

Three Dimensional Animation of How to Breed Rabbit

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Abstract

Rabbit is one of the animal groups that is included in herbivore livestock that has been known by people beside of goat, cow, buffalo etc. Most countries in this world have rabbit livestock because of the rabbit has a high body adaptation energy that can make them live in most of the world. Some of the advantages of rabbit breeding are from the side of economic profits. Because of that, this research presents an animation of the way to breed rabbit well and correctly, because rabbit breeding is one of the beneficial activities or hobbies. Through media information which uses animation, the process of information delivery will be easier to understand rather than using oral or written form. Therefore, how to breed rabbit animation will make people know the way to breed rabbit well and correctly, that will serve as a three-dimensional form.

Keywords: rabbit, breed, animation herbivore

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1. Introduction

Rabbits are herbivorous animals called Truwelu in Javanese. They are farm animals known by people besides goats, cows, buffalo etc. In Europe, rabbit production is intensive on the use of different genetic types developed specifically for reproduction (mother's genetic type) or growth trait. In a typical pyramid type, this genetic type is a line of descent in the breeder selection and multiplication stage, whereas in commercial production, rabbits are usually crossed, missed the type of mother.

However, in the year of 2011-2017 rabbit cattle population in Indonesian, reached 1.20 million head (increase 8.93 %) [2] of the number of people which increased to 240 million people, this is a very high market potential and for sure the development of various businesses included in the labor sector. Many breeding rabbits develop after seeing the advantages and characters of breeding rabbits that have close proximity to results resulting in a high enough baby rabbits in a short period of time (per year) so as to be known as trade in meat providers.

In the previous research, the discussion about the cultivation of rabbits poured on the book. To attract the interest of the community especially instill to the children, we pack the way of rabbit cultivation using 3 dimensional animations. The 2015 Asia Animation Industry Report: The Trends & Opportunities Strategy explains the trends emerging in the Asian animation industry is the growing focus on local animated content production for television as well as animated film production. A number of Asian animation studios are essential to own and protect animated content by investing in intellectual property protection mechanisms. From the lack of population of rabbits in Indonesia it is the reason why finding out about rabbit cultivation is early on. To attract the interest of breeding since childhood, this learning is packed in the form of 3-dimensional animation. Where this animation has become a trend starting 2015. There was research using 2D visualization [3]. Other lessons are through remote video [4]. The use of three dimensional image sensors is also used in light imaging research [5]. The solution we offer, is a rabbit cultivation learning to increase rabbit production in Indonesia.

2. Research Method

2.1. Method of collecting data

Method of the research that is used by the researcher is action or known as action research. Literature research is a method in which the researcher will look for the resource from

books, paper or article that can improve the research. With this method the researcher can get information from many books related to animal husbandry.

2.2. Method of development multimedia

Methodology of development multimedia that is used in this animation is based on Luther development methodology [6]. There are six steps in conducting multimedia development; they are concept, design, material collecting, assembly, testing and distribution. The methodology as shown in Figure 1.



Figure 1. Multimedia development methods diagram [6]








2.2.1. Concept

To create three dimensional animation of rabbit cultivation it takes a rabbit as an actor. In addition, it prepares the environment used for the cultivation of rabbits. Pictures, texts, sounds, animations we prepare for the design process. The concept of this animation use storyboard. In the storyboard, it tells us the animated plot we will make from the process of growth, the process of marriage to childbirth.

2.2.2. Design

The purpose of this scheme is to specify the program architecture, style, views, needs, materials or substance in making this three dimensional animation. The design phase includes a storyboard created as a planning tool and should show how a three dimensional animation development proliferation of rabbits, Table 1 is a flowchart to illustrate the program flow chart.

Table 1. Storyboard of animation

No	Picture	Scenario	Duration (minutes)
1		Display the livestock's property and equipment	3
2		Selection the candidate of mother	2
3		Make a match of rabbit Mating of rabbit	2
4		Pregnancies of rabbit	1
5		Birth of baby rabbit	3
6		Treatment of livestock	4
7			1

2.2.3 Material collecting

Stages of collecting material that will be collected according to the needs of animation are processed as text, images, animation, sound, video about general information about rabbit cultivation. And collect materials or software used to create three dimensional animations.

2.2.4. Assembly

In this animation there are 3 characters made, those are small rabbits, big rabbits and breeders. In addition, the creation of supporting characters and storyline is in accordance with the story board. The making of these characters are using blender software. There are 7 scenes in this rabbit animation those are display of equipment, selecting female rabbit, matching male and female rabbits, rabbit marriage, pregnancy, birthing process, until rabbit maintenance.

2.2.5. Testing

The testing phase is done after the creation phase and all data and materials have been incorporated. The testing phase has a function to test if the result of making animation is in conformity with the design and animation needs to be expected. Most importantly in making animation is that animation made according to the design, and in accordance with user needs. After the user using the animation system user is expected to experience the convenience and benefits of three dimensional animation system that has been crated [7].

2.2.6. Distribution

Distribution has been done to introduce the animation of rabbit cultivation, among others, provide counseling about this animation to children and ranchers in general.

3. Related Research

Related research on animation discusses the introduction of Indonesian butterfly metamorphosis. In this research butterfly metamorphosis learning still uses the media in the form of images contained in the books, it is considered less effective because it can only be seen on the picture which is died, rigidly memorable and less interesting. By using Animation technology it is expected in the learning of butterfly metamorphosis it can be more interesting, modern and easier to get information in the learning process. This animation was built using Adobe flash as a media design. The method used in the manufacture of animation application of Indonesian butterfly metamorphosis is literature research method and multimedia development method of Sutopo version. The end result of the construction of this animation is as a medium of learning butterfly metamorphosis in the form of a more interesting and modern animation that is made by using adobe flash [8].

Augmented Reality is an environment that includes a three dimensional object in the real world in real time. In this research, it will be implemented a product Catalog into the AR technology PT Djarum, product Catalogs Djarum So this could be real with three dimensional Object of cigarette products. This application is an application that runs on the Android platform and built in Unity program. This application is a video stream captured from camera Android smartphone as a detector input source, then this application will detect and track marker each product [9].

The purpose of this research to determine the effect of the use of animation media on learning outcomes and motivation to learn materials automotive electrical systems. The quasi-experimental research used nonequivalent control group design. The number of respondents is 63 people. The instrument of data collection of learning outcomes is a test, and the instrument of learning motivation data collection is a questionnaire. The data were analyzed with parametric statistic which is t-test with independent sample of t-test technique and the further test is with Scheffe test. The results shows that is there is a significant influence of the use of animation media to the learning outcomes and motivation of learning materials on automotive electrical systems in student class X TKR in SMKN 1 Seyegan, shown by the results of learning and motivation of students taught by animation media which is higher than the results of learning and motivation Learning students that are with power point media [10].

As part of a captive-breeding program to restore extirpated Columbia Basin pygmy rabbits (*Brachylagus idahoensis*) to their native habitat in Washington, we documented mating and parental care behavior of these lagomorphs, which was previously unknown. Pygmy rabbits

were bred from late February through early June, and mating behavior consisted of chasing and brief copulations. Although presented with 1–4 mating partners and 1–6 mating opportunities annually, only 74% of females became pregnant each year. Unlike other lagomorphs, females dug a 16- to 35-cm natal burrow, usually separate from the residential burrow system, an average of 13 days after a successful copulation. Twenty-four days after copulation, females gave birth to 2–7 young at the entrance of the natal burrow and then covered the entrance. Females returned to nurse 1 or 2 times per day, until young emerged from burrows about 15 days after birth. Females averaged 1.3 litters per year, rarely (2%) producing 4 litters. Except for digging a natal burrow, mating and parental care in pygmy rabbits is similar to that of other lagomorphs. Understanding reproductive behavior is critical for captive breeding and reintroduction of pygmy rabbits, and efforts to reduce the consequences of genetic bottlenecks and inbreeding in captivity [7].

4. Result and Discussion

4.1. Concept

In accordance with the concept that has been discussed, the characters are made according to need. Furthermore, the animation making is in accordance with the story board.

4.2. Character Design

The design of characters in this animation includes the design of rabbit characters, breeders and the environment. In the making of rabbit characters, breeder and the environment using a blender application in accordance with the reference used. This is illustrated on Figure 2-4.



Figure 2. the character of a rabbit



Figure 3. the character of a breeder



Figure 4. Design of animal husbandry environment

Process of making object is made using Blender software. To make the object become three dimension the steps are as follows; open Blender application then click in menu bar: Add >Mesh>(choose base object: Plane/cube/circle/etc.), after choosing the base object the next step is enter to the edit mode part. The steps are right click in the object>then look to the menu bar then>click "Object Mode" change with Edit mode (or right click in the object then push "Tab" on the keyboard). Then change the object as the requirement. This process is like shown at Figure 5 and 6.

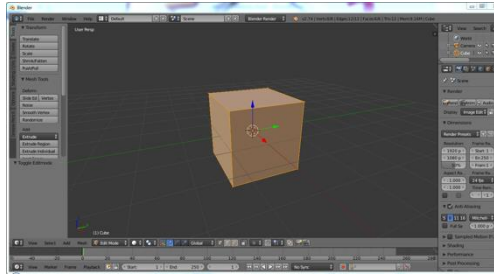


Figure 5. Stage of making object



Figure 6. Stage of Erecting a Framework (Rigging)

Figure 7 is an object which is given function of erecting a framework to make object move. The step is in menu bar: Add>Armature>Single bone, right click on the bone then push “Tab” in the keyboard to enter to the “Edit mode” on the bone.



Figure 7. Stage of actuating character

The step to make the character move is: in menu bar on the top section, change “default” with “animation”>turn on the red circle on the bottom section then choose “LocRotScale” the objective is to record all of the bone that you move as shown at Figure 8.

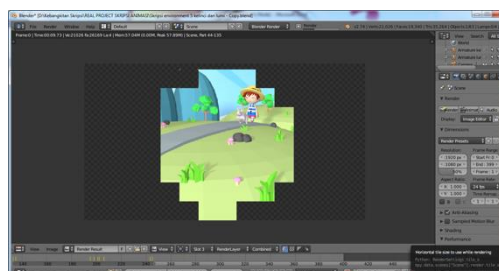


Figure 8. Stage of Rendering

The object that has been actuated is then combined to be one data which has picture format (PNG) as illustration on Figure 9, the purpose is to make the rendering process of rendering the three dimensional animation process become faster and lighter. Then the result of that picture will be imported and combined again to be a data with video format (AVI).



Figure 9. Stage of Video Editing

All of the render data from the animation object is imported to be file with video format (MP4), in this stage the researcher added the effect of transition, tone of instrument, and lighting to make the display of animation become interesting and more alive. In this stage video editing is done by using software Camtasia Studio 8. The illustration on Figure 10 displayed and explain about breed's properties.



Figure 10. Implementation

As illustrated of breeds characteristics on Figure 11. It explains about the characteristics of the healthy rabbit that will become a candidate of mother.



Figure 11. Breed characteristics

It shows two rabbits, female and male which make a match as shown on Figure 12. The rabbit pairs are separated into different cages. After the male and female mothers are selected, the next cultivation process is to marry both rabbits. The trick is to unite the male and female bunnies. Figure 13 shows both rabbits being inserted in one enclosure. Figure 14 shows and explains about the pregnant rabbit and the characteristics. Where when a pregnant rabbit will feel anxious and appetite increases.



Figure 12. Rabbits which make a match

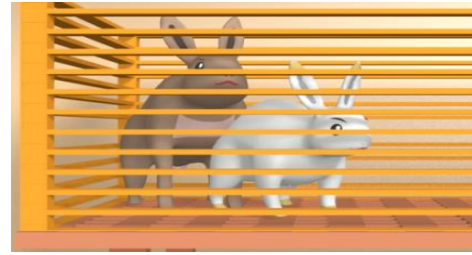


Figure 13. Rabbits put in one stable

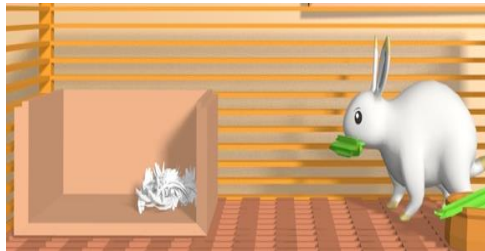


Figure 14. Pregnant rabbit

Figure 15 shows the birth of a rabbit. Typically, the rabbit bore 4-6 children of rabbits. It Depends on the seeds of rabbits that are mated. After that the female rabbit parent is separated from the rabbit's child. This is done so that the female parent can be re-prepared by the breeder to be mated again.



Figure 15. The birth of bunny

Figure 16 explains about the way to give treatment to rabbit, it includes giving meal until to keep the cleanness of stable. At this stage, the rabbit parent is separated with the child. This is done so that the parent.



Figure 16. Way to treatment rabbit

From the animation of rabbits can be used to learn the cultivation of rabbits. In the animated packaging that has been made by researchers in an interesting form, children who became the purpose of this research can develop a rabbit. The future will cultivate rabbits.

5. Conclusion

In developing three dimensional animation, we have successfully made people especially animal lovers interested in maintaining and cultivating rabbits, in addition researchers make three dimensional animation how to cultivate rabbits in the funny form, to attract the attention of children to learn the cultivation of rabbits. Researchers have made three dimensional animation how to breed rabbits in the form of videos that can make children and breeders more easily learn about breeding especially rabbits. Based on the questionnaires that we disseminate to the target children, this study has a positive impact. Compared to the questionnaire before the study, the involvement of children in rabbit breeding increased to 63.75% of the total respondents 76 children.

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