Melajah pupuh BALI application "anggita" as a medium of learning in multimedia

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Abstract. With the industrial revolution 4.0, technology is important to be utilized in various fields. Technology is a medium to support education especially at elementary school level. Technology in the cultural sphere is an important thing in the current era, such as the use of software application for preserving Balinese culture. This application teaches how to sing the Balinese poems correctly for beginners. There are three buttons that go into pupuh Ginada, Ginanti, Pucung and are supported by video. As sustainable development, the role of the AngGita application is relevant to be applied in the field of multimedia learning, because it increases the effectiveness of delivering information to students. Since, this application was published on July 6, 2019, it ranked 4.6 within 5 months and has been downloaded more than 100 downloads with the Android version 8.1. Conceptually, this application is in line with governor regulation number 80 of 2018.

1. Introduction
Culture in Indonesia is very diverse where provinces in Indonesia have their respective cultures that are different from cultures in other regions. Bali is one of the areas that until now still maintains the existence of its culture. Pupuh is one of the cultural heritages, which until now is often sung during religious ceremonies. Sekar alit is also called pupuh, gaguritan or tembang macapat (maca papat-papat) [1]. In learning to sing the pupuh, the singer must understand the rules that bind the pupuh as in lingsa, wilang guru and guru dingdong. In addition to these rules, the singer must understand the elements of the scale, language and sentiments of the pupuh [2]. Learning pupuh can be done by listening to examples of how to sing (matembang) and be guided by people who can sing pupuh correctly.

The role of technology is able to increase change in every aspect of human life and also influences how humans can improve their knowledge and ability to carry out activities. Technology also plays an important role in creating learning in the world of education. In addition, technology introduces the culture of a region or country. This makes the use of mobile-based technology very appropriate to be used to enhance learning, especially in learning Balinese pupuh. In harmony with the development of the industrial revolution 4.0, the application of Melajah Pupuh Bali AngGita is one of the media that can support to the learning of the Pupuh Bali, which is in line with the Governor of Bali Regulation No.80 of 2018 Regarding the Protection and Use of Balinese Language, Literacy, and Literature as well and the Implementation of the Balinese Language Month [3]. The Melajah Pupuh Bali AngGita application has received a very good response from the government of the Province of Bali. It has been specifically used by the Bali Provincial KOMINFO Service.
1.1. Pupuh Bali
Pupuh are poetry verses arranged according to the provisions of the pattern or structure of each song and are usually used to build a literary work of narrative poetry called geguritan. Pupuh can be used to convey the values of character education in learning Balinese [4]. Pupuh has binding rules as a provision in making or singing a pupuh, these rules are called uger-uger [5]. Uger-uger that binds a pupuh is as follows:
1. Padalingsa law is the number of lines in one verse of song.
2. The Law of Guru Wilang is the number of syllables in one song line.
3. Guru Dingdong's Law is a vowel or vowel at the end of a syllable of each line in one verse.
The pupuh in this study are Pupuh Ginada, Pupuh Ginanti, and Pupuh Pucung. The lyrics of the three pupuhs are as follows:

| Table 1. The lyrics of the three pupuhs. |
|----------------------------------------|
| **Pupuh Ginada** | **Pupuh Ginanti** | **Pupuh Ginada** |
| Eda ngadén awak bisa,  | Saking tuhu manah guru,  | Bibi Anu, |
| depang anaké ngadanin, | mituturin cening jani, | Lamun payu luas manjus |
| geginané buka nyampat,  | kawruhane luir senjata, | Antenge tekekang |
| anak sai tumbuh luhu,  | ne dadi prabotang sai, | Yatnain ngaba masui |
| ilang luhu buké katalah, | kaanggen ngaruruh merta, | Tiuk Puntul Bawang |
| yadin ririh, liu enu paplajahan | saenun ceninge urip. | anggon pasikepan |

1.2. Multimedia as an education
According to [6], interactive media-based learning will be greatly instrumental in the creation of the purpose of education itself. Multimedia is considered as an interesting learning media based on efforts that touch various senses: vision, hearing and touch. According to Francis M. Dwyer in [7] the use of graphics in education as a medium can help the effectiveness and efficiency of learning objectives. Graphics as a visual illustration are able to create learning messages that can provide different stimuli from one another.

Learning media by utilizing mobile applications is an intermediary tool between educators and students. This media can connect, provide information and distribute messages so that an effective and efficient learning process is created. Learning media becomes a bridge of communication between educators and students in the learning process. Media application Melajah Pupuh Bali can visualize videos with available poems. If the learning process does not use media then the learning process will not occur.

1.3. Industry 4.0
Technological advancements make automation possible in almost all fields. New technologies and approaches that combine the physical, digital and biological world will fundamentally change the patterns of life and human interaction [8]. Industry 4.0 as a phase of the technological revolution is changing the way people move on the scale, scope, complexity, and transformation of previous life experiences. Humans will live in global uncertainty. Therefore, human must have the ability to predict the fast changing future. Each country must respond to these changes in an integrated and comprehensive manner. The response involves all global political stakeholders, ranging from the public, private sector, academia, to civil society so that industry challenges 4.0 could be managed into opportunities.

One of the opportunities that Indonesia has, especially Bali, is through the creative economy or creative industries. Data in the Creative Economy Agency or BEKRAF shows that Creative Economy has quite promising potential. In 2016, the Creative Economy contribution to the national economy was 7.44 percent and is projected to continue to increase. In terms of value, the Gross Domestic Product of the Creative Economy is projected to have exceeded 1,000 trillion in 2017 and increased to close to...
1,102 trillion in 2018. This opportunity must be utilized by indigenous Balinese to increase local content to remain exist and be more widely known.

1.4. Agile Method

Information systems are common at this time. In fact, there are a number of methods used in developing a software. Agile method is one of the software development methods available today. Agile has different processing steps compared to other methods [9]. This method has features like:

- Fast and incremental iteration
- Users participate in development
- Customer and user communication is emphasized face to face
- Each meeting with team members is held in person
- System requirements can be changed at any time
- Testing can be carried out at any time

Initially, the agile method was developed because often the results of the development did not match the user's expectations. Agile advantages are found in customer reviews. Customer reviews are conducted at an early stage. This can reduce the risk of software implementation failure [9].

2. Method

The development method in this information media is agile software development. The Scrum model is an approach in this development. Scrum is a simple and lightweight agile [10]. The Scrum stages are as follows:

2.1. Backlog

Backlog is the stage of preparing priority details on the features built. The features contained in the AngGita application such as the creation of assets, background sound, video player playing, and the lyrics for each pupuh.

2.2. Sprints

Sprints is the stage of structuring activities according to the needs specified at the backlog stage. The application duration is 4 weeks. The activities that are arranged can be seen in table 1.

| Table 2. Sprints tasks. |
|-------------------------|
| **Task to do** | **Week 1** | **Week 2** | **Week 3** | **Week 4** |
|------------------|-----------|-----------|-----------|-----------|
| **Sprint 1**     | Creating assets | **Red** |          |           |
|                  | Background music editing |         |           |           |
|                  | Collecting pupuh text |         |           |           |
| **Sprint 2**     | Application user interface design | **Green** |           |           |
|                  | pupuh video shoot |          |           |           |
|                  | video editing and trimming |         |           |           |
| **Sprint 3**     | Implementing UI Design in android | **Blue** |           |           |
|                  | Making transition |          |           |           |
|                  | Put videos and text together |         |           |           |
| **Sprint 4**     | Implementing video player |         |           |           |
|                  | Testing app in Android phone |         |           |           |
In Sprint 1, the of making assets and background music editing was done simultaneously. This activity can be done together because it is done by different people. Workmanship done simultaneously makes time more efficient. Likewise in Sprint 2, UI design and video shoot are done simultaneously. However, in Sprint 3, activities cannot be carried out together. This is because putting assets together needs to be done before implementing it. Details about assets can be seen in table 2.

### Table 3. List of assets.

| NO | ASET | DESCRIPTION |
|----|------|-------------|
| 1  | ![Image of assets](image1.png) | Images of Dulang, Canang and Lontar are iconic assets displayed in the main menu. The Lontar image functions as a button that leads to the next menu. |
| 2  | ![Background image](image2.png) | The background uses yellow and orange to make the learning atmosphere of Pupuh Bali become more vibrant and brighter. |
| 3  | ![Stop and play button](image3.png) | The stop and play button is used to stop and play background music on the application. Then the home Button is used to return to the main menu. |
| 4  | ![Pupuh Bali video](image4.png) | Pupuh Bali video is the most important asset, because it contains information to sing Pupuh Bali. |
3. Result & Discussion

The Melajah Pupuh Bali application "AngGita" has 2 types of layouts. The first layout is the main menu. In the main menu layout, there are 3 button options. Each button navigates to each pupuh that you want to learn. On the main menu there is also a play button. The position of the play button is in the lower left corner. This play button functions to play background music. Figure 1 shows the main menu display.

![Figure 1. Main Menu.](image)

The next type of layout is the pupuh learning display. In this view, there is a frame that will be the place where the video is played. There are a number of buttons that contain the poem verse in accordance with the previously chosen pupuh. If one of the buttons containing the verse is selected, the video frame will play a video that matches the chosen verse. Users can watch videos while reading selected verses. Figure 2 shows the display of learning pupuh. In this view there is also a home button which allows you to navigate the display back to the main menu. The position of the home button is in the lower left corner.

This application has been published on Google Play since 6 July 2019. This application has been downloaded more than 100 downloads and received a rating of 4.6. Information and graphs of application usage obtained from Google Play are shown in Figures 3 and 4. In Figure 4, you can also see the version of Android that uses the application the most. Android version 8.1 is the version that uses the most applications.
Figure 2. Learning pupuh layout.

**ADDITIONAL INFORMATION**

| Updated       | Size  | Installs |
|---------------|-------|----------|
| July 6, 2019  | 19M   | 100+     |

| Current Version | Requires Android | Content Rating   |
|-----------------|------------------|------------------|
| 2.1.2           | 4.0 and up       | Rated for 3+     |
|                 |                   | Learn More       |

| Permissions     | Report            | Offered By       |
|-----------------|-------------------|------------------|
| View details    | Flag as inappropriate | Siap Being       |

Figure 3. Informations in Google Play.
4. Conclusion
The Melajah Pupuh Bali application was developed using the Scrum model approach. The Scrum model is included in the agile method. Scrum is a simple and lightweight Agile. Using this approach, application development was carried out for 4 weeks starting from creating assets to publishing to Google Play.

This application has been published since 6 July 2019 and received a rating of 4.6. After 5 months, the application has been downloaded more than 100 downloads. Android versions that use this application tend to be more on the Android version 8.1 than the previous version. Where, this version is still a new version of Android. Conceptually, this application is very relevant to governor regulation number 80 of 2018 Regarding the Protection and Use of Balinese Language, Literacy, and Literature as well and the Implementation of the Balinese Language Month.

Development of Melajah Pupuh Bali application "AngGita", in the future, will contain ten Pupuh in accordance with the number of canto in Bali. These ten pupuh will provide knowledge about how to sing the Pupuh Bali.

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