

## Research article

# Designing Animated Infographics About Thesis Defense Registration Procedures

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**ORCID**Arif Sutrisno: <https://orcid.org/0000-0003-4093-1339>**Abstract.**

The procedure for carrying out the thesis defense continues to change in line with technological developments as well as the overall need for a more effective and efficient system. Many problems have occurred through this process of change. There is website-based information consisting of long texts of procedures and static infographics, but it turns out that these forms of media are not effective in conveying information that is easy to understand. Additionally, the design of these media is unattractive. Therefore, we propose an animated infographic design related to the thesis defense registration procedure. In this research, data were collected via a questionnaire and interviews with experts. The design stage included the steps of narrative concept, asset design, storyboard, animation, voiceover, editing and rendering to produce the final design result. This product was then tested through a questionnaire. The results of testing the previous media were then compared with the results of this media test. The findings demonstrated that the animated infographics significantly increased the understanding of lecturers and students regarding the thesis defense registration procedure. This was indicated by an increase in the results for the aspects of completeness, clarity, and attractiveness of information when compared to text media or static infographics. However, the animation video produced was very dependent on the combination of visual and sound elements, so that information was difficult to obtain when one of these did not function properly. Therefore, the next design stage will involve making a video that remains informative even in the presence of visual or sound disturbances.

**Keywords:** design, infographic animation, thesis defense, visualizing information

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## 1. Introduction

Thesis is a course that must be taken by a student in order to graduate from a university. Thesis is writing related to a certain topic to complete education in college or get a degree through university [1]. In general, thesis is a term used for doctoral level and below. The doctoral level is called a doctoral thesis or dissertation. Thesis is an important part of a student's track record in education.

To be able to complete a thesis, students must be able to complete the thesis defense stage as a form of accountability for writing their thesis. Each university has

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a different way of carrying out this thesis defense process. However, the procedure for implementing this thesis defense continues to improve along with the need for a more effective and efficient system. Technological developments also make the system evolve.

There are many people who are able to adapt to the new system. However, it turns out that there are many people who find it difficult to adjust so that the thesis defense process does not run smoothly. This is what happened in the Department of Art and Design, Faculty of Letters, Universitas Negeri Malang. Based on the author's observations, many problems occur, especially during the thesis defense registration process.

There are often procedural errors by students due to not being careful in reading the procedure. Students often do not understand the procedure which then makes them lazy to follow the procedure and act outside the procedure. This makes the system built into a mess. This causes misunderstandings and initiates conflicts between lecturers.

On the other hand, it turns out that there are still many lecturers who do not understand the procedure. When students ask about procedures, the lecturer asks the students to ask the department head. This disrupts the other work of the department head and adversely affects the department's performance.

This problem is also caused by the lack of utilization of information media for system socialization. Online media as the main medium for disseminating information has the advantage of being able to convey information through audio and visual elements. However, the procedure which is quite complicated is only presented in the form of reading text. There is infographic support, but the infographic elements do not yet illustrate the information clearly and completely. In addition, the department also has supporting facilities to convey information via videotron. However, this videotron is also underutilized to the maximum, the same as the department's website and social media.

The method of delivering system information is also less attractive. The information displayed is in the form of long text and is presented in a less clear and comprehensive manner. There is a visualization of supporting infographics, but the design is less attractive and does not clearly illustrate the information. This makes the reader tend to be lazy to learn and understand the procedure.

One of the media that can overcome this problem is infographic animation. Animated films have content that is adaptive to the needs and in accordance with the characteristics of the audience because it has an unlimited visualization model [2]. Based on the results of study [3] that animation and descriptive infographics are very effective to use for narration. This is also supported by the results of a study [4] which

proves that infographic animation is valid, practical, and effectively used in increasing mastery of concepts. The results of the study by Fandy Neta et al [5] showed that there was a significant effect on the learning algorithm subject when using the help of live shoot video media combined with animated infographics. In addition to being more dynamic, infographic animations can also be made into videos that contain elements of information in the form of visuals and audio. Animated infographics can be presented offline via videotron or online via social media. That way the process of disseminating information will be more effective. Therefore, this design attempts to create an animated infographic related to the thesis defense registration procedure.

## 2. Infographic Animation

Infographic animation is an attempt to bring graphic elements to life to convey clearer information through simulation. Animated infographics are also often referred to as motion graphics. Motion graphics are time-based visual media consisting of films and graphic designs [6]. The term was first used in 1960 by the famous animator, John Whitney [7]. The most obvious difference between infographics and animated infographics is in the element of movement. Infographics are static media while animated infographics are dynamic media. In infographic animation, the moving infographic elements form a simulation that can convey messages in a more representative and attractive manner so that the message is more easily understood by the audience. This infographic media is effective in conveying information through Two-dimensional animated elements with audio-visual media which is applied through the design concept and production process [8].

## 3. Method

The data collection method was carried out by conducting a questionnaire survey of students and lecturers regarding the information aspect displayed about the thesis defense registration. In addition, data was also taken through the interview process. Interviews were conducted through a consultation process with the department heads and parties related to the thesis defense registration activities to explore the problems and find out the details of the correct procedure. Interviews were also conducted with the department's website/social media administrator and the person in charge of videotron within the department to obtain detailed information media specifications that could be displayed. The problems are then collected and analyzed.

The results of the analysis of the problem become the basis for the creation of the concept of animated infographics made. This concept includes the concept of narrative, character design, asset design, property design, and storyboards. After the concept is created, it proceeds to the animation production stage. Various assets that have been created are then animated according to the storyboard instructions. After the animation process is complete, the dubbing process is carried out and includes various sound elements in each scene. The scene that already contains sound is then rendered. The rendering of each scene is put together according to the scenario in the storyboard and given complementary visual effects. After that, the results of editing scenes that have been put together are re-rendered into one complete video that is ready to be published.

After the product is finished, the process of testing the information media on lecturers and students is carried out. This process is carried out by collecting data through a questionnaire survey related to the information aspect displayed regarding the thesis defense registration. The results of this trial were then compared with the results of trials with the previous media and analyzed.

## 4. Result and Discussion

### 4.1. Data Search and Analysis

Based on the results of data collection, the offline version of the thesis defense registration information is considered incomplete by the respondents. On the other hand, the online version includes complete and even very complete indicators. The information presented through infographic media is not able to make the information clearer due to the limited information area. Therefore, if this information is made more dynamic, the level of completeness of the information can be increased the same as the online version of the thesis defense registration information.

From the aspect of clarity, on average, the offline version of thesis defense registration information is considered quite clear while the online version is less clear. This is due to the presentation of a lot of information without being followed by explanatory pictures so that the reader is forced to imagine his own situation. The imagined situation can be different and lead to misinterpretation. The presentation of information through infographics is clear enough because it manages to make the display of the information simpler and easier to read. Therefore, it would be better if the situation was uniformed so as to create a clearer and more equitable interpretation of information. In addition,

the presentation of information should also be simplified into a dynamic infographic model so as to create a simple but complete information display.

From the aspect of attractiveness, respondents tend to be more interested in seeing information in the form of infographics than just the written version. This is because in addition to a simpler infographic display, the use of supporting elements and illustrations such as colors and symbols of the procedure flow also makes it easier for readers to absorb information. This will certainly be more interesting if there are characters and assets that are clearly described.

The presentation of thesis defense registration information, both offline and online versions, will be better if it is presented in a dynamic infographic model. The situation in the procedure also needs to be standardized in the form of an illustration of the situation. The information displayed needs to be simplified but without compromising the essence of the completeness of the information. The information also needs to be added with supporting illustrations such as clearly depicted characters and assets.

From the interview results, problems related to the misinterpretation of information on the thesis exam registration procedure often occur. The offline version of the thesis defense registration procedure is no longer used. In the future, the exam registration system that will be carried out will follow the online version of the procedure. Maybe later it will only be different during the exam process. The correct sequence or procedure steps can refer to the faculty's website regarding the thesis defense registration procedure in the special menu of the Department of Art and Design. There the procedure is very complete so that it can be used as a reference for making the video. The use of characters that appear in the video should prioritize representative human characters with the conditions or process of registering a thesis defense. Show polite and rule-abiding agency values to set a good example for the audience. The addition of agency identities such as symbols and mascots is also needed, but their use is only as an introduction or an interlude, not the main element.

Video specifications supported on the web are in MP4 or OGG format. However, there is a limit on the size of files that can be uploaded on the web related to the ICT policy of UM as the main server provider. At least do not let the file size exceeds 150 MB. There are no special conditions for video dimensions. Regardless of the dimensions, later posts on the web can automatically adjust. If the size of the file or video to be uploaded exceeds 150 MB, it is better not to upload the file or video directly to the website. The file or video can be uploaded to Google Drive or Youtube first. Later, after uploading on Google Drive or Youtube, the file or video can be embedded into the

website page. The best recommendation is to upload it via Youtube so that the display and viewing of videos on the website is more optimal.

There are no special provisions for video specifications that can be played on Videotron. Basically all videos are supported. However, to make it look more optimal, the video format should be MP4. The video ratio is also 16:9 and the minimum video size is 720p. It is better if the video content can be understood without the audience having to listen to the audio. This is because the viewing of this video is in a public place so the sound of the video is often not heard.

## 4.2. Design Stage

### 4.2.1. Narrative Concept

The narrative concept refers to the thesis defense registration instructions which are presented through the department's website. This includes activity instructions before the exam, instructions during the exam, and post exam instructions. The concept of this narrative is also in accordance with the instructions from the department head.

### 4.2.2. Asset Design

Asset design includes the concept of character design, property design, and environment design. References used in asset design refer to real life conditions on campus. The visual type chosen is flat vector to facilitate the animation process and is more formal, making it suitable for the education sector.



Figure 1: Asset Design.

### 4.2.3. Storyboard

Storyboard is a visualization of each scene that has been described in the narrative concept.

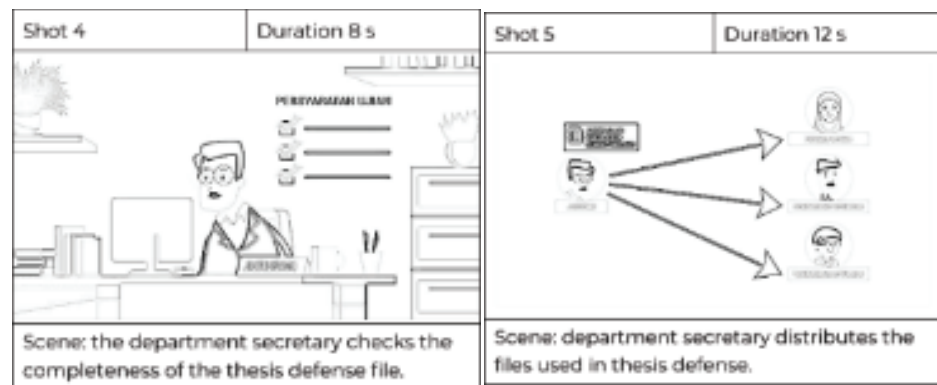


Figure 2: Storyboard.

### 4.2.4. Animation

The type of animation used here is computer animation. This type of animation is done using a computer from asset creation to sound and effects [9]. Animation is the stage of moving various asset designs according to the instructions in the storyboard. Animation is done for each scene. The animation results in the form of video cut scenes that have not been given sound.

### 4.2.5. Voiceover

The voice-over process consists of narration (dubbing), sound effects, and accompaniment music. Narration (dubbing) and sound effects are done by recording sound through an audio recorder. The results are then edited with a sound editor software. For music accompaniment using footage that is available free over the internet and free to use.

### 4.2.6. Editing and Rendering

The scene pieces are put together according to the series of scenes presented in the storyboard at the editing stage. In this stage, the visual elements are also combined with the audio elements and then the required visual effects are added. Finally, the editing

results are rendered according to the MP4 format specifications, HD 720p (1280x720 px) and 16:9 ratio. The results of this rendering are then used as test material.

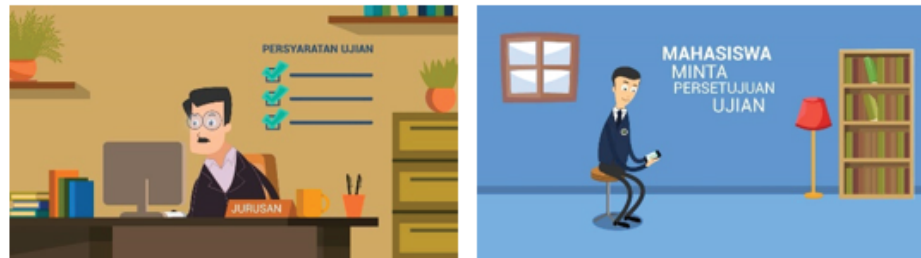


Figure 3: Design Result.

### 4.3. Testing

Based on the results of data recapitulation, the average respondent strongly agrees that the information displayed in the animated video is complete. When compared with information on infographic media or offline version of thesis defense registration procedure information, there is a significant increase in terms of completeness of information. However, when compared with the information on the online version of the thesis defense registration procedure, there was an increase of one stage, from initially agreeing (score 4), now respondents claim to strongly agree (score 5). This shows that the information video on the thesis defense registration procedure that has been made has increased the completeness of the information.

Regarding the aspect of clarity in delivering information, on average, respondents said they strongly agreed that the video was clear. This is shown from the graph, the highest is at number 5 (strongly agree). If it is related to the survey results on infographic-based offline exam information media, it can be seen that the status increase from 3 to 5 points. This shows that this video media is still clearer than the previous infographic media. Then, if it is related to the clarity of text-based information for online exam information, there is a very significant increase, from the initial value of only 2 to 5. From this it can be concluded that the video information media of the thesis defense registration procedure improves the clarity aspect of the information.

Now in terms of attractiveness. This video-based information media is considered very interesting. This is shown from the diagram which shows that on average the respondents admitted that they strongly agree that the video is very interesting. Compared to the results of the previous survey on infographic-based offline exam information media, there was an increase from the initial average score of 2 to a score of 5. On the other hand, when compared to the results of a survey on text-based online test information



media, there was a very significant increase from the initial average value of 2 to 5, which means that this video is much more interesting than text-based information media. Therefore, it can be concluded that the video information media of the thesis defense registration procedure increases the attractiveness of the information.

However, in the suggestion column, respondents also write down aspects of improvement so that the video becomes even better. These suggestions include the need to add information related to contact persons who can be contacted if there are obstacles in carrying out this procedure. Then it is necessary to add procedure text and procedure number sequences so that the visual power is stronger and able to cover the audio blurring when the viewing environment is full of sound disturbances. Then also small details such as animation and sound that are not presented properly.

## 5. Conclusion

The presentation of animated video-based information related to the thesis exam registration procedure turned out to be more effective. This is indicated by the increasing aspects of completeness, clarity, and attractiveness of information when compared to text media or static infographics. However, the animation video produced is very dependent on the combination of visual and sound elements so that information is difficult to obtain when one of them does not function properly. Therefore, the next design tries to make a video that remains informative even though there are visual or sound disturbances.

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