

# CHAPTER I

## INTRODUCTION

This introduction sets the context for the research on the perceptions of vocational teachers and students at SMK Negeri 1 Singaraja regarding artificial intelligence (AI) technology in English language learning. The study aims to uncover their views on the integration of AI in vocational education, emphasizing the importance of understanding its impact on educational practices and the expectations expressed by stakeholders.

### **1.1 Background of Study**

The emergence of the Industrial Revolution 4.0 is marked by advances in various technologies such as Artificial Intelligence (AI), Internet of Things (IoT), automated vehicles, three-dimensional printing, nanotechnology, biotechnology, materials science, energy storage, and multiplication computing (Schwab, 2019). These innovations have significantly improved education, which often progresses along with advances in technology (Rohmah, 2019). The Industrial Revolution 4.0, which is characterized by digital technology, has had a major impact on the economy and industry, through the stages of mass manufacturing powered by electricity in the Industrial Revolution 2.0 and information technology in the Industrial Revolution 3.0. Among these technologies, AI stands out in the field of education. AI, a form of artificial intelligence that uses robotics, reflects a new science that uses computers to detect human intelligence, enabling machines to learn, judge, and make decisions (Zhang & Lu, 2021; Hamet & Tremblay, 2017). AI facilitates human life by providing computerized reflection of human actions and plays an important role in understanding, analyzing, and learning knowledge expression methods to control intellectual activities (Duan & Xu, 2012). It draws from computer science, logic, biology, philosophy, and other fields to achieve applications such as speech recognition, image processing, language processing, theorem proving, and robotic intelligence (Na et al., 2019).

Based on this definition, it shows that AI becomes a form of artificial intelligence science through a combination of computers and robotics that can facilitate every human action. In addition, AI has a role needed to create social development and provide more optimal results, especially in increasing labor efficiency, minimizing costs and changing the structure of management resources and increasing demand for new jobs in the creative sub-sector (Na et al., 2019). Through AI, it can run a complex algorithm analysis so that it can bring humans to be in the latest era where AI is able to bring humans to be able to assess risks and encourage performance efficiency (Kaul et al., 2020).

The development of AI has caused changes in various aspects of human activity, including in the world of education (Hwang & Chien, 2022). In the field of education, AI helps students overcome learning challenges and achieve academic success by creating a significant impact on educational technology, providing optimal learning facilities, and offering additional learning through intelligent programs and applications. AI has the potential to increase the efficiency and effectiveness of learning while facilitating the creation of a more tailored and adaptable curriculum. Therefore, it is important for Indonesia to adapt to the Industrial Revolution 4.0, especially in the field of education. As technology develops, education must also evolve, highlighting the inextricable relationship between technology and education. AI technology, which is important in general education and English, is a social and cognitive phenomenon capable of social interaction, performing tasks that require cognitive processes, and communicating efficiently (Abbass, 2021). AI resembles humans in its ability to complete tasks with human-like or superior understanding, making it very helpful for education and learning. AI has a positive impact on students by reducing anxiety and increasing self-confidence in academics and life (Diantama, 2023). It also supports teachers by analyzing and assessing students' learning abilities (Durall & Kapros, 2020) and reducing their workload through grading, evaluating assignments, and providing feedback (Cunningham-Nelson et al., 2019). However, according to Tao et al (2019), there are several difficulties faced by teachers, including: 1) The inability of robots to monitor the personal progress of individual students. 2) Lack of stimulation of students' critical thinking in the learning process using robots in

the classroom. 3) Students' concern for the environment can decrease due to the use of robots or artificial intelligence in education.

In the English learning process, AI is able to provide learning through computer system design so that it can improve the student learning process (Groff, 2017). There are several advantages of using AI in the English learning process including 1) Through AI, teachers can develop more interesting English learning media so that the media can be an effective learning media design to increase student interest in the English learning process (Permana & Astawa, 2020). 2) The use of AI is able to attract and improve interactive learning so that learning is able to identify and achieve learning objectives. Especially in English language learning requires active interaction between teaching staff and learning so that learning styles that are tailored to student needs are needed (Kennedy, 2023). 3) Through AI, educators are able to follow learning trends so that they are able to form special skills, especially in English learning so that students are able to understand the importance of learning English instead of just knowing general skills about learning. In addition, AI is able to encourage the creation of longer skills and is directed at learning so that learning is able to adapt faster in understanding English (Detweiler, 2021). 4) Through AI, teachers are also able to choose English learning materials that are tailored to the material that can be presented by AI. So that through artificial intelligence, it is able to create feedback on the personal learning process, especially in English language learning (Subiyantoro et al., 2023).

Although there are several advantages with AI in the English learning process, the use of AI still has a negative impact on the learning process (Subiyantoro et al., 2023), including 1) The use of AI can replace the role of English teachers and lecturers in the future because the millennial generation already has competence and proficiency and technological literacy, especially in artificial intelligence operations. 2) AI can suppress the analytical and critical thinking skills possessed by teachers or students to be lower due to higher AI dependence, eliminating essential skills and independence in problem solving. In addition, one of the negative impacts caused by AI in education is an increase in academic integrity violations and academic cheating, such as the use of paper writing services

and AI-facilitated paper writing (Chen et al., 2020). This kind of cheating can harm the educational process and reduce academic honesty among students.

The emphasis that Vocational High Schools (SMK) place on acquiring practical skills which are highly valued in the labor market makes them an integral part of Indonesia's educational landscape. The Ministry of Education and Culture (2020) reports that the number of students enrolled in vocational schools is rising year, with over 4.9 million students enrolled in 2019. This indicates a growing understanding of the value of vocational training in raising the workforce's competitiveness in Indonesia in the globalization age. Keeping their curricula and teaching techniques up to date with the rapid advancements in industry is the biggest problem vocational schools confront, particularly in light of the upcoming Industrial Revolution 4.0. Technologies such as Artificial Intelligence (AI) have great potential to revolutionize education by providing more sophisticated tools for teaching and learning. AI has an important role in vocational education, where it can be used to personalize learning. The AI system can analyze individual student data and profiles, such as their abilities, interests and learning styles, so that learning materials can be tailored to each student's needs to maximize their learning potential (Yahya et al., 2023). In addition, AI can also help in creating special learning profiles, such as practicums, which allow learning materials to be tailored to students' individual abilities, learning styles and experiences. However, implementing AI technology in vocational education, inevitably has negative impacts such as privacy and security issues, limited customization in the academic experience, emotional disconnection due to reliance on AI-based systems, over-reliance on technology, misrepresentation of information, and increased screen time which can cause problems reducing critical thinking abilities. The main problems experienced in using AI technology are features that do not function properly, such as green check marks that do not indicate learning completion and inaccurate visual displays of participants' learning progress (Petridou & Lao, 2023).

However, teachers' and students' perceptions of AI technology in English language learning vary greatly. Sumakul et al (2022) found that some teachers and students had a positive perception of the use of AI in English language learning, while the findings of Keleş and Aydin (2021) found that the majority of students

had a negative perception of AI technology. Therefore, based on these differences in perceptions of AI technology in learning, this research focuses on how vocational school teachers and students perceive the use of AI technology in education, especially in English language learning, and explores what challenges are faced by vocational school teachers and students in using AI technology in English language learning.

This research was conducted at SMK Negeri 1 Singaraja, which is precisely in North Bali. The choice of SMK Negeri 1 Singaraja as the research setting was based on pre-observations and pre-interviews conducted with English teachers. It was found that SMK Negeri 1 Singaraja had given freedom to teachers and students in using AI technology in learning English, so that this supports research conducted to investigate teachers' and students' perceptions of the use of AI technology in English language learning. Apart from that, the choice of vocational schools as the research setting in this study was also based on the lack of research conducted on teachers' and students' perceptions of AI technology in English language learning in vocational schools, and even research on teachers' and students' perceptions of AI technology. English language learning in vocational schools is still very limited in Indonesia, especially in Bali.

Teachers at SMK Negeri 1 Singaraja explained that they often and consistently use AI technology to assist in creating teaching materials. AI tools such as Canva, which they use when they have difficulty finding images and can use Canva to generate images from text such as prompt text. Apart from that, teachers also use Tome AI to create PPT slides automatically, Piktori AI which can help them create short videos for students via text, and they take the text from AI tools such as ChatGPT. However, the teacher at SMK Negeri 1 Singaraja also explained that teachers still have to check the grammar, content and vocabulary used in AI tools, so that they are in line with everyday language and can be understood by students.

Apart from teachers, students at SMK Negeri 1 Singaraja said that they often use AI technology to help them in learning English. Students at SMK Negeri 1 Singaraja also said that they used AI technology when learning English and also

when they completed English assignments given by the teacher. The AI tools that are consistently used by students at SMK Negeri 1 Singaraja are Google Translate, DeepL Translator, and Kamusku, where these AI tools can help students to increase vocabulary, help complete assignments, and better understand the material provided by the teacher. Apart from this AI tool, there are several students at SMK Negeri 1 Singaraja who know and often use the AI tool, namely ChatGPT, which helps in learning English. However, students at SMK Negeri 1 Singaraja stated that the continuous use of AI technology would result in dependence on AI and as a result would reduce the role of teachers in learning English.

So based on the description above, researchers are interested in researching and investigating the perceptions of teachers at SMK Negeri 1 Singaraja regarding AI technology that they often or consistently use, such as Canva, Tome AI, Piktori AI, and ChatGPT in supporting English language learning, and identifying how students perceive them. SMK Negeri 1 Singaraja regarding the AI technology they use such as Google Translate, DeepL Translator, and Kamusku to help them in learning English. In addition, this research investigates the challenges faced by teachers and students of SMK Negeri 1 Singaraja in using AI technology in learning English.

## **1.2 Problem Identification**

Based on the background of the problems found above, a number of research problems related to the Investigation of Teacher and Student Perceptions of AI Technology in English Language Learning conducted at SMK Negeri 1 Singaraja can be identified. The problems are as follows:

1. Disruption of conventional teacher-centered learning
2. Disruption of students' critical thinking & increase in plagiarism in students' writing
3. Vocational school students lack understanding regarding the function and use of AI technology
4. Varying perceptions of AI in learning

### **1.3 Problem Limitations**

Based on the background of the problem and the identification of the problem, there are several problems that arise due to limited time and energy, so not all problems can be researched so that researchers limit the problem and only focus on investigating the perceptions of SMK teachers and students towards AI technology in English language learning and identifying challenges in using and implementing AI technology in English language learning at SMK Negeri 1 Singaraja.

### **1.4 Research Question**

Based on the background of the research problem, the formulation of this research problem is:

1. What is the perception of teachers at SMK Negeri 1 Singaraja regarding AI technology in learning English?
2. What is the perception of students at SMK Negeri 1 Singaraja regarding AI technology in learning English?
3. What are the challenges for SMK Negeri 1 Singaraja teachers in implementing AI technology in English language learning?
4. What are the challenges for SMK Negeri 1 Singaraja students in using AI technology in English language learning?

### **1.5 Purpose of Study**

1. To find out the perceptions of SMK Negeri 1 Singaraja teachers towards AI technology in learning English.
2. To find out the perceptions of SMK Negeri 1 Singaraja students towards AI technology in learning English.
3. To find out what challenges the teachers of SMK Negeri 1 Singaraja experienced in implementing AI technology in English Language Learning.
4. To find out what challenges the students of SMK Negeri 1 Singaraja experienced in using AI technology for learning English.

## **1.6 Significances of the Research**

There are two research significances obtained from this research, namely:

### **1.6.1 Theoretical Significance**

It is hoped that this research can have a positive impact on English language learning and advance English language learning knowledge regarding the perceptions of vocational school teachers and students towards AI technology in English language learning.

### **1.6.2 Practical Significance**

#### **1. For Teachers**

It is hoped that the results of this research will help teachers understand more about the use of AI technology in English language learning and it is hoped that teachers will be able to overcome obstacles in using AI technology in English language learning.

#### **2. For Students**

The results of this research should also be able to help students use AI technology and find out what AI tools they can use to help students in learning English.

#### **3. For Researchers**

This research can be used and used as a source or reference for other researchers, who want to conduct research on the same topic so that this research can help and can be used as a guide by other researchers.