

Wayang Edu: digital application for Wayang Kulit Kelantan

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ABSTRACT

Wayang Kulit Kelantan (WKK) is a traditional performance that has a long process in the learning session. This covers various aspects such as the background of the performance, repertoire, *gambalan* (puppets), as well as musical instruments and songs. This knowledge requires at least a year to understand the skills and techniques used. Therefore, *Wayang Edu* is a digital application built based on the analyze, design, development, implementation, evaluation (ADDIE) model to save learning time with traditional practitioners. The majority of users acknowledge that *Wayang Edu* offers a wealth of information and enables them to gain in-depth knowledge. Consequently, utilizing visual elements to convey messages is more impactful compared to traditional learning methods. Apart from that, *Wayang Edu* can be used anywhere at the user's convenience. With the interaction found in the application, *Wayang Edu* has been used by students as a platform to get additional information about WKK.

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1. INTRODUCTION

Wayang Kulit is one of the traditional Malay theatres in Malaysia that utilized to be a medium for community entertainment before the 1960s. The term *Wayang Kulit* is used in all theatre performances in Indonesia and Malaysia, whose puppets are made of leather [1]. *Wayang Kulit* is also explained by practitioners as a movement of pictures (puppets) in a performance manipulated by a puppeteer with the help of a musical group based on specific characteristics that have been set [2]. The present-day *Wayang Kulit Kelantan* (WKK) serves as a unique representation of traditional Malaysian culture, evident in its linguistic aspects and the elements depicted during performances [3].

The WKK, a traditional Malaysian art form, faces an immediate risk of vanishing. Once widely spread and well-liked in Kelantan, Sweeney's research in the late 1960s revealed the presence of over 300 Dalangs (puppeteers) engaged in this practice [4]. Unfortunately, the numbers dwindled to 37 in 1982 and further dropped to only 11 by 1999 [5]. WKK is a traditional performance in Malaysia that became the entertainment of the community before the millennium. However, the situation of WKK is now getting more and more worrying. This is because generations Y and Z do not appreciate or even do not recognize the form and content of WKK performances. One of the factors that cause this to happen is the time constraint, where a long period is needed to understand WKK. The comprehension covers several aspects, such as the background of the performance, repertoire, *gambalan*, musical instruments, and songs, in addition to the skills that a puppeteer and musician must have in a WKK performance.

Due to the very complex content in WKK's shows, fathoming this field in higher education institutions cannot be carried out in the same way as oral tradition as in Kelantan previously. Due to the very complex content, the time required for teaching sessions is long. Those extended and lengthy sessions are not possible in secondary schools and higher education institutions. Hence, e-learning is a learning method that is less focused but has begun to gain attention [6]. E-learning is learning through electronic media with the use of the Internet involving minimal costs [7] to facilitate the delivery of teaching content, communication, and collaboration between students and teaching staff [8]. This learning method is also known as online learning, virtual learning, distributed learning, network-based learning, and web-based learning [9]. E-learning has progressively gained significance due to the rapid advancements in new learning technologies and the widespread accessibility of the Internet [10].

Therefore, this article discusses the initiative that has been taken by a group of researchers known as *Titih Warisan* to digitalize information about WKK. This is because learning and knowledge transfer will happen more effectively and flexibly through the e-learning approach [11]. In addition, e-learning is now a necessity [12], where online learning is applied in most universities and institutions around the world in the last decade. This approach requires students to use a digital system for the use of courses offered, learning materials, discussions, and evaluations via the Internet [13], [14]. Moreover, in the past few years, there has been a growing dependence on the Internet and mobile apps as primary sources of information, resulting in a decrease in the utilization of printed media such as brochures and books [15]. Therefore, WKK learning is also not left behind in being conducted online according to the convenience of current trends, in addition to solving the problem of long time periods for *berguru* learning sessions. In line with the learning material requirements, this project was developed to achieve three objectives: i) identifying the need for digital applications in the learning of WKK at secondary school and higher education institutions; ii) analyzing the content of WKK for the needs of building digital applications; and iii) develop WKK digital applications for learning purposes at secondary school and higher education institutions.

2. RESEARCH METHOD

This research uses a qualitative method with an ethnographic approach to obtain data about WKK. Figure 1 presents the research process carried out. Semi-structured and unstructured interview sessions were conducted over three years while living with the practitioners and involving in their activities. In addition, observations were also carried out during the performance and the activity of producing *gambalan*. Figure 1 shows the process carried out for the production of digital applications in WKK learning.

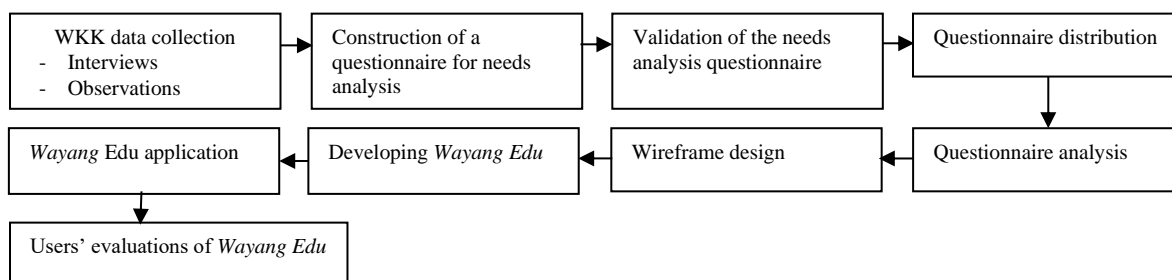


Figure 1. Research process

Based on the data collection, a set of questionnaires was built and validated by experts for needs analysis. The questionnaire set was distributed to 100 students studying WKK to find out their necessity in learning WKK. As a result of the findings, the analyze, design, development, implementation, evaluation (ADDIE) model was used for the development of *Wayang Edu* digital applications for learning purposes. The ADDIE model is a widely recognized and established approach in adult education for facilitating the transfer of information, extensively applied in the creation of multimedia learning materials [16]. This acronym refers to a structured approach to creating an educational tool through a well-defined implementation process [17].

The ADDIE model encompasses the subsequent stages: analysis, design, development, implementation, and evaluation, as shown in Figure 2. These phases in the model are interconnected and provide a versatile framework for creating a successful training approach. It is worth emphasizing that ADDIE does not adhere strictly to a linear progression of steps, and each phase comprises various distinct steps. As the steps within each phase are finished, the progression moves on to the subsequent stage [15].

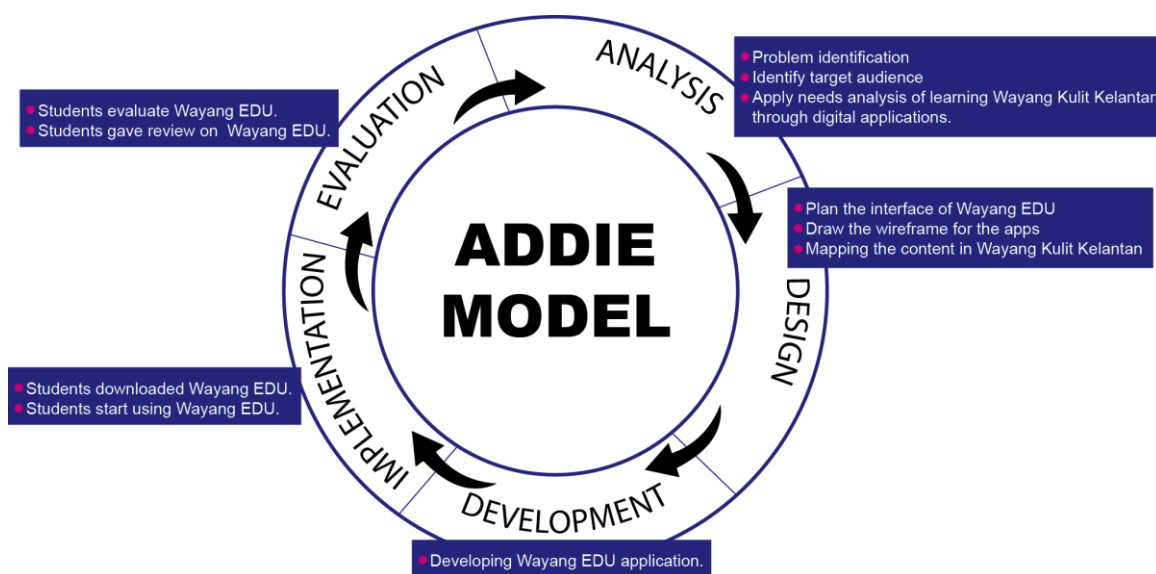


Figure 2. ADDIE model used for *Wayang Edu* application development

The development of *Wayang Edu* is produced based on the ADDIE model and applied in real learning sessions. *Wayang Edu* is used in teaching throughout the semester, and feedback is given by students after the learning session and it is continuously evaluated through feedback from students. This approach helps ensure that the educational initiative is effective, adaptable and aligned with the intended learning outcomes.

3. RESULTS AND DISCUSSION

The ADDIE model is a framework that is relevant to the standard of learning and the standard of design and technology subjects [18] and this model is convenient to be adapted to different teaching environments. Therefore, this model is suitable to be used as a guide to integrate the use of technology into teaching [19], [20]. This model has five phases that will be discussed: analysis, design, development, implementation, and evaluation.

3.1. Analysis phase

The analysis phase involves the process where the problems found in WKK learning are identified. There are several problems that need to be overcome. One of them is limited information due to the lack of published research and writing. In addition, the issue of learning that takes a long time through ethnographic methods is less relevant nowadays due to time constraints. Besides, exposure to the form of WKK's performances is very limited, and this causes students from generations Y and Z to not have the opportunity to know this traditional theatre. Based on this problem, a needs analysis was carried out for secondary school students aged 13 to institutes of higher education (IHE) students aged 24.

Table 1 indicates the results of the needs analysis conducted to identify the level of need to develop *Wayang Edu* digital applications. The questionnaire started with the sample's need to study WKK in more depth. The results of the questionnaire found that as many as 98.5% of students want to deepen their learning in WKK. This shows that there is a will in students to study WKK more closely. The same percentage also supports that WKK is a heritage that needs to be preserved and maintained. This proves that students are now still focused on national heritage. Therefore, alternative learning methods need to be created to bring students closer to WKK.

A total of 98.5% of students support that WKK learning at IHE and *Sekolah Seni Malaysia* is limited. Furthermore, 97% of students want additional information on WKK apart from the existing material. Additionally, 92.9% support that learning with practitioners is difficult to obtain due to time constraints. Accordingly, a platform to place additional information should be provided to meet those requirements.

Based on the technological perspective, 95.7% of students agree that WKK needs to be taught using new methods that involve technology. Other than that, 90% of students support that WKK is easy to learn if information can be viewed repeatedly through smartphones. This shows that students support the use of smartphones in WKK learning. This point is also supported, with 75.7% of students agreeing with the statement about the use of smartphones as a learning medium that can deliver audio visual information more

effectively. Therefore, based on the needs analysis that has been carried out, it was found that WKK needs to diversify learning methods using technology elements in general and smartphones in particular.

Table 1. Analysis of *Wayang Edu* digital application development needs

No.	Items	Percentage of agreement (%)
1	You are interested in getting to know WKK more deeply.	98.5
2	WKK is a heritage that needs to be preserved and maintained.	98.5
3	The WKK learning period at <i>Sekolah Seni Malaysia</i> and the institutes of higher learning is insufficient.	98.5
4	You want to get additional information about WKK apart from the information found in existing books.	97.0
5	WKK needs to be taught using new methods that involve technology.	95.7
6	Learning with WKK practitioners is difficult to obtain due to time constraints.	92.9
7	WKK is easy to learn if the information can be viewed repeatedly through smartphones	90
8	The use of smartphones as a learning medium can deliver audio visual information more effectively.	75.7

3.2. Design phase

The design phase involves three stages, namely designing the interface, drawing the wireframe, and classifying the content of WKK. The interface was built with a rustic concept to represent WKK as a traditional performance. This is intended to give real pictures of all WKK elements; for example, the *gambalan* found in *Wayang Edu* is a *gambalan* over 50 years old.

Wireframe is the main pillar in the development of *Wayang Edu*, where the wireframe is determined based on the content of WKK. An authentic WKK requires several WKK elements to complete the performance. Among the WKK elements included in *Wayang Edu*: i) introduction; ii) *Hikayat Seri Rama*; iii) main characters; iv) musical instruments; and v) shed and equipment. Figure 3 presents the *Wayang Edu* wireframe used throughout the development process of the application. Wireframe, which is a 2-dimensional interface of the *Wayang Edu* application, allows application navigation tests to be carried out to get feedback on the content and layout of *Wayang Edu* [21].

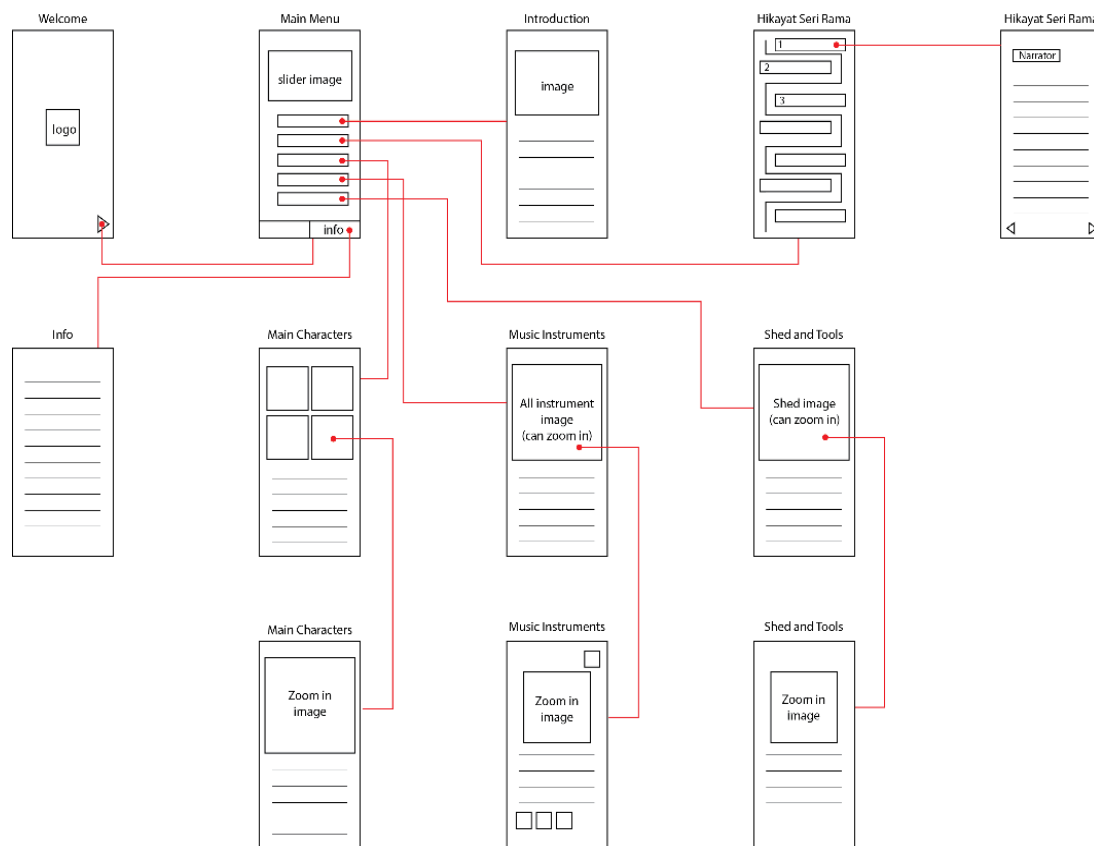


Figure 3. *Wayang Edu* wireframe

3.3. Development phase

3.3.1. Main menu

The main menu provides an initial overview of the content of *Wayang Edu*. In this section, users can see alternating photos that depict the real atmosphere of WKK's performance. In addition, this section also displays five topics discussed in *Wayang Edu*, covering the main aspects of WKK's performance.

3.3.2. Introduction

This section gives general information about WKK's performances, which used to be the main entertainment of the people around Kelantan. The WKK performance is led by a puppeteer. *Dalang* (puppeteer) is the individual responsible for the entire performance of WKK. The Kelantan dialect used by puppeteers in the performance is the language of puppetry that has been set in WKK. In addition, other pronunciations known as *Wayang* language, loan word, language shift, and collective nouns are also applied in WKK performances. Performance techniques include two aspects that must be mastered by the puppeteer. The aspects in question are acting skills and performance skills. This aspect can only be mastered in stages, i.e., puppeteers need to master the skills of puppeteering steadily before moving on to performance skills. These skills can only be acquired through the process of teaching with a certified puppeteer. Among the performance techniques that need to be practiced include puppeteer pronunciation, character pronunciation, numbers, bluffing, combinations of music and characters, compatibility of language with characters and accompaniment of songs with characters [22].

3.3.3. Hikayat Seri Rama

Hikayat Seri Rama is the main repertoire in WKK performances. It is based on cultural assimilation, whose original narration is from the *Ramayana* epic. The *Ramayana* epic originated in India and became the basic source of the existence of *Wayang Kulit* in Southeast Asia. There are two opinions that explain the existence of the *Ramayana* epic. Narayan and Mishra [23] stated that the *Ramayana* epic was written in Sanskrit by *Valmiki* about 1,500 years before century. However, there is an opinion that states that the *Ramayana* epic was written in the Christian era, which is at the time of the beginning of the Christian calendar [1]. However, the influence of *Ramayana* has been established in Southeast Asia including Thailand, Cambodia, Malaysia, Indonesia, and several other countries in Asia [24].

The *Ramayana* epic arose in Malaysia, which at that time was known as *Tanah Malaya*, through two countries, namely Indonesia and Thailand [25]. Starting from India, the epic spread to Cambodia, Laos, and then Thailand. Meanwhile, from the south, the presence of the *Ramayana* epic was through Indonesia, which also received the epic from India. The flow of the *Ramayana* epic started from the migration to Cambodia and Java. In Indonesia, the *Ramayana* epic was spread through several art forms: sculpture, *Wayang Kulit*, theatre performances, literature, and legends. *Wayang* in Indonesia that has the influence of the *Ramayana* epic is divided into five: *Kulit Purwa*, *Wayang Golek Purwa*, *Wayang Beber Purwa*, *Wayang Krucil*, and *Wayang Wong*. The oldest *Ramayana* epic in Indonesia is *Ramayana Kakawin*, written in old Javanese by *Yogiswara* in the first quarter of the tenth century AD.

Cambodia also received the *Ramayana* epic by *Valmiki* and also the *Mahabharata* epic, which once received a very supportive response from the people at the beginning of the Khmer kingdom. Lao or Laos received the *Ramayana* epic from Cambodia and wrote it in the Lao language, then named *Rama Jataka*. Later, the *Ramayana* epic was received by Thailand with the basic repertoire of *Wayang Kulit Siam*, known as *Nang Talung*. The *Ramayana* epic finally expanded to Malaya with *Wayang Kulit Cerita Maharaja Wana* version or *Hikayat Seri Rama dan Penglipur Lara* [26].

In Malaysia, the *Hikayat Seri Rama* that is given attention is the version of Roorda Van Eysinga in 1843, the version of Shellabear in 1917, and the third version of Maxwell in 1896. Meanwhile, Maxwell's version has deviated from the original version by adapting many Malay cultures, including character names [27]. There are slightly differences in the *Hikayat Seri Rama* among puppeteers in Kelantan [28]. *Hikayat Seri Rama* is also known as *Hikayat Mahraja Wana* which is delivered in an oral tradition that practiced by Muhammad Dain Othman, the puppeteer, begins with a description of the birth of *Rawana* by Goddess *Anjani*. Although *Rawana's* life is filled with family love, *Rawana* is a violent, inhuman, and intolerant young man. *Rawana's* evil deeds were known to his father, and he was given a second chance. However, *Rawana* remained unchanged. As a punishment, *Rawana* was exiled to an island known as *Langkapuri* Island. *Rawana's* asceticism was approved after hundreds of years, and *Rawana* was allowed to rule the four corners of the world except the *Sinar Naik* kingdom. *Rawana* opened a kingdom on *Langkapuri* Island with magic after asceticism. *Rawana* also increased his influence by conquering several states and declaring his title as *Maharaja Wana*.

At the same time, *Seri Rama* was born together with *Anak Panah Gadingwat Sodoroka*, who was born from his umbilical cord. *Seri Rama* was taught worldly and spiritual knowledge together with his younger brother, *Laksamana*. As a result of the knowledge learned, *Seri Rama* successfully won the tar tree

archery competition to get *Siti Dewi* as his wife. *Rawana* harboring a feeling of envy towards *Seri Rama*, managed to deceive *Seri Rama* and *Laksamana*. He kidnapped *Siti Dewi* at the same time. *Seri Rama*'s story continues with the search for *Siti Dewi* and a war that took place. *Siti Dewi* finally managed to be back to *Seri Rama* with the help of brave warriors known as *Hanuman* the white monkey.

The repertoire of *Hikayat Seri Rama* is simplified according to the plot of the narration and included in *Wayang Edu*. This information is not only limited to reading materials but also includes the narrator's voice to make it easier for users to understand WKK. This section is explained step by step according to the 16 storytelling plots practiced by the WKK puppeteers, as shown in Figure 4. In this section, users can read carefully, and there is a narrator button that can be pressed to listen to the synopsis of each plot. In addition, there is also a button at the bottom that leads to the plot before and after.



Figure 4. *Hikayat Seri Rama*

3.3.4. Main characters

The main characters are the third topic applied in *Wayang Edu*. This topic gives a visual impression to the user by featuring the four main characters of WKK from the personal collection of the developer of the *Wayang Edu* application. The attached *gambalan* was once played by *Sulaiman*, the puppeteer who actively played WKK in the Tumpat area around the 1960s. In this section, the four *gambalan* main characters are attached, namely *Seri Rama*, *Laksamana*, *Siti Dewi*, and *Rawana*. Apart from the characters, this section also tells the background stories of the characters, as shown in Figure 5.

Gambalan is the original term used by WKK practitioners to refer to puppets used in WKK performances, and this term is only used in Kelantan [29]. *Gambalan* is an important element in WKK's performance. *Gambalan* is carved on a material that is usually animal skin, known as *belulang*. The leather is usually taken from goat skin or cow skin. The shape and appearance of each character are carved according to the character's identity. *Gambalan* is manipulated by a puppeteer behind a white screen called *kelir* with music. The *gambalan* played behind the *kelir* will cast a shadow when light is emitted from the light bulb suspended in the center of the *kelir*. There are 200 characters played in WKK. However, the selection of characters during the performance depends on the story plot played by the puppeteer [30].



Figure 5. The main characters

3.3.5. Musical instruments

The next topic is about the musical instruments used in WKK performances. There are seven pairs of musical instruments that are played during the performance, namely *canang*, *kesi*, *gong*, *gedombak*, *gendang*, *geduk*, and *serunai*. This section then presents a picture of the position of the musical instrument on the shed that needs to be followed throughout the performance. The image provided with drawings is an initiative to attract users' interest when browsing the *Wayang Edu* application. Complete musical instruments are required to play 32 songs, which are divided into three types: specific songs, general songs and singing. The song referred to as a special song is a song that is only reserved for certain characters and played for a specific purpose. An example of a specific song is a *hulubalang* song that is only played for *hulubalang*. However, *hulubalang* songs are also divided into several types with different musical tempos.

General songs are songs that are played in general and are not reserved for any character. An example of a general song is the *bertabuh* song that is played at the beginning of the performance. The *bertabuh* song is played to publicize the WKK performance that will be performed that night. A singing song is a song that has lyrics and is sung by the puppeteer when the performance is carried out with musical accompaniment. The songs sung have been reserved for certain characters, such as the song for the character *Seri Rama*.

The interface of musical instruments, in general, is connected to the interface of each musical instrument individually. The user can click on the figure of the musical instrument to see the picture more closely and examine the description of each musical instrument, as in Figure 6. In addition, there are interactive elements in this section, where basic sounds and songs are loaded to give users an idea of the sound of each musical instrument.

3.3.6. Sheds and equipment

WKK shows are held in a space known as the shed. This shed is built with a structure similar to a 'squatting dog' structure, and it is an enclosed shed. Therefore, the audience can only see the shadow played on the screen and does not get a picture of the interior of the shed. The interior of the shed is highlighted in *Wayang Edu*, as shown in Figure 7. In this section, the exterior and interior of the shed are highlighted in the interface. Figure 7 illustrates a picture of the shed structure that was practiced in the past during the glory days of WKK back in the day. This interface is linked to a brief description of the equipment found in the WKK shed with a closer view.

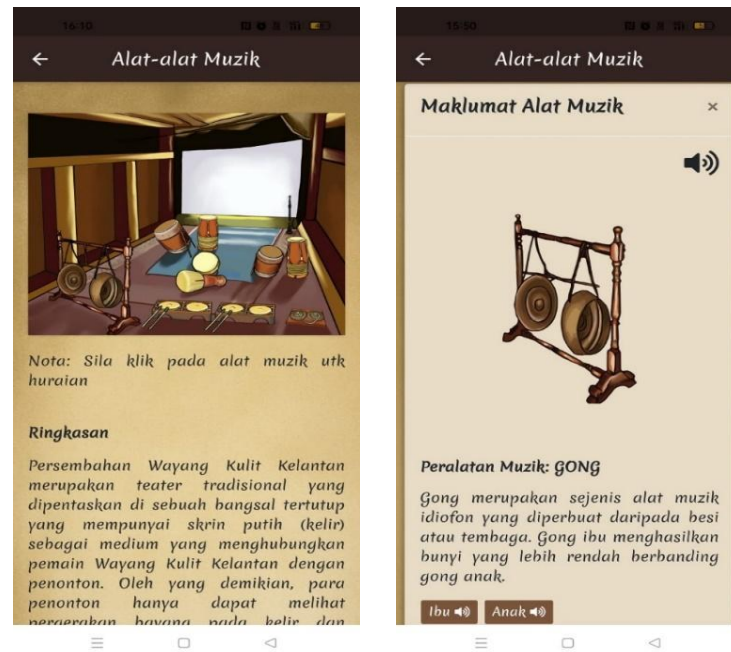


Figure 6. Musical instruments

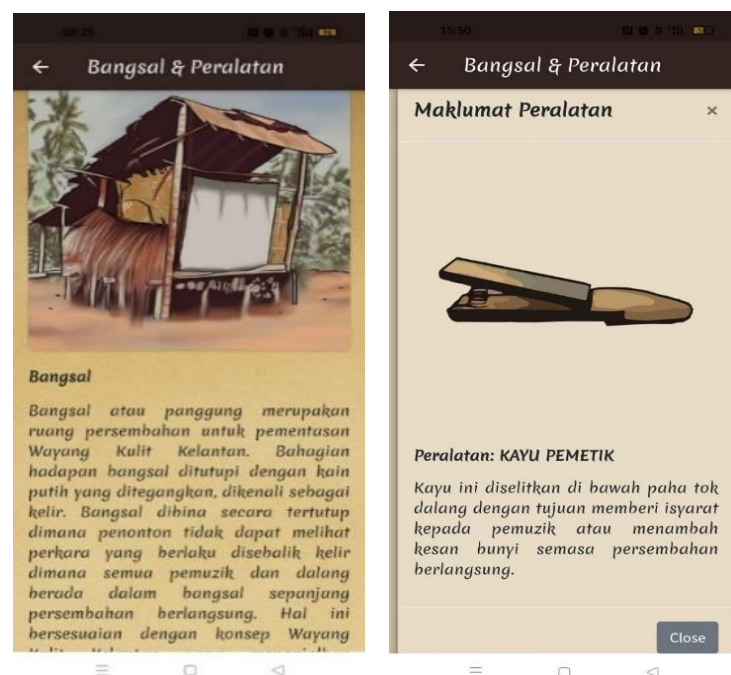


Figure 7. Shed and equipment

3.4. Implementation phase

Wayang Edu that has been completed can be downloaded through Google Play and can be accessed anywhere with internet access. This application has been distributed and applied by bachelor of performing arts (theatre) students for learning sessions. A total of 60 samples have used *Wayang Edu* as one of the alternative reading materials in teaching sessions.

Wayang Edu was built in 2020. It is a very suitable time to be used as learning sessions had to be conducted online due to the COVID-19 pandemic. Most students have never seen WKK and have no

knowledge of this traditional theatre. Besides, conventional learning gives space for students to hold and play WKK musical instruments. As learning sessions have to be conducted online throughout the pandemic, conventional learning is no longer suitable. Therefore, *Wayang Edu* took the initiative by giving exposure to students to get to know WKK more closely.

3.5. Evaluation phase

Wayang Edu is used by students throughout the semester as additional reading material and gives an impression of the atmosphere of WKK's performances. As a result of the use of *Wayang Edu*, feedback has been given by the students. Table 2 shows the feedback given by the students.

Table 2. Feedback on the use of *Wayang Edu*

User	Comment
1	In my opinion, after I downloaded the <i>Wayang Edu</i> application, there were various insights I gained as a theatre student. Among them is a variety of knowledge related to <i>Wayang Kulit</i> . What I learned before and at the present time are easy to understand, and it is easier to review what I have learned about <i>Wayang Kulit</i> before. This application is very easy to be used for students, and the information provided is also simple and easy to understand.
2	Based on the application that has been downloaded, it provides quite compact information about <i>Wayang Kulit</i> . Just need to download it and be able to find information immediately. A variety of basic knowledge can be obtained through the application. It is very effective for classroom use and searching for information about <i>Wayang Kulit</i> . It makes it easy for users to access the application and does not consume phone storage.
3	In my opinion, this application can facilitate learning from anyone, especially an individual who is a student. This is because it is easier for students to explore <i>Wayang Kulit</i> more carefully, and the sources used are more reliable than other sources.
4	I did not think that this Kelantan puppet show had an interesting storyline. I did not think that the story of <i>Hikayat Seri Rama</i> is also known as <i>Hikayat Bota Mahraha Wana</i> . Very interesting. Moreover, I did not expect that there would be more than 100 characters in this puppet story <i>Hikayat Seri Rama</i> .
5	<i>Wayang Edu</i> is very helpful for my friends and me because we majored in <i>Wayang Kulit</i> . This app also provides new knowledge to those interested in <i>Wayang Kulit</i> and should be publicized.
6	The advantages of <i>Wayang Edu</i> apps are: i) can provide more detailed and clear knowledge to users or readers, and ii) people who are old or illiterate can also learn <i>Wayang Kulit</i> by listening to the prepared narrator.
7	My view on this <i>Wayang Kulit</i> application is that it is quite interesting because there is a lot of useful information about <i>Wayang Kulit</i> , such as the characters available, the musical instruments used, and much more.
8	The best apps ever. You do not need to bring a book because any information about <i>Wayang Kulit</i> is already in the app. The app is interesting, and the information available is very easy to understand.
9	This application is able to open the eyes of young people about what <i>Wayang Kulit</i> is, which is increasingly being forgotten. In my opinion, this method is very effective in attracting the interest of today's youth.
10	This application can make learning through the Internet more fun. In addition, it makes the work of the students more enjoyable. In addition, the advantages of this application can have a good impact on learning sessions and delivery.

Learning through *Wayang Edu* can save learning time with a more engaging e-learning approach that captures students' interest. This can have implications for the preservation of WKK, which is increasingly threatened with extinction. However, *Wayang Edu* can still be improved by increasing the display speed in the future. Based on the feedback given by users, namely students, it was found that *Wayang Edu* can provide a positive impact that is very favorable. Most students agree that *Wayang Edu* provides a lot of information and can give them detailed knowledge for a better learning process. In addition, an interface designed by providing an interesting visual representation can attract the interest of students to have an effective learning session and it can be proven that messages delivered using visual elements are more effective than conventional learning.

Therefore, *Wayang Edu* is found to be able to support the Malaysian National Cultural Policy (NCP) 1971, which stated that Malaysian national culture should be based on the culture of the original people in the region [31]. Furthermore, *Wayang Edu* fulfills the strategic requirements set by NCP, which is the conservation, preservation, and development of culture towards strengthening the foundation of a national culture through research, education, development, and cultural relations. In addition, *Wayang Edu* also supports the mission of the National Cultural Policy (DAKEN) 2021. It wants to empower the civilization of the nation and the civilization of the country in achieving shared prosperity. This policy promotes sustainability and cultural empowerment through science and technology to provide added value to the country's socioeconomic development [32].

4. CONCLUSION

Wayang Edu is a digital application about WKK on mobile that was developed for educational needs. This application was developed by a group of researchers known as the *Titih Warisan* group. This initiative was made to preserve the performance of traditional Malaysian Theater so that it does not disappear due to technology and also to ensure that future generations can still see and understand WKK. This

application can provide interactive audio and visual information. The information is obtained together with the WKK practitioners in addition to the inventor himself being a WKK practitioner. *Wayang Edu* has five main menus, namely the introduction, *Hikayat Seri Rama*, main characters, musical instruments, and sheds and equipment. The uniqueness of *Wayang Edu* is that it is user-friendly, where there is a narrator's voice in the *Hikayat Seri Rama* section. In addition, the description of the musical instrument is detailed with visuals and the original sound of the musical instrument is included to give the user an overall idea. Therefore, with the existence of *Wayang Edu*, WKK has moved in parallel with the current technology to convey knowledge.

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