

Artificial Intelligence Application in English Learning for The Students with Hearing Loss

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Abstract. The rapid development of technology encourages the use of artificial intelligence applications in various fields of life, including education. This happened in the era of the COVID-19 pandemic, where learning through digital learning platforms has become a common place for teachers and students around the world. One area of learning that can utilize artificial intelligence is English through Kahoot. For students with hearing loss, the inability to receive information through sound can perfectly affect their ability to communicate. This is because deaf people have limitations in acquiring language and experience problems speaking. In addition, the lack of function of the sense of hearing causes children with hearing loss to be unable to imitate spoken words precisely and clearly, which results in ineffective communication. This study aims to determine the effectiveness of using artificial intelligence to learn English through Kahoot. The research method used is quantitative with a quasi-experimental approach. The research participants consisted of 50 students with hearing loss in SLB B Budi Nurani Sukabumi City. The results of the study show that there is a significant increase in learning English after using the Kahoot artificial intelligence program. There is an influence of 35.88% between the implementation of game-based interactive quiz media and the Kahoot artificial intelligence program on the learning outcomes of experimental group students. The completeness of the student study groups experiment at the time of posting was 90% higher than the group control (79.5%)

Keywords: Artificial Intelligence Application, English, Students with Hearing Loss, Kahoot

1 Introduction

The Industrial Revolution 5.0 is a fundamental thing that provides changes to how we socialize, work, and carry out daily activities. This virtual world with connections between three variables, namely data, machines, and humans, is what is referred to as the Internet of Things (IoT). The existence of IoT shows the role of Artificial Intelligence (AI) as a unique identifier of industry 5.0. AI is designed to model human thinking and cognitive performance related to how a machine can record information, imitate it, and modify it automatically. As one of the branches of computer science, AI is studied in order to replace the role of humans.

The ability of Artificial Intelligence to process and analyses data more quickly and efficiently than humans are the main reason why this technology is increasing-ly in demand and used in various fields, including education. One of its applications is in the development of Artificial Intelligence based English learning applications through the Kahoot application. To adjust the development of language and technology, educators can do so in a number of ways. One of them is technology. In this case, learning English can be integrated with technology [1], [2], [3], [4], [5], [6]. According to [7] the use of Artificial Intelligence technology in the class-room can help improve students' English skills. In addition, applications based on Artificial Intelligence can record and analyze students' English skills well. The results of the study stated that the technology was very helpful in teaching English. Meanwhile, according to [8] the use of Artificial Intelligence technology in learning English can help students improve their speaking skills. The results of the study showed that students who used applications based on Artificial Intelligence experienced a significant increase in their speaking ability compared to the group that did not use AI technology.

The use of Artificial Intelligence in learning English can provide an advantage for students because they can practice with a system that provides direct feedback about the quality of their English. In addition, the use of Artificial Intelligence applications in learning English also allows students to practice anytime and anywhere without depending on the schedule of tutors or instructors.

English is an international language that is widely taught at every level. As a medium of communication, English offers a wide range of skills for users to master in order to speak English, which can be utilized to produce effective communication with interlocutors. Through language, with or without realizing it, humans have the ability to give and receive information when communicating. The ability to receive information is a receptive ability, while the ability to give information is a productive ability. Not everyone has this ability; some just master productive abilities, and some others only master receptive abilities. Like-wise, strategic learning in English in schools must be increased so that it becomes interesting and student learning increases.

English is a compulsory subject in schools and other places. Competence is divided into four categories: listening, speaking, reading, and writing [9]. Learning English requires special attention because there are many problems regarding the lack of interest of students in learning languages. English, which is the reason students are less enthusiastic to follow learning. So, it is especially important for educators to increase students' interest in learning in this digital era by providing learning motivation.

Education is one effort to improve human resources. Education is also a basic need for every individual who wants to progress, be it a normal child or a child with physical and/or mental

disorders. In [10] concerning the National Education System, it is said that education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by them in society, nation, and state.

According to [11], education consists of several types, namely general, vocational, academic, professional, vocational, religious, and special education. In Law No. 20 of 2003, Article 32 concerning the National Education System also says that special education is education for students who have a level of difficulty following the learning process due to physical, emotional, mental, social, and/or potential intelligence and special talents. According to Government Regulation Number 17 of 2010, Article 133 paragraph (4) confirms that "the implementation of special education units can be carried out in an integrated manner between educational levels and/or between types of disorders," known as SLB. The levels of education include early childhood education (TKLB), basic education (SDLB and SMPLB), and secondary education (SMALB) for each type of disorder.

According to [12], special schools are educational institutions that are prepared to handle and provide special educational services for people with certain types of disabilities. SLB B Budi Nurani Sukabumi City is one of the educational institutions that handles and provides special education services for students with special needs such as blindness, deafness, mildly mentally retarded, moderately mentally retarded, quadriplegic, mentally retarded, genius, multiples, and autism. In the process of teaching and learning, this educational institution is different.

According to [13], deaf children can also be called visual children because they store more information by seeing or using their visual senses. So that deaf children experience limitations in receiving auditory information. In understanding subject matter at school such as Indonesian, mathematics, and English, citizenship education (PKN), and others. These limitations cause difficulties for teachers in delivering material that is abstract in nature, especially in the eyes of English lessons. One of the functioning multimedia and artificial intelligence technologies to support the process of English learning activities is Kahoot.

According to [14], Kahoot is a platform- and technology-based free learning medium in the field of education. Kahoot is a response system for learning media game-based students. [15] Kahoot is an interactive and usable medium. For the learning process. This interactive medium is internet-based and has four features such as quizzes, discussions, games, and polls. Kahoot can be used to explore students' knowledge and understanding about learning topics and help students validate understanding by carrying out a pre-test or post-test, whose assessment is then carried out collectively. The scoreboard that appears on the Kahoot when played encourages them to answer questions more carefully and thoroughly. On the basis of the background provided above, the following problems can be found: How effective is using artificial intelligence to learn English through Kahoot?

2 Methods

The research method used is quantitative with quasi experiment approach. According to [16], a quantitative approach is used to test a theory to present a fact or describe statistics, which show the relationship between variables, and some are developing concepts, developing understanding, or describing many things. The research subject is 50 students with hearing loss in SLB B Budi Nurani Sukabumi City. Sampling is done using the purposive sampling technique. Class participation is based on the considerations of the class taught by the lecturer.

A sample of this research is offering A as a control class with the application of power-based quiz points and offering B as a class experiment with quiz-based interactive using Kahoot! The variables in this study are: the independent variable is the quiz model (X), and the dependent variable is learning outcomes. (Y1) and learning motivation (Y2). Design research using a posttest pattern-only control group design. Technique Data collection using the posttest technique to measure results Student learning and the questionnaire method to know the motivation to learn. This study employs regression linear and post-hoc comparisons, assuming that the normality and homogeneity tests have been performed beforehand. Data analysis was performed on values posttest as knowledge value, value attitude skills, and values. Something variable is said to be different if probability or significance is less than 0.05, and a variable is said to be no different if probability or significance is greater than 0.05.

3. Literature Review

Students with Hearing Loss

Hearing impairment in Indonesian is translated as deaf. This term describes the presence of physical damage or interference. As a result of this damage, resulting in damage or hearing loss. Children have difficulty obtaining and processing information that is auditory in nature, so there are obstacles to interacting and communicating verbally. In other words, children experience disabilities in communicating as a result of a loss of hearing function (impairment). According to [17] children with hearing impairments are those who have less competence in the development of balance, coordination of body movements, and movement.

The term deaf is used to describe both those who are completely deaf and those who are simply hard of hearing. Difficulty of hearing is hearing loss that can be permanent or temporary and clearly affects a child's learning achievement but is not included in the definition of deafness. Deaf means a disorder so severe that the child is unable to process language information through hearing, with or without an amplification device, which clearly affects academic learning achievement. Deaf children are unable to hear sounds with an intensity of 90 db. Those who are still able to hear sound intensity below 90 dB are called hard hearers. Children with hearing loss need some support so that it is easier for them to learn and communicate. Developing technology allows children with hearing loss to independently operate various tools, such as computers and internet channels, as aids in learning and communicating [18]. As a learning tool, for example, many interactive tools have been developed, both program-based, application-based, and web-based, for the deaf [19].

Artificial Intelligence Application

The development of artificial intelligence (AI) technology in the field of education diverts conventional learning in the classroom. The application of AI in the field of education, which has been characterized by the existence of blended learning, reduces the dangerous risks identified as the latest method for operating MOOC platforms. The existence of blended learning also proves the theory of AI and the Marxian Alienation's impact on AI as an innovation in learning [20]. There are several non-formal learning institutions that have also implemented AI in the process. Examples of courses that have implemented AI technology include those on Udemy, Google AI, Alison, Khan Academy, Duolingo, Kahoot, and others. This course is also accompanied by a facilitator who communicates online with the materials that have been grouped according to the understanding roadmap that has been prepared.

According to [21], artificial intelligence (AI) has had a long history in education, with initial developments dating back decades. In the 1960s, researchers began to explore the potential of AI in education, especially in the area of intelligent tutoring systems (ITS). Over time, the applications of AI in education are expanding, covering areas beyond smart tutor systems. The emergence of natural language processing (NLP) and machine learning techniques is further expanding the possibilities of AI in education [22]. AI technology is used to provide language learning support to students. AI-powered platforms and tools offer interactive exercises, real-time feedback, and adaptive content delivery based on the learner's needs and skill level.

Kahoot

Kahoot is a platform with a live response system that engages students through games such as quizzes, discussions, and pre-built or impromptu surveys. Its use can inspire students to learn. Conveniently, students do not need an account to access the quiz. Moreover, it can be accessed by any device with a web browser, such as an iPad, Android, or iOS device. However, teachers do need an account to create quizzes.

Kahoot is useful for educators as they engage in introducing new content or reviewing old content. Data can be collected and reviewed as Excel documents to measure students' understanding of content. Using Kahoot may vary in terms of assessments and projects such as formative assessments, diagnostic assessments, research projects, and Kahoot! presentations. allows users to create fun quizzes. Students use computers, smartphones, or other devices to play along. Users can create flashcards for review. Users can also embed multiple videos and use Kahoot! as part of the teaching process, or students can create review games for sharing purposes [23].

4 Results and Discussions

Media interactive educational game-based Kahoot!, 13 students (28%) had a good response, 4 students (5.1%) had enough, and only 3 students (1.5%) had a less positive response to the application of the quiz. media interactive educational game-based Kahoot! Based on test results that can be done with SPSS Note that there are differences. Significant intermediate learning outcomes were observed in experimental and control groups. The significance of this difference in learning outcomes is supported by the mean difference between the learning outcomes of the two groups, which is 7.3 units for the experimental group and 79.5 units for the control group. Learning outcomes are taken from the sum posttest value.

Table 1.

Value	Average experiment	Average Control
Post Test	90	79,5

Based on Table 1, The differences in learning outcomes between classes experiment and control are because experimental group students are more active and more relaxed inside quiz

implementation. Students get feedback directly from the quiz that was held, so the stabilization and evaluation of the material are immediately given. enthusiasm and group student motivation experiment are also higher, as evidenced by the assessment rubric by 90% of group students. More experiments are ready to follow the quiz than the control group, only 68%.

A test of the influence of quizzes on learning outcomes with the help of SPSS Windows shows the application of interactive quizzes as media-based educational games! The regression equation, $Y = 39.823 + 0.587 X$, predicts a 35.88% effect on learning outcomes for experimental group students. Every increment in the one-learning method score (X). tends to be followed by an increase in the learning outcomes score of 0.567 units. R Square results show equal to 92.2%, which is the percentage of the size of the contribution of the influence of the application of quiz media interactive educational game-based Kahoot. So, it can be concluded that the higher the usage score of the media quiz, the higher the student learning outcomes.

From the explanation above, we can conclude that the application of media-education game-based interactive quizzes has a deep effect on student learning outcomes. Due to the application of the media educational game-based interactive quizzes, Kahoot! can speed up student understanding of material that has been taught because it provides feedback directly. Students can more solidify themselves and dare to express an opinion about the material that is felt to have less understanding.

5 Conclusion

The Kahoot application can increase students' interest in attending English lessons in class. This application can also increase the level of understanding of deaf students related to the learning material taught by students through exercises. The presence of AI technology is a breakthrough in the field of education to facilitate learning and foster independence. There is a significant difference in intermediate learning outcomes between students with the application of game-based interactive quiz media (kahoot! education) and students with the application of quiz-based media (Power Point). There is an influence of 35.88% between implementations of game-based interactive quiz media kahoot education! on the learning outcomes of experimental group students. The completeness of the student study groups experiment at the time of posting was 90% higher than the group control (79.5%).

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