional (3D) assets. In the learning period of one semester there are 14 video tutorials that students learn.

Of the 14 video tutorials, several live sessions were inserted which required students to meet face-to-face online as well as practice the video tutorials that had been distributed. The process of distributing video tutorials to reach the students is by uploading videos to YouTube or Google Classroom. In addition, the lecturer has also prepared a software installer that is easily accessible and open source (Blender 2.80) and can be attached to Google Classroom. In addition to utilizing Google Classroom services, online learning also provides communication services in the form of group chats or chat forums such as Whatsapp Group. This is done so that there is a choice of communication media that is more familiar to use so that it can support the quality of communication between lecturers and students both in terms of effectiveness and efficiency.

Concepts of Online Learning Assets for 3D Animation Courses

In the online learning process, especially for 3D animation courses, lecturers provide video tutorials and modules at each meeting. The video format is set to a format that is easily accessible to students. The ease of access is regulated in terms of: (1) selecting a resolution and screen size that meets the minimum requirements so that it affects the file size so that videos can be accessed faster. The format in question is a screen size of 1280 x 720 pixels and a

resolution of 72 dpi; (2) Providing alternative access for video distribution such as audio-visual social media platforms (YouTube, Vimeo). The materials studied in the video tutorial range from an introduction to the Blender software, how to create objects (3 dimensional assets) in Blender, giving textures to 3D objects, preparing 3 dimensional assets so that they can be moved (rigging), animating 3D assets and displaying the final visualization (3D object rendering and 3D animation rendering).


Each video tutorial is equipped with object simulations or animation simulations first, so that students have an idea of the material to be studied. The video structure is designed into 3 main structures, namely: (1) an introduction that explains what material will be studied in the video, (2) the content of the video, and (3) a closing that summarizes the material as well as an assignment or delivery of a special message related to the material. The module is prepared as an alternative learning media if students prefer to learn through practical documentation media, or have problems accessing video tutorials. The modules designed convey the same thing as video tutorials, only in a visual and textual format. The important parts of the video tutorial are recorded in still image (screen capture) format, and there is an explanation of the displayed image.


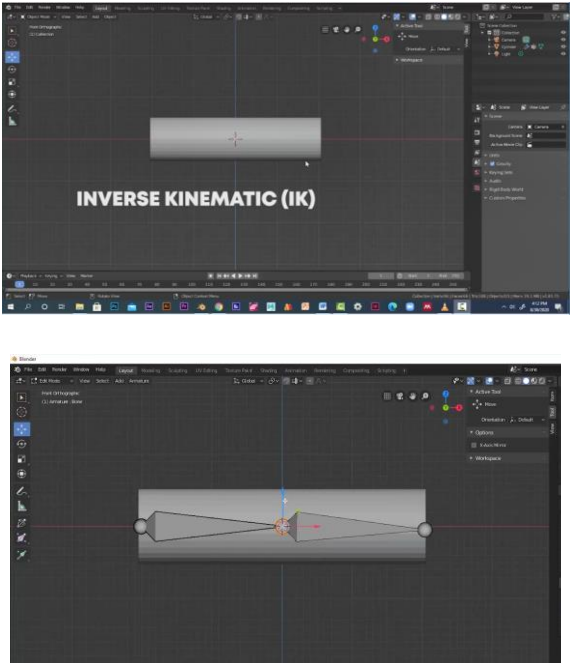

RESULTS


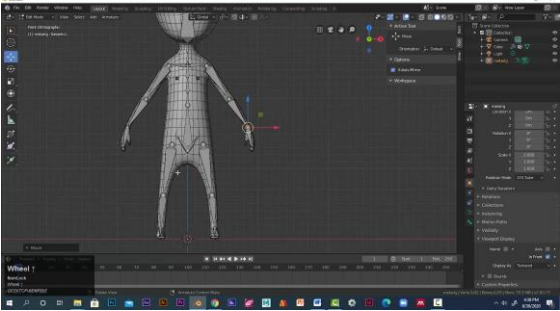

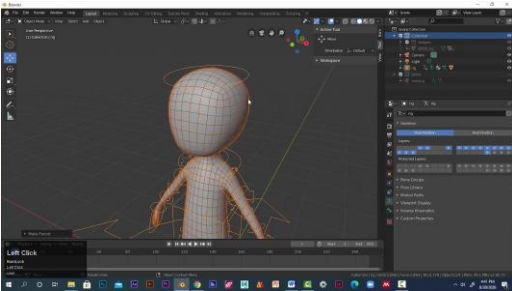
Overview of Submission Structure for Basic 3D Animation Course Materials



At this point, an overview of the delivery of 3D Animation lecture material is explained using video tutorials that can be uploaded via a Youtube or Google Classroom account. The video tutorial chosen is the sub-material "Rigging 3D Animated Characters" and is explained in the table 1 below.

Table 1. 3D Animation Course Learning Video Structure
Sub Material 3D Character Rigging

No	Screen Preview	Detailed Information	Timeline
1	<p>Intro/Opening Video</p> 	Bumper video entitled : Materi Online Pembelajaran Jarak Jauh Mata Kuliah : ANIMASI 3D	00:00- 00:08
2	Introduction	The lecturer in charge of the course gives an introduction in the form of	00:08-00:20

No	Screen Preview	Detailed Information	Timeline
		<p>a brief presentation of the material that will be delivered during the video.</p>	
3	<p>Definition of Rigging, Forward Kinematics & Inverse Kinematics</p> 	<p>Lecturers who teach courses provide theoretical basis on rigging and kinematic theory, namely Forward Kinematics (FK) and Inverse Kinematics (IK). And practice how to install a single bone on a 3D object</p>	00:20-08:25
4	<p>Preparing 3D character models</p> 	<p>Prepare 3D character models ready for rigging</p>	08:25-09:30
5	<p>Added Armature Basic Human Meta-Rig</p>	<p>Added Basic Human Meta-Rig</p>	09:31-13:55

No	Screen Preview	Detailed Information	Timeline
		armature to the 3D character model	
6	<p>Positioning the Armature Basic Human Meta-Rig</p> 	Adjusting the position of the basic human meta-rig armature to match the position of the 3D character model	13:56-17:52
7	<p>Making a rig controller</p> 	Converting a basic human meta-rig armature into a controller rig	17:53-19:31
8	<p>Embedding a rig controller on a 3D character model</p> 	The controller rig that has been successfully created is then implanted into the 3D character model	19:32-22:08
9	<p>Resume</p>	The rigging implementation process on the 3D character model has	22:09-25:20

No	Screen Preview	Detailed Information	Timeline
		<p>been completed, and the 3D character is ready to be animated.</p>	
10	<p>Outro / Closing Video</p> 	<p>Outro Video with thanks for closing the material</p>	25:21-25:33

DISCUSSIONS

Implementation of the Video Content Structure Concept

The video structure has been designed in accordance with the online learning asset concept where there are 3 main structures, namely: (1) an introduction that explains what material will be studied in the video. This introduction is realized with an intro video that informs the title of the material (8 seconds), then continued with the delivery of an introduction to the lecture material by showing the course lecturer directly, so that students also know the visual profile of the lecturer (12 seconds). (2) In the delivery of the material – as an important part, the terminology or terms related to the learning material are conveyed at the beginning.

Online Lecture Evaluation

Students fill out online questionnaires before taking the Semester Final Examination for the 3D Animation online practicum course, odd semester 2020-2021. The questionnaire asked students' responses regarding aspects of material clarity, facilities, and lecturers' teaching abilities. The assessment was carried out using a Likert scale ranging from 1-4 points. There are 4 3D animation classes that are run with the average number of students per class is 42 people. The value of student satisfaction in class DA is 2.67/4; class F is 2.64/4; class K is 2.71/4 and class V is 2.5/4. From these data obtained an average value of 2.63 with a percentage of 65.75%..

CONCLUSIONS AND RECOMMENDATIONS

The most fundamental thing in online lectures in the practicum category is the quality of communication and the main support is a quality of the internet access. The campus is obliged to help students in the form of incentives to support good internet access, even if it is in small amounts. Audio-visual tutorials with a good delivery structure and relevant to the material are very relevant to support practicum model online lectures, moreover it is also supported by modules which are documentation of the video tutorials. The ideal concept constructed for the online learning model for the practicum category, especially for the 3D Animation course, are: (1) a good communication strategy supported by relevant media; (2) A well-structured material delivery structure according to the material program per lecture meeting; (3) The use of software that is in accordance with the practical material; (4) the existence of supplementary materials such as modules.

FURTHER STUDY

There is still a lot of room wide open for further research in learning 3-dimensional asset-based animation. The research opportunities referred to can be in the aspects of methodology, material delivery techniques, or communication strategies.

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