

‘AIClopedia’: How Does It Facilitate Gen-Z Students in Learning English?

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ABSTRACT

Gen-Z has specific characteristics, one of the characteristics is being strongly connected to technology. It makes teachers nowadays should be able to facilitate them with technology-based learning media. One of the technologies that can be applied is Artificial Intelligence (AI). AI provides a self-directed learning activity where the students can learn by themselves using technology anywhere and anytime. This study aimed at developing a prototype design of AIClopedia (Artificial Intelligence Encyclopedia) by using the ADDIE method. AIClopedia is a learning media that can be used by the students in learning English which focuses on providing descriptive information of Indonesian endemic animals in two different languages (English and Bahasa Indonesia). The prototype has been judged by educational material and ICT media experts. The data of expert judgment rubrics showed that the prototype was categorized as excellent. It implied that the media can be used in facilitating Gen-Z students in Learning English.

Keywords: Artificial Intelligence; Gen-Z; Indonesian Endemic Animals

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INTRODUCTION

English is known as the language which connects people around the world. By having the ability to communicate in English, it would make it easier for someone to share information with many people from various parts of the world. This fact is also supported by the Indonesian government. The Indonesian government has regulated laws that determine the obligation to provide English subjects as stated in the Peraturan Pemerintah Indonesia No. 20 of 2003 concerning the National Education System (Indonesia, 2003). It is stated that with English, Indonesian young students in the future are expected to be able to develop the existing regional potential and compete with the global society.

A good learning result cannot be separated from the influence of students' learning motivation (Daskalovska, Gudeva, & Ivanovska, 2012; Redondo & Martin, 2015; and Riswanto & Aryani, 2017). Therefore, the quality of students' learning experiences in learning English must be maintained properly. One of the actions that can be taken is to include technology in the learning process. Technology is something new and interesting for students at this time, especially for the Generation Z students who were born around the year of 1995-2012 (Jones & Shao, 2011; and Stillman & Stillman, 2018). This generation is also known as the Digital Natives which is always in touch with technology. Based on the preliminary research that has been conducted in a public senior high school in Badung, Bali, it was proven that 96.1% of the students were ready and familiar with the use of technology. This fact requires teachers' innovation in developing their way of teaching in order to be able to adapt to students' needs for technology. This condition is also in line with the theory of 21st century learning skills, where teachers are required to be able to design appropriate learning by involving technology in the learning process (Saavedra & Opfer, 2012; and Phillips & Trainor, 2014). This is one of the researchers' considerations in choosing the technology to be used in the developed learning media.

One of the technologies that has become part of humans' everyday lives is Artificial Intelligence (AI). Artificial Intelligence (AI) is an application or software which helps humans by allowing computers and machines to stimulate human perception to successfully complete tasks (Murphy, 2019). There are numbers of the use of AI in our lives, such as voice recognition and image recognition applications. This technology has influenced humans' lives tremendously in every aspect.

Education was affected significantly by the use of AI along its process of implementation in teaching-learning activity. AI has become a warm demand for the Gen-Z students. It supports students and teachers in teaching and learning as a learning media. AI is also able to provide new ways of learning which can change learning-teaching and education in a good way (Bhari & Jetawat, 2017; Tuomi, 2018).

AI is believed to be working very well in an independent learning classroom which concerns on students-oriented learning process (Bhari & Jetawat, 2017). It also would lead students to enhance their self-directed learning ability by using AI-based learning media in the process of learning either inside and outside the classroom. AI could help teachers in doing their jobs to teach better and more efficiently about certain objects. On the other side, AI is also very beneficial for students by supporting them to learn anywhere and anytime. The system was believed to be able to assist both teachers and students in order to create a better learning environment.

AI-based learning media was proven to give a significant effect on students' self-directed learning (Haryanto & Ali, 2019; and Holmes, Bialik & Fadel, 2019). It could create

a more independent learning environment and let students control their own learning. Moreover, the use of AI-based learning media could put students in an efficient learning process (Deloitte, 2019). It can help students to learn anywhere and anytime as long as they have the internet connection and supporting device. If it seems from the teachers' point of view, AI also could help teachers to have a better professional environment (Pedro et al., 2019). The use of AI-based learning media provides an assistant which can help teachers in several teaching activities such as answering the students' frequently asked questions. AI-based virtual teaching assistants could free up teachers' extra time to make it more efficient for the teachers, so they can be more focused on other tasks such as giving more respective guidance to the students (Perera & Aboal, 2018).

In this research, the researchers focused on developing an AI-based learning media that can facilitate VIII grade students on Badung regency in English learning. The developed prototype would be named as AIClopedia. AIClopedia comes from AI (Artificial Intelligence) and Encyclopedia. This prototype was expected to be able to display a written and oral description using the technology of image recognition in AI. Based on the result of the interview with the teacher, it was found that animals which are listed as Indonesian endemic animals became the object of this learning media (Widjaja et al., 2014). Endemic fauna are those animals that exist only in one certain geographical region. Indonesian endemic fauna was chosen as the content of this learning media because the students could develop the existing regional potential and compete with the global society. AI-based learning media could create an independent learning environment for students to learn English because it gave the students new learning experiences which supports the teaching and learning process.

METHOD

This study was applied research and developments (R&D) design and ADDIE (Analysis, Design, Development, and Evaluation) model. The research was limited to the development stage. Some instruments such as interview guides, questionnaires, and expert judgement were used in this study. Due to the complexity of the programming process and limitation of time, 5 Indonesian endemic animals were developed as the content of this Artificial Intelligence-based learning media. Those animals were Komodo Dragon, Proboscis Monkey, Birds of Paradise, Bali Myna, and Maleo. The preliminary observation was done in order to find out students' familiarity and readiness towards technology. In the end of this study, the AI-learning media was assessed by the expert using expert judgment rubrics. The expert judgment involves educational material and ICT media experts. These components were validated with poor, fair, good, very good, and excellent scale. The

experts also gave judgment related to some improvements that were needed by the product. Finally, the data was analyzed qualitatively and quantitatively.

FINDINGS

This study administered ADDIE as the research method. In the first stage of the study, an analysis was carried out to discover students' familiarity on using technology. The survey was taken on 203 Junior High School students in Badung, Bali, Indonesia. The data showed that 96.1% of the students were familiar with the usage of technological devices such as smartphone, tablet, laptop, and computer. Unfortunately, the students mostly used those devices to play games or use social media.

A rubric of the expert judgment was conducted in order to assess the quality of the prototype product. The material and media ICT expert were involved in judging this product. In the phase of designing, the material expert was conducted in order to identify the quality of the rubric which would be used as the construction of the product development. The rubric was administered by using likert scale. There were 18 questions in the material expert judgement questionnaire. In the first revision the product was scored with 77 points. Even though the result showed that the material was considered as very high quality, the researchers still needed to do some improvement to the material due to some revision given by the material expert. Moreover, the after revision material expert judgment was conducted. It turned out to get 84 score which also considered as a very high quality product. The result of the material expert judgment is presented as below.

Table 1. Material Expert Judgement Rubric

Score	Value
18 - 32.4	Very Low Quality
32.5 - 46.8	Low Quality
46.9 - 61.2	Neutral
61.3 - 75.6	High Quality
75.7 - 90	Very High Quality

Table 2. Material Expert Judgement Result

Before Revision	After Revision
77	84

The second expert involved in this study was a media ICT expert. It was conducted in order to validate the quality of the prototype product in terms of media ICT. 18 questions were administered as the media expert judgment questionnaire. Likert scale was applied in order to determine the score of the questionnaire. The media expert judgment rubric was prepared in order to identify the quality of the product. Firstly, the prototype was considered to have a very high quality with a score of 85. After that the researchers still established some improvement on the product with the help of the programmers' team because there were some comments and revisions added by the media expert. The after-revision material expert judgment was conducted in order to find out whether there had been some improvement or not on the product. It appeared that this was an improvement on the product which was proven by the result of the judgment. It was considered as a very high-quality product with the score of 85. The table 4 shows the difference between before and after-revision of the media expert judgement score.

Table 3. Media ICT Expert Judgement Rubric

Score	Value
18 - 32.4	Very Low Quality
32.5 - 46.8	Low Quality
46.9 - 61.2	Neutral
61.3 - 75.6	High Quality
75.7 - 90	Very High Quality

Table 4. Media ICT Expert Judgement Result

Before Revision	After Revision
78	85

DISCUSSION

As stated, before that this study was administered in order to develop a prototype product of an Artificial Intelligence learning media for the VIII grade students of a public junior high school in Badung, Bali Indonesia. The media was developed into a website which was constructed based on the syllabus analysis, media development, material and media expert judgment and revision. In the findings, it has stated that 96.1% of the junior high school students in Badung are familiar with the use of technology. Similar result was

also found by the survey done by Indonesia Internet Service Provider Association in 2017. The survey mentioned that 75.50% of the kids in the age of 13-18 were internet users (APJII, 2017). Moreover, JF, Pullen & Swabey (2014) found out that 62% of the kids' technological usage or ownership with the main reason was for socialization.

In the implementation, this study involved 1 English teacher and the VIII grade students of a public Junior High School in Badung, Bali, Indonesia. The similar thing was found out towards an interview with the English teacher. It was discovered that the teacher supported the development of an artificial intelligence learning media which could support students independent and English learning. In term of the topic and also the content of the learning media, the teacher was asked to fill out the syllabus list to determine whether the competencies or the topic fit the class's needs. The teacher decided to use Indonesian endemic animals to be developed in the learning media. Therefore, the researchers decided to call this product "AIClopedia" which pictures AI as Artificial Intelligence and Clopedia as Encyclopedia.

One of the characteristics of artificial intelligence has known as giving students their right to control their own learning (Gamoura et al., 2018). It was discovered that AI gave a tremendous effect on students' independent learning. Based on those studies, it can be assumed that AI enhances students' self-directed learning skills by letting them do the learning at their own pace.

Time and energy sufficiency is also one thing that could be activated through the use of AI in the classroom (Holstein, McLaren, & Aleven, 2018). It was discovered that by implementing an AI-enhanced classroom, the students received adequate help in the learning process. A good AI learning tool is promised to be able to work better with human teachers. In fact, it also saves time and energy on traditional classrooms. As a result, both AI learning media and the real teachers could collaborate to create a better learning environment for the students.

In this study, a survey on students' familiarity on technology was also done in order to observe whether the prototype would fit students' needs and capacity. As mentioned before, the result of the survey showed that 96.1% of the junior high school students in Badung stated their readiness in using technological devices. Therefore, the researchers decided to develop a prototype of AI learning media to teach English in a public junior high school in Badung. The English teacher was also actively involved in this study in the process of material blueprint analysis. It was done in the purpose of finding out the purpose of the material and the competencies that were needed to be achieved at the end of the learning process.

After listing out the students' needs on the competencies, the researchers continued the study to the designing stage. In the designing stage, the researchers prepared several

things such as syllabus or content of the product and draft of the media design. The learning media was occupied with 5 Indonesian endemic animals namely Komodo Dragon, Proboscis Monkey, Birds of Paradise, Bali Myna, and Maleo. Those 5 animals are listed as the Indonesian endemic animals by Widjaja et al (2014) and also considered as National Conservation Priorities by The Indonesian Ministry of Environment and The Ministry of National Development Planning.

BLUEPRINT & TABEL ISI MEDIA AICLOPIDIA

KOMPETENSI INTI DAN KOMPETENSI DASAR
BAHASA INGGRIS SMP KELAS VIII SMP N 5 MENGWI

KOMPETENSI INTI	KOMPETENSI DASAR
3. Memahami dan menerapkan pengetahuan (faktual, konseptual, dan prosedural) berdasarkan rasa ingin tahunya tentang ilmu pengetahuan, teknologi, seni, budaya terkait fenomena dan kejadian tampak mata.	3.1 Menerapkan struktur teks dan unsur kebahasaan untuk melaksanakan fungsi sosial teks deskriptif dengan menyatakan dan menanyakan tentang deskripsi orang, binatang, dan benda, pendek dan sederhana, sesuai dengan konteks penggunaannya.
4. Mengolah, menyaji, dan menalar dalam ranah konkret (menggunakan, mengurai, merangkai, memodifikasi, dan membuat) dan ranah abstrak (menulis, membaca, menghitung, menggambar, dan mengarang) sesuai dengan yang dipelajari di sekolah dan sumber lain yang sama dalam sudut pandang/teori.	4.1 Menangkap makna dalam teks deskriptif lisan dan tulis, pendek dan sederhana.

TABEL ISI MEDIA

No	Nama Hewan (Bhs Indo)	Nama Hewan (Bhs Inggris)	Nama Ilmiah	Deskripsi Bahasa Indonesia	Deskripsi Bahasa Inggris	Gambar
1	Komodo	Komodo Dragon	Varanus komodoensis	Komodo adalah hewan endemik Indonesia yang hidup di Pulau Komodo. Hewan ini memiliki ekor panjang, lidah bercabang, gigi tajam, dan air liur yang beracun. Komodo suka memakan daging. Mereka berkamuflase saat berburu.	Komodo Dragons are Indonesian endemic animals that live in the Komodo Island. They have long tails, forked tongues, sharp teeth, and poisonous saliva. They love to eat meat. They camouflage when they hunt.	

BLUEPRINT & TABEL ISI MEDIA AICLOPIDIA

KOMPETENSI INTI DAN KOMPETENSI DASAR
BAHASA INGGRIS SMP KELAS VIII SMP N 5 MENGWI

KOMPETENSI INTI	KOMPETENSI DASAR
3. Memahami dan menerapkan pengetahuan (faktual, konseptual, dan prosedural) berdasarkan rasa ingin tahunya tentang ilmu pengetahuan, teknologi, seni, budaya terkait fenomena dan kejadian tampak mata.	3.1 Menerapkan struktur teks dan unsur kebahasaan untuk melaksanakan fungsi sosial teks deskriptif dengan menyatakan dan menanyakan tentang deskripsi orang, binatang, dan benda, pendek dan sederhana, sesuai dengan konteks penggunaannya.
4. Mengolah, menyaji, dan menalar dalam ranah konkret (menggunakan, mengurai, merangkai, memodifikasi, dan membuat) dan ranah abstrak (menulis, membaca, menghitung, menggambar, dan mengarang) sesuai dengan yang dipelajari di sekolah dan sumber lain yang sama dalam sudut pandang/teori.	4.1 Menangkap makna dalam teks deskriptif lisan dan tulis, pendek dan sederhana.

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1	Komodo	Komodo Dragon	Varanus komodoensis	Komodo adalah hewan endemik Indonesia yang hidup di Pulau Komodo. Komodo adalah kadal terbesar di dunia. Hewan ini memiliki ekor panjang, lidah bercabang, gigi tajam, dan air liur yang beracun. Komodo suka memakan daging.	Komodo Dragons are Indonesian endemic animals that live in the Komodo Island. They are the heaviest lizards on Earth. They have long tails, forked tongues, sharp teeth, and poisonous saliva. They love to eat meat.	

Figure 1. Material Blueprint Design

The expert judgment was administered in order to understand the part of the design which needed improvement and revision. It was found out that there were some things that were needed to be revised, such as selection of the right sentences, grammar etc. The expert also commented on how the material was well fitted with the syllabus and the learning objective. The result of the expert judgment stated that the score of the assessment of the material was considered as very high quality with the score of 77. Even though the material was believed to have sufficient quality, the researchers still worked on some

improvement due to the experts' suggestions and comments. The improvement of the material after and before expert judgement can be seen in the figure 1.

After revising the material, the researchers applied the after-revision material expert judgment. This assessment was done in order to see the difference of the score between the before and after revision model of the material. The result indicated that there was a significant difference in the result of material expert judgment after and before revision. The score of the after-revision material expert judgment was 84 which was considered as very high quality material.

After establishing some revision on the rubric of the material, the researchers were helped by a team of programmers in order to develop the media. The team of programmers developed the program by using the researchers' blueprint which included animal images to create the layout of the project. Due to the limitation of the time, the game was developed into a platform that can be accessed and used on the website. In the media, there were 5 Indonesian endemic animals that could be detected through AI, those are Komodo Dragon, Proboscis Monkey, Birds of Paradise, Bali Myna, and Maleo. It took 4 months to accomplish the program.

AIClopedia operates by recognizing the images of Indonesian endemic animals through Artificial Intelligence-developed camera. The prototype was targeted to be able to provide both written and verbal information of Indonesian endemic animals. This function hopefully could provide students with support in descriptive text learning, speaking and listening skills. It is able to recognize both moving objects and also regular pictures of Indonesian endemic animals which have been inserted in the system as mentioned previously. Through this product, it was expected that the students could learn anywhere and anytime.

The media expert judgment was done in order to figure out the quality of the developed media. It was found out that the score of the media expert judgment was 78 which was considered as very high quality. Unfortunately, there were some comments from the expert which mentioned that the media needed some improvements on the wrong typed sentences in the result of the system searching, the system unable to detect some pictures of the animals, etc. As a result, the researchers did some revision on the media with the help of the programmers' team.

After the researchers revised the media with the help of the programmers' team, the after revision media expert judgment was conducted. It was applied in order to define whether there was some improvement or not on the product. It appeared that there was an improvement towards the product which could be seen on the final score of the judgment. It was stated that the score was 85 which is considered as very high-quality media. The

image of the media can be seen in figure 2. The media can be accessed on aiclopedia.netlify.app.

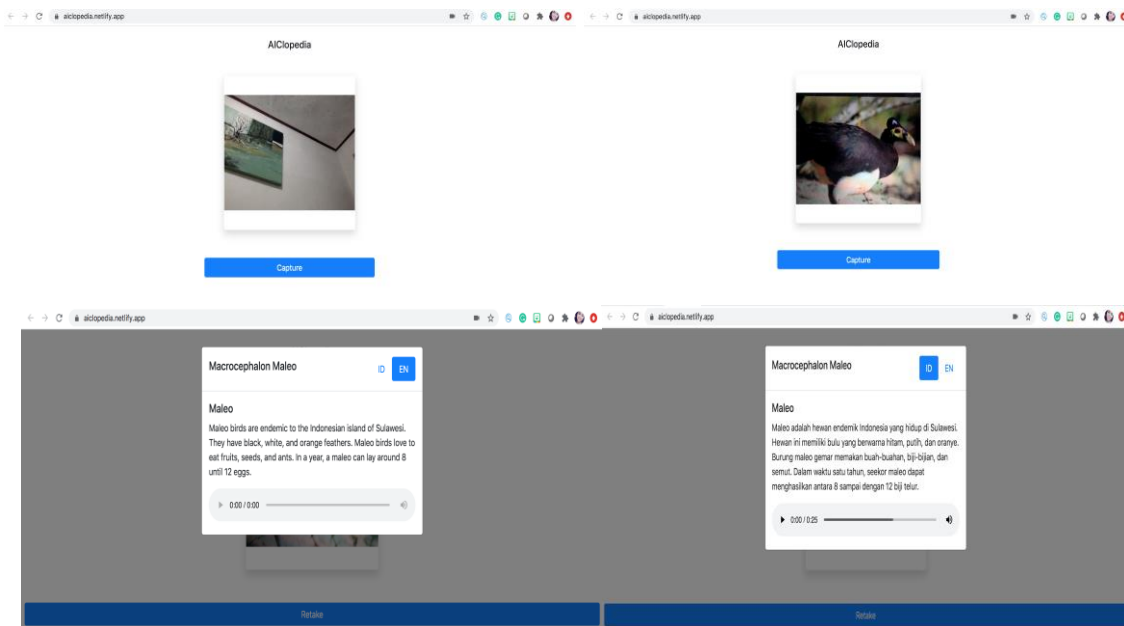


Figure 2. Product Development Result

CONCLUSION

This research applied ADDIE Research and Development method which aims to develop a prototype product of AI based learning media called AIClopedia. In this study the research has been done until the development stage. This product of this study was expected to be able to provide a self-directed learning media where the students could learn on Indonesian endemic animals anywhere and anytime they needed. It is able to recognize both moving objects or regular pictures of Indonesian endemic animals. Due to the limitation of the time, 5 endemic animals were inserted in the system. Those were Komodo Dragon, Proboscis Monkey, Birds of Paradise, Bali Myna, and Maleo.

After developing the material and the media, the researchers distributed the questionnaire to the experts. Material and ICT media experts were involved in this study. The material expert judgment was established in order to determine the appropriateness of the material inserted in the product. Meanwhile, the media expert was administered in order to know whether the prototype has been developed sufficiently. The final data of the material and media expert showed that the prototype could be recognized as a very high quality product.

After the implementation of the research and development process, AIClopedia is expected to be able to give students a technological-based learning media which supports

their self-directed learning activity inside or outside the classroom. The product is also expected to be able to help teachers and create a better result of the teaching and learning process. The time saving can be caused by the automation answering system that works through AI image recognition function in the product.

AIClopedia is a prototype product which needs further improvement. Hopefully the future research can develop an AI-based learning media that is able to recognize more numbers of the Indonesian endemic animals. The future research is also expected to be able to continue the study to the implementation and evaluation stage. The subject of the study is also needed to be broadened, since this study only involved the VIII grade students in one of the public junior high schools in Badung, Bali. Therefore, it was suggested that the future research would apply greater participation in a difference and greater participants.

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