

Design of Sundanese Script Through Android Based Interactive Game Applications

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Abstract. The purpose of this research is to utilize the latest android-based technology to introduce the Sundanese script to the public. so, this design can be used especially in the preservation of Sundanese culture which is judged by the development of the current era which has begun to be abandoned. Sundanese script with the concept of this android-based game to introduce the basics of Sundanese script as learning that can be used every day. Therefore, people can master the standard Sundanese script by using different methods and experiences for those who wish or find it difficult to absorb material using conventional methods. The research method used is descriptive qualitative with a project design process approach, data collection, and analysis to design. The results of this design through the method used starting from data collection to design, in the form of an android-based application prototype design that can be used directly. So that in this study it can be seen the use of technology is used as a learning media solution which is considered easy to use and can be useful for the community.

1. Introduction

The script is a cultural element in the form of a sign that is used by the community as a means of communication. According to Baidillah, the script in Indonesia was born from the influence of Indian culture with artifacts such as inscriptions, ancient manuscripts, and copper plates as evidence [1]. One of the tribes who know the script from the first is the Sundanese. According to Ruhaliah, the ancient Sundanese script was the result of the development of the Cacarakan script which was born from the influence of the Mataram kingdom, and the Pegon script which was born from the influence of the development of Islam in the archipelago [2]. Baidillah also stated that the Sundanese script had disappeared due to various factors and was revitalized by Sundanese script experts who gave birth to the standard Sundanese script [1]. Even so, the standard Sundanese script has a writing system that is different from the system that people know, so there will be difficulties in applying it in everyday life. According to Fatoni in Putra, this different writing system has an impact on the Sundanese people who are not very familiar with their ancestral script [3]. In addition, based on the results of research conducted by Widyanda, people only recognize Sundanese script without mastering it properly [4]. This is evidenced by the phenomenon that had occurred in the writing error of the Sundanese script on the Bandung City Bus Bandros in 2016 and has remained wrong until now, as shown in Figure 1 below:



Figure 1. Error in Writing Standard Sundanese script

The efforts that have been made by a group of literacy activists named 'Aksara Di Nusantara' (ADN) in maintaining the Sundanese script can be said to have not been maximized. According to 'Aksara Di Nusantara', products made such as infographics, fonts, and images that were released for free in the end did not reach the general public. This product is only used by character lovers. Another effort is the distribution of Sundanese script applications for free on the Play Store, but most applications provide the same method. Although these efforts already involve the use of technology, new development or breakthrough is needed in the effort to maintain the Sundanese script. If left unchecked, this problem will have an impact on the loss of the original Sundanese cultural identity, namely the forgetting of the Sundanese script, the elimination of Sundanese language subjects such as in the 2013 KTSP, and the lack of education for the next generation of Sundanese script. In addition, Nahak stated that the impact of globalization can also fade a culture if it cannot survive [5]. A culture will be easily influenced by other cultures if the community accepts it continuously. According to Kurniawan, cultures that cannot survive will undergo a process of fusion with other cultures or even undergo a process of elimination [6].

To overcome this problem, we need a method that aims to preserve the Sundanese script. However, to adapt to the times, new and different methods are needed in order to reach other groups who have difficulty in learning Sundanese script, such as the use of technology commonly used by the community, namely smartphones. In addition, using new methods can also find new findings that can be used in people's daily activities.

Based on the strategies that have been carried out in maintaining the Sundanese script, this design will be made with a different method than the one that has been made before. Among them is a way of presenting information designs that integrate video games based on Android as a new and different maintenance method to adapt to the times [16]. In addition, the design involves other disciplines ranging from visual communication design, and informatics engineering, to the art of music which will later be packaged with other elements that cannot make users get bored quickly such as illustrations, music, and stories. In practice, in this study, the researchers used descriptive qualitative research methods with the results in the form of a prototype design.

2. Method

In this study, researchers used a qualitative method that is interpretive. The researcher describes the process of the research method used, including collecting data, studying literature, and also testing the results of the applications made. In this case, the researcher interprets the process carried out starting from what is seen, heard, and understood which is expressed in the descriptive form [7] in other ways, as stated by Denzin and Lincoln in Lexy Moleong's book that the output of this research is in the form of interpretation phenomena that occur [8]. Of course, the results of this research are in the form of a prototype design. Researchers determine the target of this design is intended for adolescents aged between 13 years to 16 years, with a regional scope in the province of West Java.

The media used by researchers in the results of this design will be based on Android, where the targets will use their respective smartphones in using the applications made. This is because the researchers conducted a technical consumer journey with the majority of point of contact results using smartphones, as shown in table 1 of the consumer journey below:

Table 1. Consumer Journey

Time	Event	Place	Point of Contact
Morning	Wake up, worship, shower, dress, have breakfast, open your smartphone, and go to school.	Room, dining/family room and street	Toiletries, smartphones, TV, clothes, bags, shoes, calendars, cutlery, vehicles and billboards.
Midday	Study, rest, worship, eat, hang out with friends, and open your smartphone.	Schools, classrooms and canteens.	Whiteboards, books, stationery, bags, smartphones, and calendars.
Afternoon	Gather with friends, play, open smartphone, worship, and go home	Gathering places and highways	Smartphones, billboards and vehicles
Night	Rest, play smartphones, watch movies, have dinner, worship, study or do assignments, play, and sleep.	Home, bedroom, bathroom, living room and dining/family.	Smartphone, TV, cutlery, books, laptop, bedding

3. Results and Discussion

The media used is an Android-based video game application containing standard Sundanese script material in it. According to Surachman, video games are one of the interactive multimedia that causes reciprocity because it is the result of a combination of elements such as video, audio, text, images, and others [13]. This is determined because the design is combined with an interactive experience, so users will more easily remember information.

3.1. Communication Strategy

To support the design objectives, a strategy is needed that includes the objectives and the communication approach, the following are the objectives and the communication approach. The message material that will be presented is about the basic material of the standard Sundanese script as well as the quizzes. According to Gloria in Harade, information involving illustrations will not make users bored quickly so the design will be made using the illustrated story method [9]. According to Purwati, the way of writing by adding language style will give a certain sense so that hyperbole and personification are used in story writing [10]. The design uses Indonesian as the storyteller in large portions, Sundanese quizzes with a moderate portion in the quizzes, and English in small portions in some GUI elements. The visual reference used is the pixel art technique in gameplay to facilitate technical creation as well as application optimization and digital painting on cutscenes to accommodate images that need to be emphasized more clearly. According to Karlina, there are messages that can only be conveyed through voice [11]. So, to complete the message or feeling conveyed, several types of audios are used in the game from game music to sound effects.

3.2. Creative Strategy and Media

In providing learning material, a strategy is needed that can still attract attention. Here is a creative strategy used.

3.2.1. Copywriting

To make an article interesting, persuasive wording is needed. Because according to Hendrawan, interesting writing can convey messages effectively and creatively [12]. The main title chosen was 'Siloka Aksara' with the sub-title 'An Adventure of Sundanese Script'. The word 'Siloka' means 'symbol' or 'cannot be interpreted directly'. The use of sub-headings is needed to clarify what the main title has not conveyed.

3.2.2. Visual Design Concept

This design is presented with bitmap-based images with pixel art and digital painting visual styles. The pixel art style was chosen in the gameplay to facilitate technical production as well as application optimization, an example is shown in Figure 2 below:



Figure 2. Pixel Art 'A Space for The Unbound'

Meanwhile, digital painting on cutscenes was chosen to accommodate images that need to be seen more clearly, for example in Figure 3 below:



Figure 3. Digital Painting

3.2.3. Storyline

The storyline is made based on a story that is engineered to be able to adjust the stages of the standard Sundanese script learning material. The following is the sequence of the scenes made, as shown in table 2:

Table 2. Storyline

No	Scene	Note
1	logo opening & bumper	
2	When she came home from school, Aksa was sitting looking at her necklace. His friend called to immediately leave for group work to a friend's house. Aksa got up from the table and left the classroom.	Prologue, in class, after school.
3	It was raining and Aksa rushed to run with her friend. However, when crossing the bridge, Aksa saw someone was drowning and needed help. Aksa unbuttoned her uniform and unconsciously jumped into the river.	Bridges and Intros.
4	Aksa began to regain consciousness. However, Aksa was surprised that she was in a different place. Aksa is surrounded by a stone wall that looks ancient with writings that Aksa recognizes, namely the Sundanese script.	Another world and in a temple.
5	When confused, Aksa was approached by a large bird. The big bird thanked Aksa because the bird felt lonely. Aksa was surprised to see the bird suddenly speak.	In the temple and the appearance of Dadali.
6	The bird introduces itself as Dadali.	In the temple.
7	Aksa saw stones inscribed with Sundanese script in front of them.	In the temple, the first puzzle game.
8	On their way out, Aksa and Dadali heard echoes of voices thanking both of them.	Outside the temple and the appearance of Karuhun.
9	Aksa is guided by Dadali to the next rescue site.	Gameplay and stages of ngalagena.
10	When Aksa rescued the animals from the second cage, there was an earthquake as well as the echo of a giant anger.	Gameplay, rarangken round.
11	While rescuing the remaining animals, the roar grew louder and closer.	Number round, swara, and final boss.
12	After finishing defeating Buto Ijo, suddenly the surroundings became alive. Dadali and other animals thank Aksa.	The ending and appearance of Sri Maharaja Tarusbawa.
13	To return to his world, Tarusbawa asked Aksa to lift his necklace in the cauldron that Tarusbawa pointed to. The gate with the dazzling light opened.	Ending
14	Suddenly, Aksa was unwittingly already in her world, when Aksa walked with her friend on the bridge.	The ending and the world of origin.

3.2.4. Storyboard

To clarify the description of the storyline, storyboards are made from existing storylines. The storyboard is a rough picture arranged according to the storyline. In the preparation of the Siloka Aksara storyboard, the goal is to regulate the direction of the concepts and stories that will be designed. This storyboard will make it easier for researchers to design before entering the other stages. The following is a storyboard of 'Siloka Aksara' The storyboard design is arranged according to the order of the storyline by using digital sketches as in the example in figure 4 below:

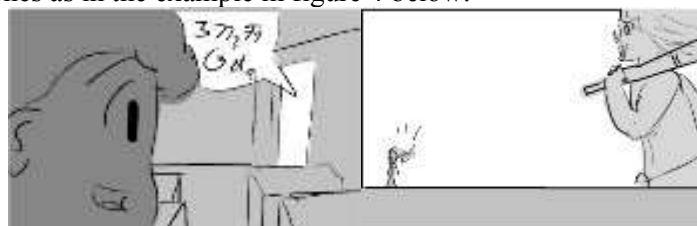


Figure 4. Storyboard example

3.3. Concept Design

The design format used in this is made with a 16:9 aspect ratio format, .apk format, 24 fps framerate, 1920x1080 px screen resolution, and C# script. The aspect ratio and resolution were chosen as a way to accommodate various smartphone screens because this resolution is the HD resolution that is commonly used in every application design. The framerate was chosen so as not to burden the Android system when running this application because it can lighten the load time of each asset created because there will be many assets that will be loaded in the application. C# scripts are built into the Unity software to incorporate all the programming that will be used in later video games.

3.3.1. Layout

Spatial and diegetic layouts are used in this design. According to Fragerholt in Babu, spatial layout is a layout whose UI is not recognized by game characters, while diegetic layout is a layout whose UI is recognized by game characters and players but is visible to players in the game area [14]. One example of a spatial layout is in the Resident Evil 5 game and the diegetic layout in the Dead Space game, in the figure 5 below:



Figure 5. Spatial Layout Example

So that the layout structure used on the main menu page uses a layout dominated by illustrations. The buttons available in the main menu are the 'start', 'material', 'credits', and 'exit' buttons, as shown in the figure 6 below:



Figure 6. Layout Main Pages Menu

Examples of the use of layouts are also presented on the story page using a layout consisting of image elements and dialogue text. On the side of the dialogue text, there is an area for the avatar, which is a visual of the character who is delivering the dialogue. The layout of the story page is dynamic, meaning that the placement of narrative text and dialogue may change to match the illustration, the layout used on other pages has also been adjusted. in the figure 7 below:



Figure 7. Layout Story Pages Menu

3.3.2. Typography

The main title 'Siloka Aksara' uses the Paytone One typeface because it has characteristics similar to the TG Siloka Sundanese typeface, The Paytone One typeface itself is free as stated on fonts.google.com. The TG Siloka Sundanese typeface is a standard Sundanese script type of Sans Serif type combined with a geometric circle shape, thus creating a contemporary impression and still has an exotic impression, TG Siloka Sundanese is a typeface created and owned by @tegamitype. This typeface is free to use on condition that it includes the source or designer. The typeface for body copy uses the Amaranth typeface which is available free at fonts.google.com. The selection of this typeface is based on the similarity of characteristics with the Pay tone One typeface, but has more styles so that it has the freedom to design body copy, all types of text used have been adapted to design needs, here are examples of fonts used in The TG Siloka Sundanese typeface in the figure 8 below:

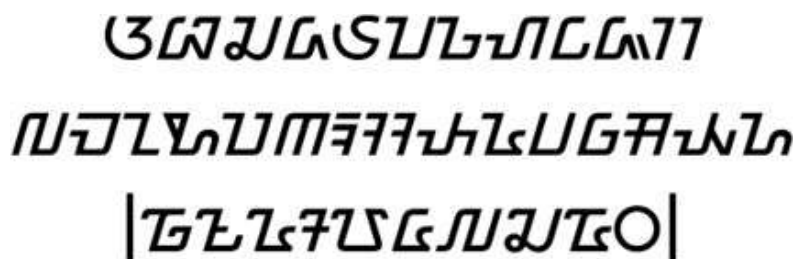


Figure 8. TG Siloka Sundanese Typeface

3.3.3. Illustration

In order for the story to be easily conveyed, illustrations are needed to help convey information. The visual design uses references from the illustration of the video game 'A Space for The Unbound', a game produced by Mojiken Studio which tells the adventures of two teenagers who experience supernatural phenomena. So that the illustrations used in this design are made with digital painting techniques. The main character in the story named Aksa is visualized with the characteristics of a high school student, in the figure 9 below:



Figure 9. Main Character illustration Example

Other characters are also designed using digital painting, such as the character Dadali who acts as Aksa's companion, Dadali is designed with a serious nature and likes to guide because of his function as a guide for players.

Then another companion character named Sri Maharaja Tarusbawa. This name is taken from the name of the Sundanese king who once named the land of West Java as the land of kabuyutan which is also used in the video game Siloka Aksara. Visuals with references to beskap and bendo were chosen because they were characteristics of blue-blooded people in ancient times.

Another character, the giant, is made with visuals that characterize Buto Ijo. It was chosen based on the legend of Buto Ijo the giant who likes to kidnap. This giant's craze is used to adapt the story that is made while at the same time adding to the impression of the story of the archipelago, even though Buto Ijo comes from Java, in ancient times the territory was only divided into kingdoms. The following is an example of an illustration that the researcher designed on the character of Buto Ijo in the figure 10 below:



Figure 10. Buto Ijo illustration Example

In addition to character illustrations, researchers designed background illustrations to be used in the game. The first setting or stone scene is designed to depict an ancient place. The dominant colour brown was also chosen to help depict the antiquity of the place used.

The second setting is that the swamp scene is designed based on a story where the inhabitants of the Kabuyutan land are animals. This setting is made so that the game has variations that do not saturate players quickly, then the last setting, namely the fire scene, is the first setting that changes as the story progresses. It is designed to depict a process that looks increasingly difficult, here's an example of the background illustration in the figure 11 below:



Figure 11. Setting Fire Scene

3.3.4. Colour

The colour used in this design is dominated by brown. Brown can help give a game setting a vintage feel. Another colour used is yellow to give the impression that it still shines even though it is old-fashioned. White and blue colours are also used as alternative colours to support other colours. These colours will be used for the user interface. There are three scenes that will be created to describe the three places, namely the stone stage, the swamp stage, and the fire stage. The colour of the stone round is used when the game takes place in the Ngalagena round. This colour will later be applied to the background of places, blocks, buildings, and as a filter, see Marsh Stage Colour Final Result. The next colour is the colour used during the rangkén round. In this round, the green colour is more dominant to distinguish the swamp round from other rounds. In addition, this colour was also chosen to create a

swampy atmosphere. This colour will be applied to the background of places, blocks, and filters. The last colour used is the dominant colour red to create a hot atmosphere. This colour was chosen to follow the storyline when the giant was angry. This colour will later be used in the swara round and the numbers will be applied to the background, filters, and blocks. According to Sayonto in Nugraha, these colours will later help in shaping the atmosphere to create a certain meaning [15]. The following is an example of the colours used in this design in the figure 12 below:

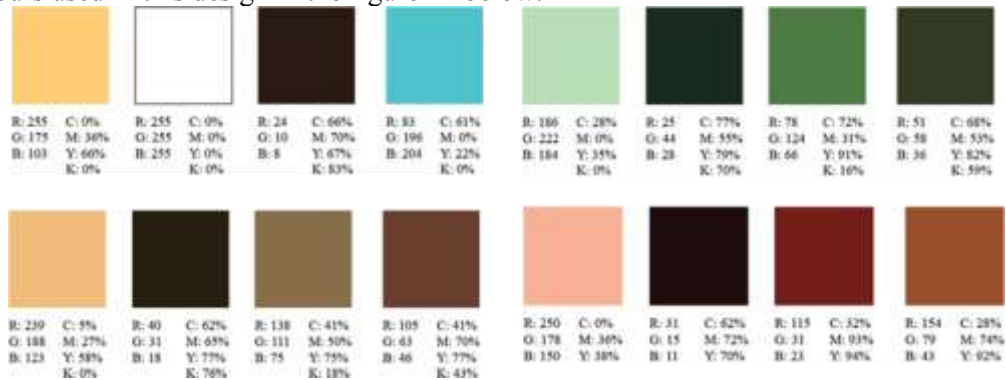


Figure 12. Color Palletes

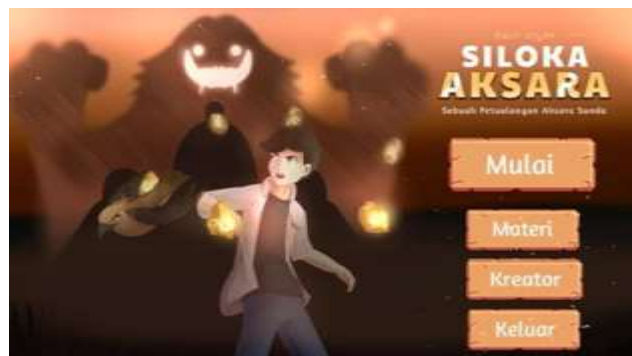


Figure 13. Final Art Works of Main Pages



Figure 14. Final Art Works Visual Gameplay Platformer Pages

3.4. Testing

After the design was completed, the researcher tested the results of the games that had been made. This test is carried out by several users with a predetermined age at random with a total of 10 testers. From the overall test results, it worked very well and was successful. from page to page runs smoothly as the first-page access starts from the pages page, the games page, the material page, the creator page, and also the exit page. Of course, the tests carried out are used as input and trial and error testing so that they can be improved for perfection. The following researchers describe the results of the tests carried out in table 3 below:

Table 3. Testing

No	Test	Test Description	Result	Description
1	Bumper	Bumper login process to the main page	successfully	Well
2	Main Page	The process of entering on the main pages, along with other menus	successfully	Well
3	Game Pages	Game process from start to finish	successfully	Well
4	Material Pages	Access Process to Material Page	successfully	Well
5	Creator Pages	Access Process to Creator's Page	successfully	Well
6	Exit Pages	Process Access to Exit Page	successfully	Well

4. Conclusion

The conclusion obtained from this design is, Sundanese script which is Sundanese culture that can be preserved in new and different ways using games designed by researchers. With this design, researchers are trying to develop a design concept until testing is carried out, the results of the design are still in the form of a prototype and can be accessed via Google Play. From the results of the tests that have been carried out, this design is running well and successfully. I hope this design can be useful, especially in efforts to maintain Sundanese culture, especially in the section on knowing Sundanese script.

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