

Digital Tourism Education Collaboration for Strengthening Micro Business and Post Covid-19 Sustainable Education Models

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Abstract

The covid-19 pandemic that is sweeping the world today, provides a huge amount of specific financial activities that make it difficult for business to develop for the sake of success. The main objective of this study is to provide Post Covid-19 sustainable education models based on digital tourism education collaboration for strengthening micro business. One of small businesses that impacted by covid-19 pandemic is the kujang (cleave) gallery which is a local wisdom of West Java that needs to be preserved. This gallery produces products in the form of kujang with unique various types. In addition to financial activities one of the activities affected by the covid-19 pandemic is educational activities. Educational activities which are important assets of a country must continue in connection with anything. Therefore, learning and financial models are needed that can maintain the sustainability of both activities. The method used is combined Student Teams-Achievement Divisions (STAD) with Multimedia Development Life Cycle (MDLC). The selected technique to construct this model is Augmented Reality (AR) integrated game based to which construct the digital tourism education collaboration. This model is expected to have a positive effect in supporting microbusiness especially kujang gallery and educational activities pasca covid-19.

Keywords:

Covid-19, Digital tourism, Edu-games, Local wisdom, Micro business, Sustainable education model.

1. Introduction

COVID-19 is a serious health problem now in various countries in the world and also in Indonesia. The world health organization, WHO has declared COVID-19 as a pandemic and the Indonesian government has also said COVID-19 as a national disaster. The COVID-19 pandemic also has a negative effect on business activities especially small businesses so that business activities on small businesses are very difficult to develop and even go bankrupt. In addition, the negative impact on business process activities also impacts on educational activities because with this pandemic educational activities are directly stopped, especially teaching and learning activities face to face. These face-to-face activities are replaced by online activities where each student and teacher conducts teaching and learning activities online. Online teaching and learning activities in Indonesia are still very limited due to infrastructure limitations that are not yet ready for the process. (Gt Walker et al., 2020; McKibbin et al., 2020; Singhal, 2020; Sohrabi et al., 2020). This activities are also become a challenge for implementing Industry 4.0 in education (Tosida et al., 2020)

One of the small business activities that experienced the negative impact of development during the pandemic was the Kujang Guru Teupa gallery. This gallery is a gallery that sells goods such as cleaver, cleaver trinkets, cleaver pins and others which are typical souvenirs of West Java. So that the existence of this gallery, contributes positively to major contributions to regional income and contributes to preserving culture. one of the small businesses based on local wisdom in Bogor. (Ardiansyah et al., 2020; Eneng Tita Tosida, Agung Djati Waluyo, 2017) online business activities have been tried by gallery owners but these activities do not provide a very significant change in the number of requests compared to before the pandemic (Tosida et al., 2020). Therefore, it needs a new innovation to increase knowledge about cleaver and cleaver alignment so that the gallery can still survive at the time of this pandemic.

Teaching and learning activities online is a paradigm that appears in the midst of a pandemic for educational activities so that these activities can still run as they should. The teaching and learning process online still experiences many difficulties regarding infrastructure. In addition, online learning activities also become a new challenge because this process is different from face-to-face learning. such as video assignment activities, exam performance, attendance and student satisfaction in accepting online learning will make the teacher as providing learning continue to work to find new innovations so that online learning can run effectively.(Bortnik et al., 2017; Ibáñez et al., 2018; Stockwell et al., 2015)

Kujang is one of the Intangible Cultural Heritage (WBTB) and is an Intellectual Property Rights (IPR) that must be continuously socialized to the community so that it remains sustainable and becomes part of Sundanese identity in particular, and the people of West Java in general. Kujang until now has become one of the icons of West Java. Kujang has various types, from a number of inputs and sources. Types of cleaver reach more or less there are 20 types, mostly the result of naming of the owner / collector cleaver itself, because of its unique shape. From the source of the Bogor pantun, there are 6 types of cleaver, namely Kujang Ciung, Egret, Jago, Naga, Bangkong, Rhinoceros, and there is an additional 1 from other sources namely Wayang Kujang. Kujang is now only a display item as nostalgic material. Mubah (2011) in his research mentioned that regional arts such as ludruk, ketoprak, puppet, gamelan, and dance also experienced the same thing. This is evidenced by the start of the loss of cultural values both historically and attitudes and behaviors held firmly by the Indonesian people, especially the younger generation today. Lack of interest in the historical sciences such as this that causes slowly clearing history fades. This is really unfortunate considering the popularity of cleaver as a traditional weapon typical of West Java which should be protected and preserved(Afrianto, 2018).

The problems that arise also need to be addressed and managed properly, one of which is by utilizing the positive value of the technology that is currently developing so that it can neutralize the problem properly. Good use of technology demands new innovations that tend to be more attractive to the younger generation, most young people tend to prefer using their gadgets to access social media and also do various kinds of games (games) online. (Subhash et al., 2018). Therefore, to overcome the problem of the lack of public knowledge, especially the Indonesian young generation about Kujang at this time, this research will build a learning model that is "Educational Model of Preservation of Heirloom Android-based Heritage to improve the strengthening of small businesses after the COVID-19 pandemic" which in it contains a lot of information about Kujang which is processed in such a way as to be a number of interesting quizzes for anyone who plays it, moreover this game is visualized in the form of three dimensions. Later this application is expected to preserve the culture of Indonesia, especially West Java and can help young people to know more about kujang at this time. This application can be used on an android mobile phone, which allows people to more easily use this application, because at this time almost all Indonesian people from the lower classes to the upper classes are already using an android mobile phone.(Plass et al., 2015; Urh et al., 2015). This innovation can be generated by start up and telematics small medium enterprises (SMEs) who will increased and empowered to produce the educational game (Tosida et al., 2019).

Game model that has educational content is an innovation that can be well developed to overcome the current situation and conditions. Games with educational content are better known as Educational Games. This educational type game aims to provoke children's interest in learning to know the historical values of the Kujang Pusaka. So with a happy feeling it is hoped that children can more easily understand the purpose of the educational game. This educational game uses an Android-based platform to get the results of a learning application about the historical values of Kujang Pusaka (heirloom Kujang), giving rise to an impression of entertainment to the users of the application that has been made, so that it is expected to have a positive effect on the development and strengthening of small businesses in the pandemic.

2. Research Methodology

The method used in this study uses the combination of STAD (Student Teams-Achievement Divisions) and Multimedia Development Live Cycle (MDLC). STAD component in research conducted by (Rahayu et al., 2017)

STAD has six steps : (1) In Student Worksheet there must be motivation and apperception; (2) team building; (3) presentations from teachers; (4) learning activities in teams must be heterogeneous; (5) implementation of individual quizzes; (6) awarding. While (Wyk, 2012) consist the five components are class presentations, teams, quizzes, individual improvement scores, and team recognition. The two studies actually mean the same, only the first researcher adds the awarding component. In our study, we used a component STAD with an additional component awarding which is combined with the MDLC method in the process of making the application. STAD integrated MDLC methode (Figure 1) consist are concept, design, material collecting, assembly, testing, and distribution (Gavish et al., 2015; Udjaja et al., 2018).

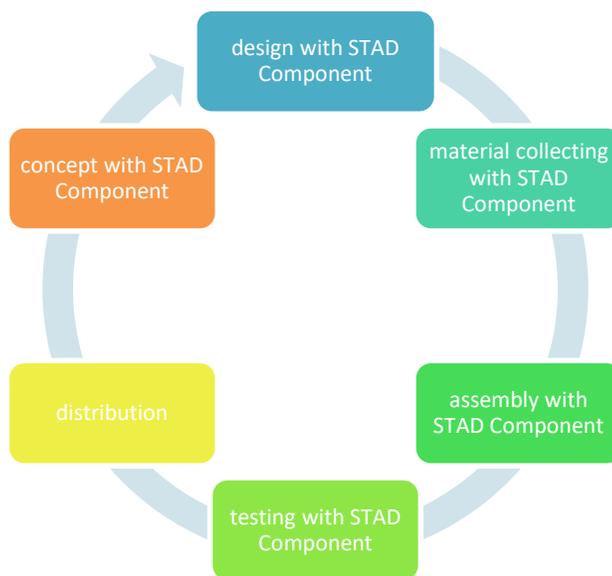


Figure 1. Combined STAD with Multimedia Development Life Cycle (MDLC)

The combination of STAD and MDLC is made at the time of making a game application so that in the game there are several MDLC components that are combined with STAD components, only one MDLC component is combined with the STAD Method.

2.1. Concept with STAD Component

All STAD components are used in the concept of making this game so the concept stage is the stage to determine the type of application (presentation, interactive, etc.) and general specifications. Basic design rules are also determined at this stage such as application size, targets, and others. The purpose of this educational game to preserve the cleaver cleaver is the introduction of the traditional weapon of West Java, Kujang. The game consists of an introduction about the kujang along with the encyclopedia. Making educational games using interactive multimedia types that are equipped with controllers that can be operated so that users can choose what they want for the next process. Multimedia in this study uses interactive multimedia such as interactive learning, game applications, and so on. Users can control what and when multimedia elements will be sent or displayed. For more details, see Table 1.

Tabel 1. Application Concept

Title	Multimedia-based Educational Preservation Game Kujang Heritage Application
Target User	Children Aged 4-6 Primary School
Duration	There is no
Image	Use the .jpg and .png file formats
The video	There is no
Audio	Voice narration and music .wav and mp3 instruments
Application Type	Interactive
Game Type	3D Quiz Game
Software	Unity 3D and Visual Studio Code.

2.2. Design with STAD Component

At this design stage it explains the specifications of the application architecture. As for this design phase several designs will be made including storyboards using STAD Component, navigation structures using STAD Component, and flowcharts STAD Component.

2.3. Material Collecting with STAD Component

Material Collecting with STAD Component is the stage where material collection with STAD Component that suits your needs is carried out. This stage can be done in parallel with the assembly stage. In some cases, the Material Collecting and Assembly stages will be done in a non-parallel fashion. As for some of the ingredients collected below.

1. List of Objects

The materials that will be used as objects to make this application are all information about Kujang Pusaka.

2. Image

In this study requires several images to form the concepts that have been made. Like pictures / photos of several types of cleaver.

2.4. Assembly with STAD Component

Assembly stage (making) is the stage where all multimedia objects are created. Making an application based on a storyboard, flowchart view, navigation structure or object diagram that comes from the design stage. In the process of making an application there are several stages that are : (1) Data collection that is data needed in making applications includes Kujang Pusaka photo data and several other supporting images, (2) Modeling that is process using Unity 3D software and Visual Studio Code. In making models, several templates can be made for the User Interface (UI) to enhance the appearance and make the application more user friendly.

2.5. Testing with STAD Component

Testing phase, that is a process that is carried out after completion of the manufacturing phase by running the application and see whether there are errors or not. Trials are classified in 3 (three) categories, namely:

1. Structural testing

Structural testing are conducted to find out whether the system has been structured properly and correctly in accordance with the design that has been made.

2. Functional testing

Functional testing are based on the process of navigation and validation contained in the system that runs in accordance with the functions and uses.

3. Validation testing

Validation testing is done by testing all existing data processes on the system by comparing the manual processes whether providing valid data or not.

2.6. Distribution

Distribution that is the last stage, after completing all the stages, the application will be saved into a storage medium. This stage can also be called an evaluation phase for developing finished products in order to become better. The results of this evaluation can be used as input for the concept stage of the next product.

3. Result and Discussion

The application of augmented reality (AR) with the marker based tracking method for the visualization of this media can be run on a minimum Android OS Jelly Bean 4.0 and supports various types of smartphone brands. AR adds the real world with virtual elements. This is a great virtual aid for designing problems. Students' interest in learning about local wisdom is decreasing, especially if the government's efforts are not strong enough to promote it. Interest in learning the young generation currently has a different style, because it is more interested in applications issued by various vendors through a device gadget. The implementation of Augmented Reality is very suitable as a visualization media of prestige cleaver because it can display 3D objects in virtual and real-time by providing information about the meaning contained in the prestige of cleaver in the form of 3D animation. Applications such as this allow students to receive direct visual feedback about how the given item will look in different settings. Some applications also allow students to design virtual objects to investigate their physical properties or interactions between objects.

Several studies have seen the power of visual images in undergraduate lectures and computer technology and internet-based tools find that the level of attendance in lectures is much higher in multi-media lectures than in conventional classes. It is inevitable that the formation of Indonesian character is strongly influenced by local values, culture and customs that exist in each region. This has shaped their personalities, traits, behaviors, habits, and attitudes that manifest local wisdom that grows around the community (Plass et al., 2015; Stockwell et al., 2015).

According to that 3D animated films are unique in their dimensions and entertainment nature, therefore animated films have been accepted as one of the most popular and most popular audio-visual media, so animation is chosen as an attractive medium for visualizing the public, especially children the meaning of prestige clever that we rarely know. To give a natural impression on the 3D animation video to be presented it is necessary to use rigging animation techniques, Rigging characters is one of the most important processes in making 3D animated films.

Rigging functioned to create a hierarchical structure of a character called a framework. The framework is used as a framework (framework) that can give lives to a character in order to behave like a character that exists in the real world. Besides rigging can speed up the process of making animated motion. Character design is deliberately made to resemble a mannequin by not using facial details to make it simpler and simplify the 3D modeling process because to make characters that resemble humans is quite difficult and takes longer to make more detailed parts, especially in the face, especially the characters used are sufficient so a lot is made to a minimum so that the trial process between characters using rigging and non-rigging characters can be done easily. Most animations involve "characters," meaning models that you have created such as people, animals, robots, or anything that moves must be given "bones" in order to be moved. Some of the application function and one of the socialization activity shows in the Figure 2.



Figure 2. Game based AR of kujang learning media and one of the socialization activity (before covid-19)

The next stage is application testing. This stages is running on an Android Smartphone. There are several stages of testing application, that will be carried out : structural, functional, validation and compatibility testing. Structural testing is a trial to find out whether the structure or flow of the system is made according to what was designed. It is intended that the flow and logic are appropriate and there are no errors when running the program. This is done repeatedly until the desired results are found, the structural test results of system can be seen in Table 2 .

Tabel 2. Structural Testing

No	Plot	Result
1	Splash Screen → Main Menu → Pamor (motive) Kujang → Page 1/2/3 → Main Menu → Exit	Corresponding
2	Splash Screen → Main Menu → How to Use → Main Menu → Exit	Corresponding
3	Splash Screen → Main Menu → Start → Augmented Reality → Main Menu → Exit	Corresponding
4	Splash Screen → Main Menu → About → Main Menu → Exit	Corresponding

Furthermore, a functional test is performed. This functional test is carried out to find out whether the system has been functioning properly. At this stage an experiment is carried out to determine whether the function of each button or menu on the page can function properly. Based on the trials that have been carried out, the overall buttons or menus on each page can function and run as desired. These results can be seen in Table 3.

Tabel 3. Functional Trial

No	Scene Name	Display	Results
1	Splash Screen Scene	Animation	successful
2	Main Page Scene	Pamor Kujang	successful
		How to use	successful
		Start	successful
		About	successful
		Exit	successful
3	Kujang Pamor Scene	Next	successful
		Back	successful
		Exit	successful
4	Scene How to use	Back	successful
		Exit	successful
5	Scene Begins	Augmented Reality	successful
		The video	successful
		Exit	successful
6	Scene About	Exit	successful
		Back	successful

Validation Test is the stage where it is checking the information data of an object whether it is in accordance with the data that was previously collected at the material collecting stage, in other words, validation here to ascertain whether the application made is in accordance with user expectations or not. Tabel 4 shows a trial testing application to detect kujang prestige markers whether information can be displayed in the form of animated video or not. The validation test is tested based on the slope, distance and marker media used.

Tabel 4. Validation Trial

No.	Trial Description	Trial Results
1.	Markers are scanned as far as 20-30 cm with a tilt of approximately 0 ° and a 14 "laptop screen as the media marker	Object detected
2.	Markers are scanned as far as 20-30 cm with a tilt of approximately 90 ° and a 14 "laptop screen as the media marker	Object detected
3.	Markers are scanned for 1 meter with a slope of approximately 0 ° and a 14 "laptop screen as the media marker	Object detected
4.	Markers are scanned as far as 20-30 cm with a slope of approximately 0 ° and HVS paper as the marker media	Object detected
5.	Markers are scanned as far as 20-30 cm with a slope of approximately 90 ° and HVS paper as the marker media	Object detected
6.	Markers were scanned 1 meter with a slope of approximately 0 ° and HVS paper as the marker media	Object detected
7.	Markers are scanned as far as 20-30 cm with a slope of approximately 0 ° and the mobile screen as a media marker	Object detected
8.	Markers are scanned as far as 20-30 cm with a slope of approximately 90 ° and mobile phones as media markers	Object detected
9.	Markers are scanned for 1 meter with a slope of approximately 0 ° and the cellphone as the media marker	Object not detected

At this stage of compatibility testing, some types of smartphones are used as a comparison of the speed of the object read by the camera, in this case the object is tested based on the camera pixel, RAM, and processor (Tabel 5).

Tabel 5. Compability Test

No	Merk & Spesifikasi Handphone	Application Performance
1.	Samsung Galaxy Young 2 (2014) Spesifikasi: - CPU (1.0 GHz Cortex-A7) - RAM (512 MB) - Kamera (3.15 MP) - OS (Android 4.4.1 KitKat)	The application performance on this cellphone is smooth, the button response is a little slow, the camera can read objects in about 3 seconds
2.	Lenovo A2010 (2015) Spesifikasi: - CPU(Quad-core 1.0 GHz Cortex-A53) - RAM (1 GB) - Kamera (5 MP) - OS (Android 5.1 Lollipop)	The application performance on this cellphone is smooth, the button response is a little slow, the camera can read objects in about 3 seconds
3.	Xiaomi Redmi 3s (2016) Spesifikasi: - CPU(Octa-core 1.4 GHz Cortex-A53) - RAM (2 GB) - Kamera (13 MP) - OS (Android 6.0.1 Marshmallow)	The application performance on this cellphone is smooth, the button response is a little slow, the camera can read objects in about 3 seconds
4	Samsung Galaxy J2 Pro (2018) Spesifikasi: - CPU(Quad-Core1.4 GHz Cortex-A53) - RAM (2 GB) - Kamera (8 MP) - OS (Android 7.1 Nougat)	The application performance on this cellphone is smooth, the button response is a little slow, the camera can read objects in about 3 seconds

This stage the application has been completed. The trial was conducted by conducting a survey of the audience. The presentation of the survey results looks presentable in every aspect for the requirements as an application improvement where the survey was conducted with 10 respondents. The questionnaire was made referring to the SUMI (Software Usability Measurement Inventory) questionnaire category, this method is a survey instrument used to measure user perceptions about the usefulness of the software. This method is based on a questionnaire developed to see the experience and views of users of the usefulness of software products. The statements in the SUMI questionnaire consist of categories: Effect, Control, Efficiency, Learnability.

In testing this application has an interesting assessment with a percentage of 80% with the user's suitability such as color, background design (background) has a percentage of 80%. In making it must also be seen for the accuracy of the selection of types and colors of writing with a percentage of 80%. For the color and shape of the button in the application has a percentage of 90%. But for the quality of the animation display is still quite lacking with a percentage of 30%, with the suitability of a pretty good music illustration with a percentage of 100%. For the button functions in accordance with the intended menu with a percentage of 100%. This application is relatively easy to move from one part with a percentage of 50% with the application response to the desired command that is 60%. This application also provides usability instructions on how to use it well with a percentage of 80% and for its excellent operation with a percentage of 100% with overall convenience the application has a percentage of 80%

Rating :

$$1. \text{ Effect} : (\text{Question Point 1-8})$$

$$\text{Hasil} = \frac{80+80+80+80+90+90+30+100}{8} \times 100\% = 78,75\%$$

2. <i>Control</i>	: (Question 9-10)	Results = $\frac{100+50}{2} \times 100\% = 75\%$
3. <i>Efficiency</i>	: (Question 11)	Results = 60%
4. <i>Learnability</i>	: (Question 13-14)	Results = $\frac{100+80}{2} \times 100\% = 90\%$

From the above results it can be concluded that the visualization media of Kujang Pamor is quite feasible to use to help the socialization of Kujang Pamor through Augmented Reality features and 3D animation videos, because the trial results show values above 50% so that it can add to the attraction and interest in learning the Kujang Pamor, especially for children in order to preserve Sundanese culture by utilizing technology.

4. Conclusion

The main objective of this study is to provide Post Covid-19 sustainable education models based on digital tourism education collaboration for strengthening micro business based on local wisdom, especially Kujang Guru Teupa gallery in Bogor, West Java, Indonesia. The method used is Augmented Reality (AR) integrated game based to which construct the digital tourism education collaboration. Integration of Rigging and Marker Based AR Animation Techniques for the Visualization of Kujang Pamor the method used is STAD integrated with MDLC which consists of 6 stages: concept, design, material collecting, assembly, testing and distribution. The media used to visualize the cleverness of the clever uses Marker Based AR combined with rigging animation techniques to make animation movements easier and the resulting movements can be smoother, besides keyframes and objects used are fewer so that it saves more time in the process 3D animated video. After testing the respondent, the results are as follows: Effect : 78.75%, Control : 75%, Efficiency: 60%, Learnability : 90%. From these results it can be concluded that the visualization media of Kujang Pamor is appropriate to be used to be Post Covid-19 sustainable education models based on digital tourism education collaboration. This model can help the socialization of Kujang Pamor through the features of AR and 3D animated videos, because it can add to the attraction and interest in learning the Kujang Pamor especially for children in order to preserve Sundanese culture by utilizing Sundanese culture technology.

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