

# Historical role-playing game application of Sunan Ampel

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**Abstract.** Sunan Ampel is a religious figure and one of the legendary members of Walisongo in Surabaya even on Java. The history of Sunan Ampel is rarely known by the public or even very little information is known about him. This is because the existing references are still limited, difficult to obtain and not interactive. Therefore, we need media that can describe the history of Sunan Ampel interactively and not based on textbooks. This can be overcome by developing game-based Sunan Ampel historical applications. This game is built with two-dimensional characters and the genre of Role-Playing Game. There are 3 phases in the history game Sunan Ampel, namely: the phase in Wonokromo, the phase in Yellow Flower, and the phase in Ampel. Some NPCs are involved such as some wild animals, residents, Kibang Kuning and Prabu Brawijaya. The black box testing of interface and game design results show that all game features are running well on desktop platforms and the games storyline has illustrated some of the history of Sunan Ampel.

## 1. Introduction

Indonesia is a country with the largest Muslim religion in the world [1]. At present the number of Muslims in Indonesia is estimated that the number reaches 207 million people [2]. Indonesia's densely populated western regions generally have a greater number of Muslims than eastern Indonesia. Because trade has a high role in the process of spreading religion, the islands that are close to the trade route receive more influence. Muslim traders played a major role in the community and even developed the political power of Islam in those days. [3] The spread of Islam in Java was carried out by Walisongo, which means Nine Wali, consisting of nine sunan. One of them is Sunan Ampel. Sunan, as the first to spread Islamic teachings in Java, started from Surabaya. History is not just a symbol, but history can play a role in strengthening the solidarity of a community [4]. In account of the past, humans have the right and obligation to give meaning so that history as an event becomes history as a story, history as writing, which has a basic principle as a science [5]. History as a story must be based on true facts [6]. Along with the increasingly complex national journey, the Indonesian nation has historical concern and awareness of its own people [7]. On the other hand learning media are also important to note in order to facilitate understanding of the material, especially history. Learning media are tools and techniques used as intermediaries for communication between teachers and students [8]. Learning media are used to build effective communication and interaction between teachers and students in the learning process at school. According to Gagne and Briggs, learning media is a tool that is physically used to convey the contents of teaching materials in the form of: books, tape recorders, cassettes, video cameras, video recorders, films, slides, photos, pictures, graphics, television, and computers [9]. One of the learning media that is currently becoming an idol is game. Games are software that has artistic, sound and game value in them [10]. Meanwhile, according to Gold, the game is a collection of objects and rules that



contain stories to be told and resolved with the character as the main user [11]. In this problem the existing game is generally directed to be an educational game in order to provide benefits for the players. According to Andang Ismail, educational games are very enjoyable activities and can be educational ways or educational tools [12]. Meanwhile, according to Nur Aliya Hafid, games that are applied in the world of education are known as educational games [13]. Each game has a type, the type of game is a description of the game being played [14]. One interesting game genre is Role-Playing Game. According to Bowman, Role Playing Game is a game that gives people the opportunity to actively take roles in the game according to their expression of identity, explore their game which has been adjusted in the rules and needs of their role in everyday games [15]. Role-Playing games are games that provide freedom of choice and flexibility because a user controls the game [16]. According to Henrisken, Role-Playing game is a medium in which a person through his role and the world in which he plays a role is given the opportunity to participate and interact with content in that world [17]. Role-Playing games are what are created in user interactions or between users and game managers in a clear framework [17].

Therefore, the authors propose research on the educational game history of Sunan Ampel's life since arriving in Surabaya which tells about how Sunan Ampel built a new civilization of the Ampel community in Surabaya based on Role-Playing Games.

## 2. Related works

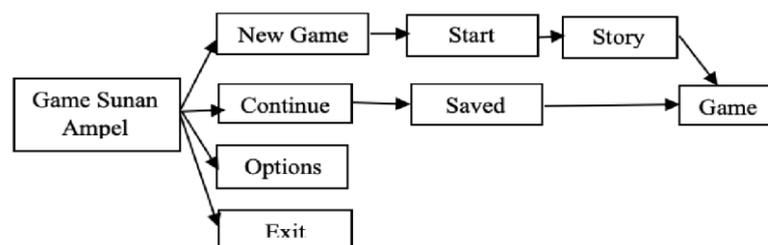
There are several related studies which have similarities with this proposed research. Nyimas developed a type of mobile game that illustrates the story of Uthman bin Affan's best friend by taking the main topic of the well that Uthman bought for the needs of the Muslims [18]. Furthermore, there is another research with the theme of developing puzzle games for learning organs using the K-nearest Neighbor algorithm. This game is desktop based using virtual mannequins [19]. David also developed a first person shooter game using virtual reality technology that provides learning about the history of the war of November 10, 1945 [20]. The research developed by this writer is a historical learning game sunan Ampel with a type of Role-Playing Game that is different from some pre-existing learning games.

## 3. System design

This game about the history of Sunan Ampel in Surabaya is a role-playing game. There is a historical story of Sunan Ampel that will be displayed in a different and pleasant form. So that the player will understand the story and figure of Sunan Ampel indirectly. In this game the player must complete the mission by interlude the story provided. With this game, the author hopes to help players to understand the history of Sunan Ampel in Surabaya.

### 3.1. Menu diagram

This game has several menus, namely: New Game, Continue, Options and Exit. The "New Game" menu displays the game from the start and shows the story. "Continue" menu plays back the level that has been done. The "Saved" menu is a choice of which stage has been played. The "Options" menu contains settings for background music. The "Exit" menu is selected when the player chooses to leave the game. The menu structure is shown in the following image.



**Figure 1.** Menu structure.

3.2. *Parameter curves*

There are several curves parameters used in this game, namely health points (HP), magic points (MP), Attack, Defense, Agility and Luck. HP or health points determine how much damage the character can receive before being eliminated from battle. MP or magic points, are used to determine how many skills or magic a character can have. Attack visualize how much physical damage can be given to enemies at a certain level. Defense visualizes how much physical damage the character can receive at a certain level. Agility or Attack Speed determines whether the attack missed or right on target. Luck visualizes that the higher the luck level, the greater the chance of getting a certain state.

3.3. *Storyline design*

The detailed storyline design is shown in the following table including the story and pictures.

**Table 1.** Storyline design.

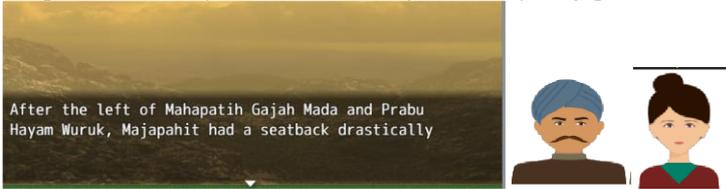
<p>Introduction Story</p>	<p>Majapahit Kingdom after Mahapatih Gajah Mada and Prabu Hayam Wuruk left a drastic setback. The kingdom was divided because of a civil war. And many dukes are not loyal to the descendants of King Hayam Wuruk, King Brawijaya. No royal taxes and tributes reached the palace of Majapahit. More often enjoyed by the dukes themselves. This makes the King saddened. Even more so with the bad habits of the nobles and princes who like to party pre and play gambling and drinking. Prabu Brawijaya is well aware that if this kind of habit is carried on the state / work will become weak and if the kingdom has lost power how easy is it for the enemy to destroy Majapahit.</p> 
<p>Chapter 1</p>	<p><i>The player will play the role of one of Raden Rahmat's students.</i>  <i>After passing through the Kriyan area, the group entered the Wonokromo area which is still in the form of a forest, the group faced a blocking wild animal. There is a quest that if successful, will get Potions.</i>  <i>Mission: fight wild animals and look for potions.</i></p> 

Table 1. Cont.

<p>Chapter 2</p>	<p>Enter Kembang Kuning area. While in this area the group met with Ki Wiryo Saroyo or Ki Bang Kuning. While living at the residence of Ki Bang Kuning, Raden Rahmat married Ki Bang Kuning's daughter named Mas Karimah and had two daughters named Mas Murtosiyah and Mas Murtosimah. There, Raden Rahmat built a mosque and spread Islamic propaganda to the public. Many people in Kembang Kuning do irrational things. Mission: player traces the area, player will also interact with other characters.</p>
	
<p>Chapter 3</p>	<p>Raja Majapahit sent a Duke of Surabaya to place Raden Rahmat in the Ampel area. And gave the title to Raden Rahmat as Sunan Ampel. Raden Rahmat started to build a mosque in the Ampel area which at that time was still a swamp. In the Ampel area, many players meet residents who still worship the jinn and perform ritual offerings. Mission: look for citizens who commit crimes and fight it</p>
	

3.4. User interface

The journey in this game contains a lot of dialogue between players and other Non-Playable Character (NPC). Interface dialog and Turn Base game as shown in the following.



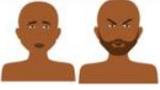
Figure 2. Dialog and turn base game.

3.5. Level design

The design level of the Non Playable Character and its curves parameters is shown in the following figure.

Pig		HP: 30 MP: 30
Rhinoceros		HP: 40 MP: 40 Rewards: exp: 6 Gold: 2 Drop items: Bow
Tiger		HP: 50 MP: 50 Rewards: exp: 4 gold: 4 Drop items: potion, magic water
Lion		HP: 45 MP: 45 Rewards: exp: 3, gold: 5 Drop items: Knife

(a) Wild Animals

Villager		HP: 50 MP: 50 Rewards: gold: 10 Drop items: Herb, stick
King Brawijaya, Kibang Kuning,		

(b) Human

Figure 3. Non-playable character.

3.6. Finite state machine as artificial intelligence for non-playable character

The following is a picture of AI for NPC wild animals.

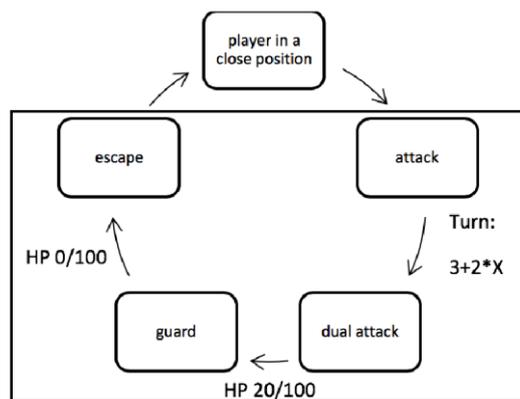


Figure 4. FSM for wild animal.

4. Testing and result

The test is carried out using the Black Box Testing approach. The results of the trial are shown in the following tables.

Table 2. Black box testing for general parameters.

General Parameters	Condition	State
Wild Animals Character	Wild animal character animals available and playing in the game	Valid
Human Character: Sunan Ampel, Ki Bang Kuning etc.	Human character available and playing in the game	Valid
Environment Character	Environment available and supporting game	Valid
Gameplay of RPG	Gameplay could be played as RPG	Valid
FSM NPC	Behavior NPC based on FSM	Valid
Playing Menu	Menu can be played as menu design	Valid
Running All Chapters	All chapter can be played well	Valid
Android Deployment	The game can be deployed into android form	Not Valid

All the general parameter running well except android development.

**Table 3.** Black box testing for believable character.

Believable Characters	Condition	State
Behavior Tiger	Tiger have intelligent behavior based on FSM	Fulfilled
Behavior Rhinoceros	Rhinoceros have intelligent behavior based on FSM	Fulfilled
Behavior Lion	Lion have intelligent behavior based on FSM	Fulfilled
Behavior King Brawijaya	King Brawijaya have intelligent behavior based on FSM	Fulfilled
Behavior Ki Bang Kuning	Ki Bang Kuning have intelligent behavior based on FSM	Fulfilled

## 5. Conclusion

The conclusions of this study are as follows:

- Base on Black Box Testing, all features in the game include: gameplay, 2D characters, story chapter implementation, FSM of NPC's running well.
- The story in the game is still simple yet reach the whole story of Sunan Ampel

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