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The Use of Augmented Reality-Based Learning Media: Arloopa for English Descriptive Text in Secondary School

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Abstract

This study aims to understand the English learning process using Arloopa as a digital medium. This study uses a descriptive qualitative design. To answer the problem of the study, the researcher observed the learning and teaching process in an Islamic secondary school in Malang. Two classes were observed by immersion in the classroom to get data. To verify the data obtained, the researcher checked the learning module document. The researcher revealed that using Arloopa as a digital learning media requires additional skill technology for the teacher if the students need to be equipped with a mobile phone, which Arloopa is only working with a mobile phone. The teacher should connect the mobile phone's display to the LCD projector so that the students can view an object displayed by Arloopa. It would be different if each student in the class utilized an Android phone.

Keywords: arloopa; augmented reality; descriptive text; digital learning media; TEFL

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Introduction

Nowadays, the educational world is in a transition period from a conventional era to a digital era. The transition is closely related to the rapid development of technology. This development affected the digitalization of education. The digitalization of education occurs in all aspects. Model, approach, strategy, and media of learning are being designed and varied in digital-based learning owing to the Z generation tending to prefer and use digital matter over conventional ones. Hence, the growing interest in digital-based education carries some advantages for teachers in designing the learning media (Aprianto & Heriyawati, 2020).

According to global digital statistics 2023, a total of 5.44 billion people used mobile phones in early 2023, which is equal to 68 percent of the total global population, and the number of mobile users has increased by just over 3 percent, equating to 168 million new users over the past 12 months. Augmented reality (AR, hereafter) is another growing phenomenon on mobile devices. It is an artificial intelligence technology that incorporates digital content such as images, animations, and audio-video into real word space. This technology enables the user to integrate digital content with the natural world and has the potential to facilitate the teacher and learners to carry out enjoyable learning.

In the education world, the rapid growth of technology has impacted the teaching-learning process. The learning process has been utilized by inserting technology into its components, including learning media. Various types of media, including ICT-based media, are essential to help teachers convey content and make it easier for students to understand learning material (Ali & Alimah, 2023).

Concerning AR applications, Roussos et al. (2022) have studied and stated that AR applications are already altering education and learning with the use of cutting-edge technologies (Roussos et al., 2022). AR applications are necessary to revolutionize how students study and learn (Aliprantis & Caridakis, 2019). It will lead a role in most industries including education (Kaviyaraj & Uma, 2021), and this technology has a substantial potential to control the language learning field. (Karacan & Akoğlu, 2021).

In the literature, it is remarkable that there are many works on using augmented reality in education. These studies, today, are increasing day by day to find out the appropriate ones in the educational field. Yildiz (2022), based on his research, suggested that Arloopa be preferred

more in learning and teaching environments. He recommended that AR increases academic success and supplies important information (Yildiz, 2022). Based on Arloopa's site, it is an AR visualization tool that brings the physical and digital worlds together as one. Arloopa places virtual content into the real environment; it creates fantastic, interactive, and valuable experiences. In line with previous literature (Waliyuddin & Sulisworo, 2021), when applying this technology to Math subjects, they noted that utilizing AR-based Arloopa is very useful in the learning process, with 75% of respondents voted in usefulness, ease of learning, and satisfaction aspect (Waliyuddin & Sulisworo, 2021). Marwahdiyanti et al. (2021) stated in their study that Arloopa got 88.86% in the very good category of interest indicator and 87.65% in the activity indicator when they applied this AR to their participant of the different ability students.

Previous studies have revealed that AR-based Arloopa has a potential role in education. However, when the researcher examines the literature, it is seen that there is a lacuna of study discussing how Arloopa is applied as digital learning media in English. This lacuna motivates the researchers to conduct this study. Thus, the researchers want to reveal the implementation of AR based Arloopa in English as media of learning. The researchers attempt to discover a portrait of the learning process utilized by digital media Arloopa. Using a descriptive qualitative design, the researchers aim to get a picture of the learning process utilized by the Augmented reality-based learning media of Arloopa. The current study adds to the body of knowledge by illuminating the unique challenges and learning. The studies help shape future research and practice in education. The research question navigates this study, "How does the teacher utilize augmented reality based-Arloopa for his English descriptive text classroom?"

Literature Review

Augmented Reality

One of the hottest subjects these days is augmented reality, a kind of experience that enhances reality as it already exists (Yildiz, 2022). In a nutshell, this idea is that computers augment and transform reality. Augmented reality (AR) is a new technology that involves the overlay of computer graphics on the real world" (Silva et al., 2003). Three elements describe Augmented Reality: blending the actual and virtual worlds, real-time interaction, and registration in 3D (Silva et al., 2003). , this technology combines the real world with virtual objects and

provides interaction between real and virtual objects. It is essential to differentiate augmented reality (AR) from virtual reality (VR) due to the presence of virtual items. While items in VR are exhibited in a simulated world, those in AR are displayed in real time and within their surroundings (Yilmaz & Goktas, 2018). Applications for augmented reality are already widely utilized in daily life, mostly on mobile devices. The most popular ones include Google Street View, Google ARCore, and Microsoft HoloLens.

Augmented Reality Arloopa as Learning Media

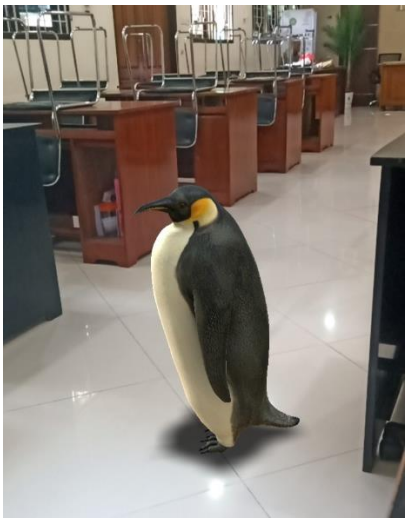
The application of augmented reality (AR) technology has expanded to include the military, marketing, entertainment, engineering, psychology, and advertising due to advancements in both hardware and software. With AR's cutting-edge technology, the apps have developed into rich learning environments (Yilmaz & Goktas, 2018). Technology utilizing augmented reality promotes students' motivation, excitement, and social interaction in addition to their tenacity, attention, and creativity in the classroom(Madanipour & Cohrssen, 2020; Rakhimjonovna, 2023).

Applications for augmented reality are being utilized extensively everywhere, from elementary schools to universities. Students could view the subjects they had learned in class or at home owing to these applications, and they improved as learners because of the content interaction (Kim & Kim, 2018; Madanipour & Cohrssen, 2020; Yildiz, 2022). One of the augmented reality-based applications is Arloopa.

The Arloopa app is an AR visualization tool that combines the physical and digital worlds. It places virtual content in a real environment, creating fantastic, interactive, and valuable experiences (arloopa, 2023). Arloopa is a virtual and augmented reality software offering cutting-edge AR services that enable users to display digital content—such as text, photos, and sounds—over an actual environment. Arloopa has been used in the education context to develop test instruments integrated with augmented reality and encourage high-order thinking and digital literacy skills (Waliyuddin & Sulisworo, 2022; Zuniari et al., 2022). Arloopa application can be utilized in learning media to enhance the delivery of educational materials through augmented reality experiences, potentially improving student engagement and understanding.

Arloopa offers various features that can be utilized as learning media in educational settings. Some of these features include: (1) Marker-based, markerless, and location-based AR: Arloopa supports different methods of augmented reality, allowing for versatile and flexible integration of digital content into real-world environments; (2) Video, photo, and GIF recording: Users can record and save videos, photos, and GIFs using the Arloopa application, which can be used for later review or sharing purposes; (3) Social sharing: Arloopa enables users to share their augmented reality experiences with others, fostering collaboration and communication among learners; (4) In-app 3D objects library: The application comes with a diverse library of 3D objects that can be used to enhance learning experiences and provide a more immersive environment for students; (5) Customizable teaching context: Arloopa allows educators to adapt the application to their specific teaching needs, incorporating custom content and themes; (6) Wide range of subjects: Arloopa can be used to teach various subjects, including English, Math, Science, Fine Arts, and Computer, among others; (7) Immersive and interactive learning: Arloopa's augmented reality features make learning more engaging and interactive, allowing students to better understand and retain information (Roussos et al., 2022; Yildiz, 2022).

Figure 1. AR Arloopa example with a virtual penguin in real-time
Authors' collection



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English Descriptive Text

The text used to describe something, someone, an animal, a place, or an event to readers or listeners is known as descriptive text (Knapp & Watkins, 2005; Maru et al., 2020; Noprianto, 2017). Describing involves arranging their characteristics, beginning with their names, classifying them, and addressing their traits, behaviors, functions, and the like. This practice allows readers or listeners to understand what the writer is writing about as though they witnessed it firsthand.

Descriptive writing has stages and a framework, much like other genres. The terms identification, broad statement, and description refer to a descriptive text's constituent parts or schematic structures. A specific participant, such as a person, object, location, animal, or event, is intended to be introduced and identified through identification. Conversely, description is designed to provide a comprehensive overview of the individual based on their traits, attributes, demeanor, and habits (But et al., 1998; Knapp & Watkins, 2005; Noprianto, 2017).

Method

The current study uses a qualitative approach with a descriptive design to understand the English learning process by utilizing Arloopa as a digital learning media. To collect data, the researcher uses observation in the class. The context of this study is the learning and teaching process in an Islamic junior high school (MTs) in Malang district, which has implemented *Kurikulum Merdeka* for seventh grade. The purposive sample is English in the 7th class with a descriptive text topic. The study is conducted in the second semester of the academic year 2022/2023. As additional information, the students of this school mostly stay in Islamic boarding schools that do not allow them to equip themselves with mobile phones in their daily learning and when they are in school.

The researcher will undertake the following steps. First, the researcher will read literature about using Arloopa digital learning media. In the next step, the researcher will observe the teaching and learning process, which is utilized with the Augmented Reality (AR) -based learning media of Arloopa. During the teaching and learning process, the researcher will observe, make notes, and record the learning process.

To analyze the data, the researcher uses thematic analysis, in which the researcher involves one participant in a single case study, namely the researcher himself, whose role is that of the English teacher of the selected class (Braun & Clarke, 2022).

Findings and Discussions

Learning media has a significant role in the learning process. It helps the teacher to deliver the material and the students to get comprehension on the delivered materials. It is like a bridge that connects the material and students. Nowadays, many teachers utilize digital learning media in their teaching. Digital learning media is supposed to be more attractive to the students. The teacher attempts to find an appropriate digital learning media considering the learning materials. The teacher, in this study applied Arloopa as the learning media.

Arloopa is an augmented reality application (AR) designed to provide immersive and interactive AR experiences for various industries and applications. The researcher tried to unlock the features of Arloopa. They are:

1. Augmented Reality Content Creation: This application offers tools and capabilities to create and design AR content; it enables users to develop their own AR experiences, including 3D object tracking, image recognition, spatial mapping, and animation features.
2. Marketing and Advertising: It enables businesses and marketers to leverage AR technology for promotional purposes. It allows them to create engaging and interactive AR campaigns, such as AR product visualizations, virtual try-on experiences, and gamified marketing activations.
3. Education and Training: Arloopa can enhance learning experiences in educational settings. It enables the creation of AR educational content, such as interactive simulations, virtual tours, and 3D visualizations, to make complex subjects more accessible and engaging.
4. Entertainment and Gaming: It has applications in the entertainment industry, offering opportunities for AR-based gaming experiences. It allows developers to create AR games that blend the virtual and real worlds, providing users with unique and immersive gameplay experiences.

5. Real Estate and Architecture: Arloopa can be used in the real estate and architecture sectors to showcase properties and architectural designs. It lets users visualize and explore virtual 3D models of buildings, apartments, and interior designs, helping potential buyers or investors make informed decisions.
6. Industrial and Technical Applications: Arloopa can be used in industrial and technical fields for training, maintenance, and remote assistance. It allows workers to access AR overlays with instructions, diagrams, and real-time data visualization, improving efficiency and accuracy in complex tasks.

Overall, Arloopa is designed to empower users to create, deploy, and experience immersive augmented reality content across various industries, ranging from marketing and education to entertainment and industrial applications.

In connection with the third feature of Arloopa, the teacher utilized their teaching through this application. The teacher uses the feature “Animal” menu. Indeed, Arloopa has various menus. They are Animal, Education, Art and Museum, Entertainment, Dinosaurs, Masks, NFT, Join The Cause, Cultural Heritage and History, Virtual Tours, Characters, Games, The Matrix, Science and Technology, Human, Fashion, Cars and Vehicles, Weapons and Military, Architectural, Industrial, Furniture and Home, Share Love, Holidays, Food, Nature, Offline Packages, and My Models. The teacher, here, uses the "Animal" menu rather than the "Education" menu. This menu selection is based on the material the teacher will deliver to the students.

Designing Learning Module

The researchers gathered the document of learning. It was in the form of learning modules. The researchers examined it to check what digital learning media would be utilized. The teacher organized the learning module based on the material the learners would be studying. It was stated in the learning module that the lesson content consisted of descriptive text with an animal theme. The learning module document also noted that the teacher would use Arloopa, a digital learning tool, to present descriptive text content. The teacher explicitly mentions the learning media that will be utilized in the lesson. The teacher selected learning media based on the learning objective as it related to the learning resources. Learning resources are commonly

defined as text, video, application, and other materials that help learners meet learning objectives (Nyoman et al. et al., 2021; Sidik, 2019).

The learning process utilized with Arloopa

As stated in the teaching module, the learning material is descriptive text with a sub-topic describing animals. In normal conditions, the teacher and all the students bring Android phones so they can access the Arloopa application by installing it beforehand. They then open the application by clicking its icon, and Arloopa will be opened. However, this normal condition did not appear in this classroom. All the students could not access Android phones due to the code of conduct in their school.

As mentioned in the introduction, the students of this school were not allowed to bring their Android phones into the classroom. Meanwhile, Arloopa is digital media based on the android platform. Hence, to apply this media, the teacher and the students needed an Android device to run it. Using this medium was a new challenge for the teacher to utilize the media.

The teacher then decided to use one Android phone for all. The teacher would use his Android phone to access Arloopa and project the phone's monitor into the LCD projector, so all the students can view the object Arloopa monitored. The teacher should connect the phone to the projector to do this trick. However, it is too difficult due to their compatibility. The socket of the projector does not accept the socket of the phone. The teacher attempted to connect the phone to the laptop with a wireless connection; then, the laptop was projected into an LCD projector. This trick runs with trial and error.

Being familiar with technology is crucial to the teachers as they teach Z generations, who are always accompanied by technology in their daily lives. The success of technology-based language learning dramatically depends on the instructors' choices for language teaching methods and their technical proficiency with digital tools and platforms (Lam et al., 2018; Lee, 2017; Nugroho & Mutiaraningrum, 2020).

The teacher prepared a laptop with Windows 10 as its operating system; he also prepared an Android phone and checked the LCD Projector installed in the classroom to see whether the LCD was on typically or not. The teacher plugged the VGA cable into the VGA socket on the laptop that was previously turned on. Next, the teacher tried to connect the cellphone display to

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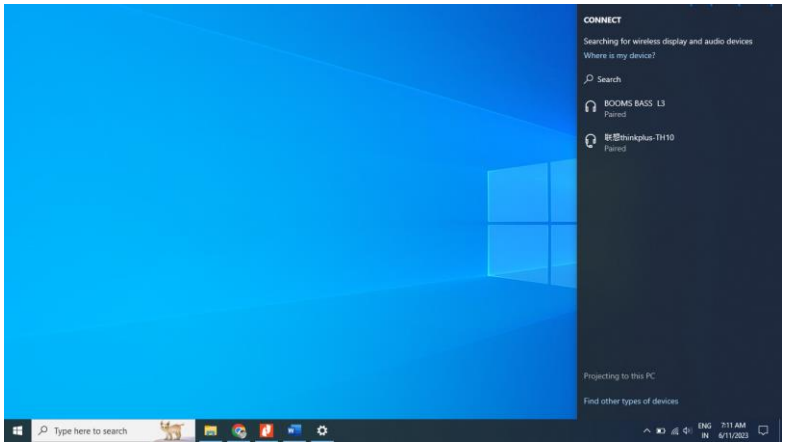
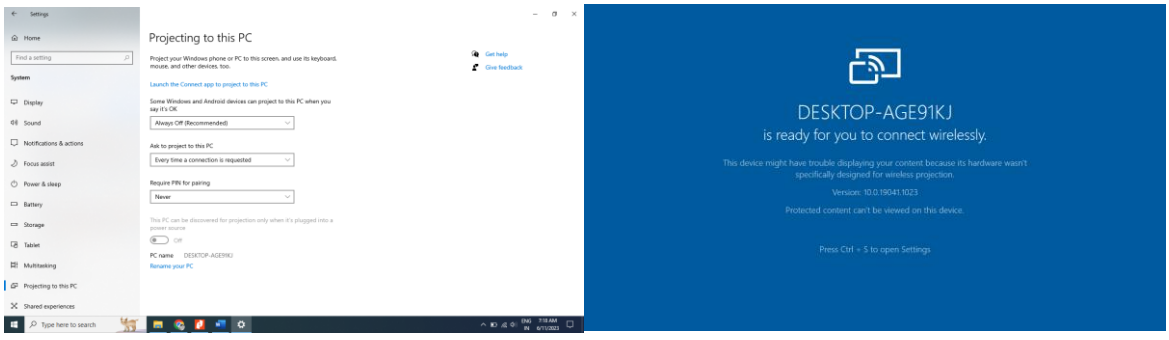
the laptop display by pressing the Windows and K buttons. Then, a project to this laptop menu appeared at the bottom right of the laptop, and the teacher clicked on the menu.

Figure 2. Projecting to this PC option
Authors' collection



The windows directed the teacher to the projecting to this laptop menu, and the Launch the Connect app to project to this PC option appeared. The teacher clicked on the command then Windows displayed information about the Windows ID to use the cellphone to recognize the identity of the laptop. This display also indicated that Windows was ready to accept display connection connections.

Figure 3. Launching menu and Dekstop ID
Authors' collection



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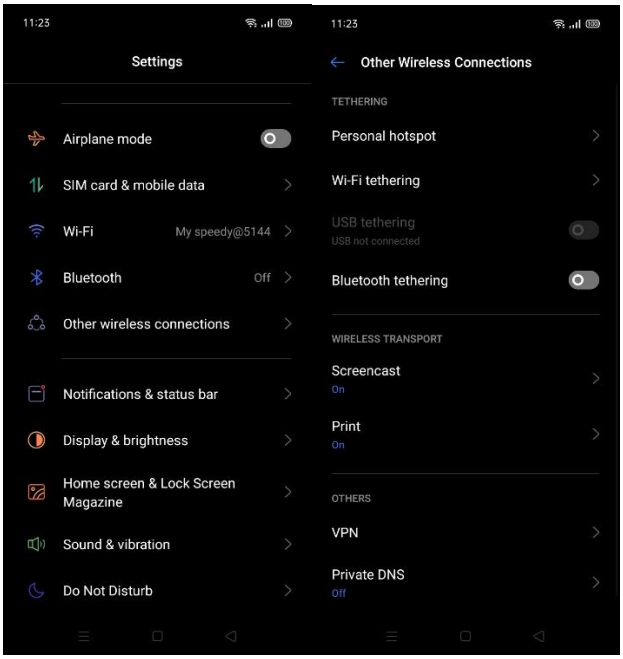
On the settings menu on the mobile phone, there was another wireless connection menu; the teacher used this menu to connect the mobile phone display to the laptop display. The teacher then clicked on the menu and would be directed to the screencast menu.

Figure 4. Phone Setting Menu
Authors' collection



Screencast is a menu that can be used to display the cellphone screen on the screen of another supporting device. This connection requires the user to activate the wireless connection. Then, the teacher must activate the wireless connection on the cell phone and laptop.

Figure 5. Screencast menu
Authors' collection

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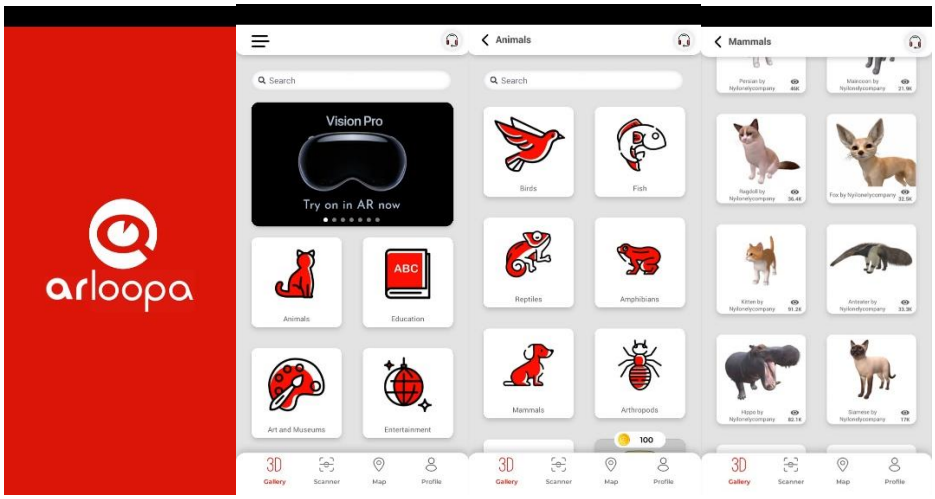
The teacher then clicked on the screencast menu and was asked to activate the menu. When the menu was active, the cellphone would scan for the availability of a wireless display connection, including the appearance of the laptop's ID. If the ID of the laptop used appeared, the teacher could click on the ID to activate the display connection between the laptop and cellphone.

When this connection was successful, the teacher opened the Arloopa application installed on the cellphone. This application required an internet network. When the application was open the teacher selected the animals menu. The animal's menu grouped many sub-menus by animal types, such as birds, fish, reptiles, amphibians, mammals, arthropods, and mollusks.

Figure 6. Arloopa application in its menus.
Authors' collection



Then, the teacher chose the sub menu mammals. The mammal sub-menu had various mammals such as tapirs, deer, elephants, and kangaroos. The teacher chose a cat mammal animal.

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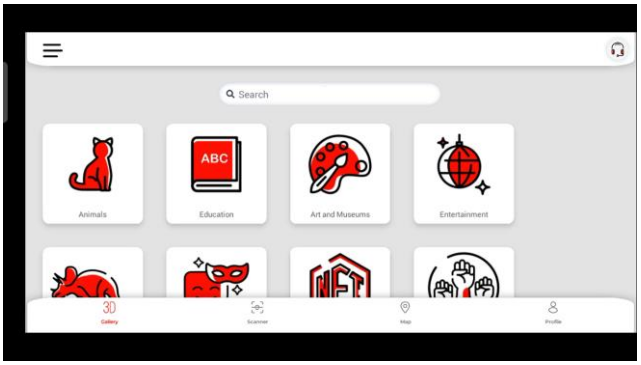
Figure 7. The phone's display mirrored in the laptop's display

Authors' collection



When the cat icon was selected, Arloopa projected the camera on the target area, and a virtual cat appeared along with the target image, which was the projection of the cellphone camera. This virtual cat display was then forwarded to the laptop and forwarded to the LCD projector.

Choosing a learning resource, in this case, is a virtual cat. The material, which was underway, was descriptive text. The text describes something, someone, an animal, a place, or an event based on its characteristics. The virtual cat was chosen because it looks like an animal but is virtual. One item that can be used as the subject of a descriptive paragraph is an animal, and virtual cats serve as a descriptive text object. This selection is connected with the material and objective of the learning (Yilmaz & Goktas, 2018; Larasati et al., 2021; Maruf et al., 2022; Sidik, 2019).

Then, the teacher started delivering the material when the cellphone display had been projected by the LCD projector on the screen. The teacher delivered the listening text to the students, and the students paid attention to the descriptive text while they saw the appearance of a virtual animal in their class.

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Figure 8. Virtual cat of Arloopa in the classroom
Authors' collection

In the next stage, the teacher asked several questions related to the text that had been read. The students simultaneously answer the questions posed by the teacher. At the end of the lesson session, the teacher asked students to rewrite the contents of the text that had been read but still displayed the virtual animals described. At the end of the class, the teacher asked the students to make their descriptive text by describing the object projected by Arloopa via LCD Projector. The students are enthusiastic about doing that assignment. They can arrange sentences describing things more easily than before.

Researchers who participated in the class activity found that students learned descriptive text much better using Arloopa's AR learning media featuring virtual animals. Students see virtual creatures as if they were real. It is straightforward to notice the characteristics of the animal. How an animal's physical characteristics, such as headdress, skin color, and body shape, can be seen. Virtual animal displays can help students arrange words into sentences that explain animal objects. Using Arloopa for learning descriptive text can increase students' attention and motivation in learning and also increase students' creative thinking. These findings were in line with the work of other studies in the area of utilizing digital learning media (Hsiao et al., 2012; Ivanova, 2011; Lam et al., 2018; Yilmaz & Goktas, 2018; Yu et al., 2018)

Conclusion and Implication

Digital learning media can be defined as media that help teachers in the teaching and learning process by utilizing applications to deliver the learning material. Augmented reality

Arloopa can be used as digital learning media by utilizing the features in Arloopa. Descriptive text is a text that depicts an object based on its appearance. This study aims to capture a portrait of how English teachers use Arloopa's augmented reality as a learning medium in teaching descriptive text material with sub-themes depicting animals.

Based on the discussion results, Arloopa can be a learning medium. Using Arloopa is enough to drain the teacher's technological abilities if, in that class, students are not allowed to bring cell phones. The teacher needs to connect the cellphone display to the LCD projector so that all students can see the objects displayed by Arloopa.

This research provides a positive impact in the form of a portrait and insight for teachers who want to utilize the technology of augmented reality Arloopa in their classroom instruction. This research is limited to describing how Arloopa is used in learning descriptive texts in class where students are not equipped with cell phones. Due to the limitation of the research, future research may investigate how Arloopa is used in English classrooms where all students can hold their cell phones and how the teachers' and students' voices on utilizing Arloopa in the English classroom.

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