

## Multimedia Elements in the Motion Tracking Effect of Taekwondo Martial Arts Learning Media

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### ABSTRACT

Taekwondo is a modern martial art derived from traditional Korean martial arts. That is the art or type of self-discipline or Pencak silat that uses bare hands and feet. The basics of Taekwondo consist of a combination of offensive and defensive movement techniques that use the body to confront the enemy. With today's technological developments, providing taekwondo training materials may be more effective. Video media has the advantage of being easy to learn. You can play the video repeatedly and slow down to see the trainer. This tutorial allows users to see and practice taekwondo movements and sounds so users do not get confused. Taekwondo training is packaged in VCD format as a medium to be displayed via an LCD projector during learning. The development method for producing a multimedia system involves three stages: pre-production, production, and post-production. The testing phase is done by running the video on Windows Media Player and seeing if there are errors or not. If there is an error, it will be corrected, and if it has gone well, the process will continue to the next stage. At this stage, direct testing is carried out at the time of manufacture by seeing whether there are errors in the video or animation; when there are errors, they are corrected immediately. From the alpha test results, it can be concluded that motion tracking can run well on the art recognition media (Poomsae).

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## 1. INTRODUCTION

Taekwondo is a modern martial art originating from traditional Korean martial arts. That is the art or type of self-discipline or Pencak silat that uses bare hands and feet. The basics of Taekwondo consist of a combination of offensive and defensive movement techniques that use the body to confront the enemy. Taekwondo focuses more on kicks than punches. Kicking techniques are generally more complex than the hands, but kicking

techniques are the main because their strength is greater than the strength of the hand. With proper and correct training methods, the quality of kicks can be significantly improved. In today's Taekwondo, it is not just a self-defense tool. On the other hand, we believe that the Taekwondo Tournament will make Taekwondo a performance-oriented sport and further develop the possibilities through this martial art [1], [2].

There are many ways to learn taekwondo, but there are still drawbacks. For example, the picture book is not clear in the media and cannot be adequately practiced. The video only describes the movement, but there is no explanation of how the movement works, and you have to come to the taekwondo practice area [3].

With the development of today's technology, it may be more effective to provide taekwondo training materials. Video media has the advantage of being easy to learn [4]. This is undoubtedly very helpful for the growth of the human potential of Taekwondo participants. Watch videos to learn movement techniques. Movement does not have to be during practice; it can be done anywhere. In addition, you can play the video repeatedly and slow down to see the trainer. Media is "all forms and channels that can be used to present information. Media is a tool or method used as an intermediary to convey information (messages) and complete recipients of information to receive it [1], [5].

The advantage of multimedia motion tutorials is that it makes learning computers and speakers at home as additional audio support tools easier for users [3], [6]. This tutorial lets users see and practice taekwondo movements and sounds so users do not get confused. In addition, the basic techniques of taekwondo Pencak silat movements are also explained [1]. From the opinion of experts, it can be concluded that the media is a sub tool used to convey information to students as recipients of information designed to increase student interest in learning [7]. In the research and development carried out, Taekwondo training is packaged in VCD format as a medium to be displayed via an LCD projector during learning.

## 2. RESEARCH METHOD

The development method for producing a multimedia system involves three stages, namely pre-production, production, and post-production [8].

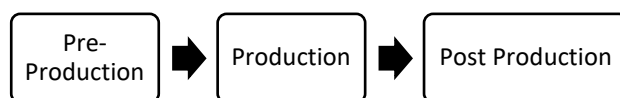


Figure 1. Suyanto Waterfall System Development Method

The series of activities carried out in the development of this system based on this methodology include :

## 2.2. Pre-Production Stage (Initial Process)

The pre-Production Stage is the stage of all work and activities before commercial multimedia is produced. We are planning well before production can save costs for commercial multimedia buyers [8].

1. Story ideas are ideas or thoughts that underlie the formation of stories in films, which is the most critical access because there is an exciting and promising idea, so film observers will be interested in seeing the films made [9].
2. A scene is a story script written in camera terms used as a guide for making a film [10].
3. Storyboard, a plot summary is a sketch of a film. Plot summaries are in the form of stills from successive films. Plot summary Usefulness is a basis for the design of motion of objects in the film. Describing summary board plots is generally done on a sheet of paper [11], [12].

## 2.3. Production (Manufacturing Process)

The production step is the process of making multimedia commercially, and in this step, taking pictures, recording sound, setting light, and selecting a camera [8]. In the production process, this is the step where the video creation process begins.

1. In this stage, the author uses Adobe Premiere CS6 software to edit the video and then uses Adobe After Effects CS6 for other touches [13], [14].
2. Music is used to emphasize the situation in the scene, while sound effects emphasize the expression of a scene. In addition to music and sound effects, this process will add voice actors as explanations in the video [15].

## 2.4. Post Production (Final Stage)

The post-production stage is the period of all work in activities that have occurred after creating multimedia is actually for commercial purposes. Post-production includes editing, giving special effects, recording sound effects, mixing audio and video, ordering or agency approval, duplicating, and submitting or broadcasting (for TV commercials) [8]. This stage is the last in the multimedia process that has been done previously, namely:

1. Rendering is also defined as the final step in editing, which results in an image displayed on the screen.
2. After all, stages have been completed, and the next step is to distribute the video to the general public using media such as YouTube, Instagram, and Facebook.

### 3. RESULTS AND DISCUSSION (11 pt)

Researchers used the Pre-Production, Production, and Post-Production methods to simplify making audio-visual media [8].

#### 3.1. Pre Production Stage

This stage is a process that is the initial work and activity before the audiovisual media is produced. So all the materials that will be used in the production and post-production processes are detailed and made initially to simplify the product manufacturing flow.

##### 3.1.1. Determining the Theme

Making media introductions that can attract early students to watch to find out about art moves (Poomsae) in taekwondo martial arts.





##### 3.1.2. Scenario Video Making

The media created is an introduction to art moves (Poomsae) in taekwondo martial arts to understand it easily.










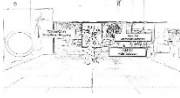



##### 3.1.3. Storyboard

A storyboard is a reference in making an audiovisual media because every need for video capture and effects and actions performed by the actors are all arranged in a storyboard [16]. At this stage, the application of Multimedia Elements is carried out [17].



Table 1. Storyboard

Scene	Board	Time	Description	Take Pictures
1		00:07	Name dan logos amikom	<i>Medium Shoot</i>
2		00:07	Name	<i>Medium Shoot</i>
3		00:07	Name dan logos	<i>Medium Shoot</i>
4		00:03	Name of Kick or Taeguek Movement 1	<i>Medium Shoot</i>

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5		00:15	First stage of Taegeuk 1	<i>Long shoot</i>
6		00:15	The final stage of Taegeuk 1	<i>Long shoot</i>
7		00:03	Name of Kick or Taegeuk Movement 2	<i>Medium Shoot</i>
8		00:15	First stage of Taegeuk 2	<i>Long shoot</i>
9		00:15	The final stage of Taegeuk 2	<i>Long shoot</i>
10		00:03	Name of Kick or Taegeuk Movement 3	<i>Medium Shoot</i>
11		00:15	First stage of Taegeuk 3	<i>Long shoot</i>
12		00:15	The final stage of Taegeuk 3	<i>Long shoot</i>
13		00:03	Name of Kick or Taegeuk Movement 4	<i>Medium Shoot</i>
14		00:15	First stage of Taegeuk 4	<i>Long shoot</i>
15		00:15	The final stage of Taegeuk 4	<i>Long shoot</i>
16		00:03	Name of Kick or Taegeuk Movement 5	<i>Medium Shoot</i>
17		00:15	First stage of Taegeuk 5	<i>Long shoot</i>

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18		00:15	The final stage of Taeguk 5	<i>Long shoot</i>
19		00:10	End of video	<i>Medium Shoot</i>

### 3.2. Production (Manufacturing Process)

At this stage, making videos from the beginning of the scenario to the final stage of production is by taking videos that will later be processed in the post-production stage.

#### 3.2.1. Opening video capture process

This process is done by giving the Indonesian Taekwondo logo a video effect.



Figure 2. animated logos

#### 3.2.2. Taeguk video shooting process

This process takes a few days, starting with taking Taeguk 1 to Taeguk 8 in more detail.

#### 3.2.3. Closing process

This process is carried out by providing closing credits and a video effect on the Indonesian Taekwondo logo.

### 3.3. Post Production Stage

Post-production is the final stage in making animation; after the video is obtained at the production stage, sound and other materials.

### 3.3.1. Video merge

The process of taking video on the storyboard is complete; next is merging the scene in the application. In addition to merging, sorting is done according to the storyboard according to the scenario flow.

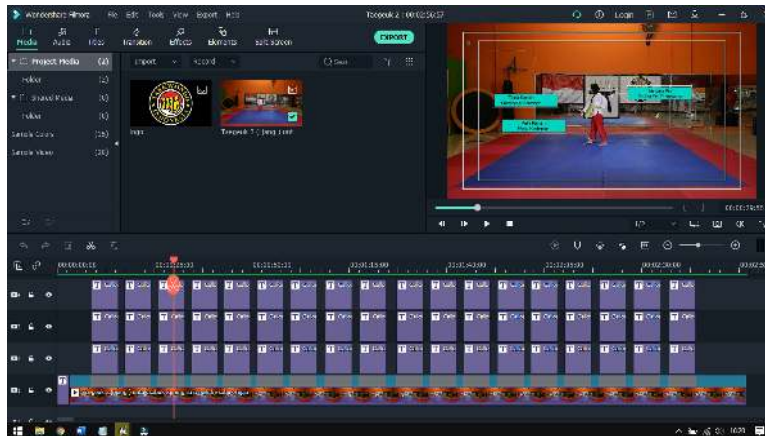


Figure 3. video merging process

Figure 3 is the process of merging videos carried out in the production stage process, then sorted according to the storyboard that has been made in the pre-production stage process.

### 3.3.2. Add Effect

The addition of video effects is carried out on several videos so that the delivery follows the needs of the scenario. The effect used is the Motion Tracker to detect the presence of a marker generated from the video made.

### 3.3.3. Add sound and music

After combining all videos and adding visual effects, next is the addition of sound and music to strengthen the attractive impression of a profile video.

### 3.3.4. Final result rendering





















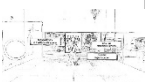



After the video, effects, sound, and music have been combined, the next stage is rendering. This merging process uses Adobe Premiere Pro, and the merge follows the storyboard that has been created.

### 3.4. Alpha Test















Alpha testing is a test carried out on software to ensure that the software can run appropriately according to the needs and expected goals [18], [19].

The testing phase is done by running the video on Windows Media Player and seeing if there are errors or not. If there is an error, it will be corrected, and if it has gone well, the process will enter the next stage [20]. In this stage, direct testing is carried out during manufacture by seeing whether or not there are errors in the video or animation; when there are errors, they are immediately corrected. The author carries this test, and the test results can be obtained. The results of this test have been summarized in table 2 of alpha testing as follows:

Table 2. alpha test

Scene	Board	Time	Description	Results
1		00:07	Name dan logos amikom	
2		00:07	Name	
3		00:07	Name dan logos	
4		00:03	Name of Kick or Taegeuk Movement 1	
5		00:15	First stage of Taegeuk 1	
6		00:15	The final stage of Taegeuk 1	
7		00:03	Name of Kick or Taegeuk Movement 2	
8		00:15	First stage of Taegeuk 2	
9		00:15	The final stage of Taegeuk 2	
10		00:03	Name of Kick or Taegeuk Movement 3	
11		00:15	First stage of Taegeuk 3	
12		00:15	The final stage of Taegeuk 3	



13		00:03	Name of Kick or Taegeuk Movement 4	
14		00:15	First stage of Taegeuk 4	
15		00:15	The final stage of Taegeuk 4	
16		00:03	Name of Kick or Taegeuk Movement 5	
17		00:15	First stage of Taegeuk 5	
18		00:15	The final stage of Taegeuk 5	
19		00:07	End of video	

#### 4. CONCLUSION

The basics of Taekwondo consist of a combination of offensive and defensive movement techniques that use the body to confront the enemy. With today's technological developments, providing taekwondo training materials may be more effective. Taekwondo training is packaged in VCD format as a medium to be displayed via an LCD projector during learning. At this stage, direct testing is carried out at the time of manufacture by seeing whether there are errors in the video or animation; when there are errors, they are corrected immediately. From the alpha test results, it can be concluded that motion tracking can run well on the art recognition media (Poomsae).

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