Creative Teacher on AI Age: ICT Challenges in English Learning for Secondary Students in Indonesia

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Abstract. The growing widespread popularity of AI, facilitated by technological advancements, offers significant potential to revolutionize methods of instruction for educators both within and beyond the educational setting. AI facilitates combining traditional teaching approaches with technology-driven instruction, increasing student engagement. As a medium for knowledge exchange and the promotion of humanistic ideas, online education provides an essential element of learning. Nonetheless, it is also characterized as an atmosphere where knowledge transforms in all dimensions. This study aimed to assess the proficiency and obstacles associated with the cultivation of ICT literacy abilities and autonomy in English language acquisition among secondary school students in Indonesia. A survey was administered to 560 children. The data was gathered via interviews and questionnaires and subsequently evaluated employing both quantitative and qualitative methodologies. The survey suggested that respondents exhibited moderate proficiency in ICT. Twenty statements assessed ICT literacy, whereas ten questions evaluated English learning. The absence of enthusiasm and digital media proficiency, the affordability of internet data support, insufficient financial resources for specific English learning applications, unreliable internet connectivity, and inadequate technological infrastructure in educational institutions hindered respondents' satisfaction with ICT. A multitude of barriers impedes those with impairments from achieving ICT literacy. Educational institutions must surmount these challenges and leverage them to enhance students' proficiency in English skills or English language components.

Keywords: digital transformation, English learning, ICT challenges, secondary students

1 Introduction

In today's age of technology, education is the key element in fulfilling educational demands. The educational sector has to tackle the necessity of using diverse digital tools into the learning process to align classes with students' learning orientation expectations. Considering the rapid development of digital technology, schools and classroom learning have to keep to adapt and improve as a means to give what is needed for students to thrive alongside with diverse advances in digital technology.

In essence, education promotes principles of humanity and a sense of identity across a range of perspectives or ideologies [1], [2]. This concept proposes that education exceeds solely the dissemination of knowledge through digital technology. It also seeks to enhance the character of learners and promote human values, ultimately fostering their complete humanization.

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Based on the aforementioned, the development of creativity in the context of education (educational stakeholders and an atmosphere favorable to the growth of creativity) becomes crucial and urgent. Creative teachers who are comfortable with digital technology are the primary force driving encouraging creative potential in schools and equipping pupils with the skills to tackle the educational challenges in the digital era. As a consequence, learning that promotes the development of creativity, creative thinking, the ability to solve problems creatively, problem-based learning, and humanistic and contextual approaches to the learning process plays an essential role in developing creative learning and facilitating the growth of creative learners [3], [4]. Creativity is the process of challenging standard thoughts and ways of doing things to discover novel options or ideas [5], [6]. A person's creativity is determined by their capacity to generate new ideas, overcome challenges, articulate concepts in a straightforward way using a variety of languages and terminology, and transition between problems by utilizing the various alternative solutions provided.

In the digital era, creative teachers are the primary source of encouragement for learning, as they must avoid being taken over by AI. AI introduces numerous applications that are more interactive, and attractive, and operate in a way that is comparable to the way the human brain works. Is artificial intelligence more creative than teachers? Teachers have developed a fascination with demonstrating humanistic creativity by integrating technological advancements facilitated by AI with humanistic and pedagogical values. This strategy produces a more compassionate kind of teacher creativity than that of artificial intelligence. For this reason, educators must have a comprehensive awareness of the newest technological developments, as well as humanistic and pedagogical principles, to successfully educate students in the digital era.

The ability to have a comprehensive understanding of digital technology is fundamentally important in the modern world. As a result of the fact that it affects every single human being, including students at every level of school, digital literacy is a talent that can be acquired by everyone. As a consequence of the rapid advancement of digital technology, educational actors are required to adapt to varied preferences for learning. This includes completing homework assignments, establishing digital businesses, and securing or getting career opportunities that are based on digital technology. Thus, everyone must learn advanced digital skills to maximize their work performance. Digital literacy is essential for improving English speaking, vocabulary, and articulation. Digital literacy improves, simplifies, and enhances proficiency in languages. Digital literacy includes media, information, and ICT literacy [7], [8].

Learners need to have a thorough comprehension of all three types of literacies. Since there are only a limited number of resources available to researchers, this article only addresses the level of information and communication technology literacy in the context of English language learning. At present, educators as well as students have to deal with the challenges that are brought about by the constant advancement of digital technology. Urgent attention must be paid to the transformation because it has major effects. How individuals participate in educational activities is always evolving as a result of developments in information and communication technology. Consequently, it is essential to make use of the latest developments in information and communication technology to improve the learning process for languages [9], [10]. ICT abilities are necessary in all sectors of life. Information and Communication Technology skills are essential in all areas of life. Consequently, technology needs to motivate students to learn, acquire, and apply ICT skills to achieve significant objectives. ICT-based employment provides pupils with prospects for future professions. Proficiency in information and communication technology is necessary for all employees, as indicated by [11], [12]. The researchers asserted that digital technology has transformed all facets of life, including learning for students. Hence,

each institution must promptly furnish the necessary information technology resources to facilitate learning that utilizes ICT. The integration of technology in education can transform the responsibilities of educators by enabling students to engage in profound and significant learning experiences at their speed. Every educational institution in Indonesia is at the forefront of the trend by educating students in digital technology and producing IT-literate results. Students possessing sophisticated information and communication technology abilities are more inclined to display proactive conduct, engage in logical reasoning, demonstrate critical analysis, and participate in autonomous learning [13], [14]. To improve their schoolwork, it is recommended that all students utilize information and communications technology appropriately. Technology-driven education can improve language acquisition, assessment, and successful outcomes [10], [15]. Additionally, these digital media provide enhanced flexibility in learning options regarding time and location, which are also appealing, accessible, cost-effective, and technologically proficient [16], [17].

Students hold lead roles in a classroom setting that is built on information and communication technology they are respected as sources of knowledge and data, learning is made more accessible, students are encouraged in their quest for autonomy, and their digital talents are strengthened [18]. Consequently, it is highly advised to participate in English language learning activities that are concentrated on digital platforms. Students can acquire competency in many languages, adapt to diverse learning methods, and fulfill the demands of developing information and communication technology skills and responsibilities while studying independently due to this opportunity [19].

Previous studies have shown that students who possess advanced skills in information and communication technology demonstrate a higher rate of language acquisition, a higher level of engagement in educational activities, a greater openness to a variety of learning methods, and a stronger motivation to improve their internet-based abilities [20]–[22].

For children who have an extensive knowledge of information and communications technology, the opportunity to develop cognitive capabilities such as analytical thinking, critical thinking, and English skills may be more easily available to them [23]. Nonetheless, prior researchers did not perform comprehensive studies on the impact of students' proficiency in information and communication technologies and the challenges faced by secondary school students in rural Indonesia in attaining English learning independence on teachers' creativity in the current digital instructional era. A researcher aims to address the shortcomings. The researcher has therefore decided to conduct this particular investigation.

Technological proficiency and constraints in the context of language classroom instruction, research have thrived. The following are pertinent findings from prior research on this subject: Proficient in information and communication technologies enables learners to become innovative and active in their pursuit of the English language [10], [24], [25]. The present study, however, is quite different from previous studies because it specifically investigates the obstacles to the development of information and communication technology skills. It also investigates the impact of these obstacles on the possibilities for secondary school pupils residing in remote regions to learn English. The acquisition of ICT knowledge may substantially enhance the cognitive processes of students and increase their ability to achieve what they want in the classroom. Proficiently employing technology for learning may greatly help students residing in remote areas by increasing their motivation and self-confidence, while also allowing them to implement their acquired knowledge in the English language and exercise more independence in their learning process [13].

The investigation will concentrate on specific subjects to facilitate the collection of empirical data regarding the English language acquisition process in six secondary schools in

Ruteng City, Indonesia. The researcher offered the subsequent research questions, which are based on the arguments and evidence that have already been previously disclosed:

1. What is the level of the learner's capabilities in information and communication technology?
2. What kinds of challenges did students have when they were trying to learn English and improve their information and communication technology skills?

2. Review of the Literature

ICT Applied in English Language Instruction

The ability to perceive and understand any message, regardless of whether or not it is related to literacy, is what we mean when we talk about literacy. Likewise, literacy has progressed in the field of information and communication technologies. Having the ability to read and write is only one aspect of what defines literacy. The development of one's intellectual capacity, the utilization of one's associated capacity, and the successful management of the challenges encountered in everyday life are all components of this process. Those who are learning English must prove their literacy skills because it has a direct impact on their capacity to learn English. Literacy has numerous advantages, including the expansion of one's vocabulary, intellectual capacity, perspective, capacity for analysis, and exposure to a wide range of ideas. These advantages, when taken as a whole, contribute to the resolution of a wide range of educational issues every single day [26].

Students need to make the most of their existing English learning ability. Students are encouraged to use a variety of applications to demonstrate their information and communication technology literacy, which is made accessible by artificial intelligence (AI). In the modern era, the use of artificial intelligence has had an enormous effect on the cognitive processes and productivity of teachers and learners. This idea is because numerous sectors primarily rely on applications to achieve the best possible outcomes [27], [28]. According to these experts, any applications that are relevant and made possible by artificial intelligence have the potential to save time and money in the field of learning English language mastery.

In addition, careers that are appropriate and do not make use of information and communication technology or the incorporation of artificial intelligence will soon become useless and will progressively fall behind. The argument originates from the unavoidable transition toward jobs that are performed by computers. Individuals are considered to be digitally literate when they can use digital devices that are always linked to the internet to accomplish activities, comprehend, analyze, and spread information [29], [30].

In the context of English learning, digital literacy entails preparing many forms of linguistic material, including textual content, graphics, interactive activities, and more. ICT literacy enables students and educators to understand how digital applications can enhance educational experiences for learners. Acquiring this skill is essential for students to master the English language [9], [25]. This understanding enhances educators' capacity to seamlessly integrate instructional technology into their teaching methods. Consequently, learning will be more systematically structured. In contemporary society, students must acquire ICT literacy, as these competencies are vital across all educational tiers, including English studies. English educators should acknowledge the significance of Information and Communication Technology, given the recent digitization of several English learning tools. Consequently, it is recommended that English educators promote the use of pertinent AI-mediated English learning applications among their students instead of prohibiting engagement with AI breakthroughs.

Creative Teacher in the Artificial Intelligence Era

In the current digital era of learning, teachers must possess digital insight and be innovative. The teaching profession remains covered by a variety of AI-mediated applications that continue to pose a threat to the survival of the future education sector. Stakeholders are fully conscious of the significant role that educators perform in the transformation of knowledge and a variety of humanistic values. In the digital era, the teaching profession could be aided or even "taken over" by AI if teachers are not adapting to the advancements in digital technology. Consequently, they must possess the necessary skills to master digital media that are by current developments. This is the role of knowledge transformation [31], [32]. One of the advantages of transforming knowledge that is readily accepted by students is the presentation of learning that is interesting, creative, and enlightening. Teachers in the digital era could accept a solution that is both informative and engaging from the standpoint of knowledge transfer. When the teacher's responsibility is to teach an extensive range of humanistic values to learners, this argument is dismissed, as AI cannot facilitate this practice. Did the educator leave the classroom? Innovative educators are solving the problem.

In the digital era in which we live, creative teachers are those who are capable of identifying, providing, and executing learning models that foster the development of deep student understanding, creative problem-solving, problem-based learning processes, the nurturing of humanistic values, and the setting up of a friendly, safe, and comfortable learning environment for students [2], [33]. The essence of creative English teachers in the digital learning era is crucial for facilitating an effective, engaging, and relevant educational process that meets students' needs through the adaptation of digital technology [1], [34], [35] such as (1) English teachers utilize various digital platforms (YouTube, Teacher Tube, online interactive videos, blogs, Google Meet, English podcasts, and other relevant online digital platforms); (2) application of various methods, such as online-based gamification, online digital media project-based learning to improve listening, reading and speaking skills; (3) differentiated learning where the teacher teaches material according to the student's level of ability, needs, interests and uses applications according to the student's ability or difficulty learning English; (4) facilitating students to interact directly with native English speakers through various online digital platforms. Apart from getting validation of the correctness of language skills and components, students can also improve their cross-cultural communication skills; and (5) teachers as facilitators and mentors in learning by giving students opportunities to think independently and actively provide input on various digital-based assignments of their peers in class.

Through the creative integration of digital technology and innovative techniques, English educators can facilitate students' mastery of language content while fostering their development as humanistic, personable, adaptable, and competent learners, both cognitively and socially. Consequently, innovative educators in the digital age prioritize not only the dissemination of knowledge but also the awareness of students' emotions, fostering an understanding of ethical values, nurturing interpersonal relationships, and the adaptation of instructional materials to align with students' social and cultural contexts. At present, artificial intelligence serves solely as an automated instrument for assessing students' proficiency in English, including the correction of language skills and components. Creative educators in the digital age are recognized for their proficiency in emotional, social, cultural, and contextual dimensions, as well as experiential learning, whereas AI serves just as a tool, excelling in the accessibility of learning resources.

The idea that creative teachers and artificial intelligence are not rivals but rather complementing partners is made clearer by a narrative that was presented beforehand. In the context of education in the digital age, the function of teachers cannot be replaced by

developments in digital technology since the partnership between creative teachers and artificial intelligence is essential to the creation of education that is relevant, effective, and meaningful.

3. Method

A cross-sectional survey was applied to this study. In July 2023, it was carried out by six secondary schools in Ruteng, Indonesia. The purpose of this design is to determine the shortcomings of the educational system. The researchers chose this survey approach to investigate the hurdles to studying English and information and communication technologies at six secondary schools in the rural area of Ruteng, Indonesia. The study population consisted of 14,124 students, while the sample comprised 560 students who were chosen using the Multistage Cluster Random Sampling. As shown in Table 1 below, the sample was collected from six different secondary schools in the Ruteng region.

Table 1. Sample total

No	**School**	**Sex**		**Sample Numbers**
		Female	**Male**	
1	School 1	62	28	90
2	School 2	64	26	90
3	School 3	76	25	101
4	School 4	50	42	92
5	School 5	54	38	92
6	School 6	60	35	95
Total				560

Source: Researchers' Data

This data was collected through the use of questionnaires and individuals who were interviewed. The questionnaire includes several statements that are designed to assess the level of information and communication technology knowledge possessed by the members of the survey. The theory that was developed by Trilling and Fadel (2009) to explain information and communication technology literacy serves as the foundation for such courses. Through the process of this period, several statements concerning independently driven English learning were generated from concepts that were investigated by [36]. The challenges and opportunities associated with learning English, information and communication technology, and literacy were examined with a total of twenty questions. Whoever responded to questions that were closed-ended was required to choose one of the five possibilities that were provided to them. Before offering the questionnaire to each of the participants, the authorities initially conducted three rounds of assessment. After determining whether or not each item was pertinent to the content validity, the results were discussed.

Within the context of this investigation, a score was employed to represent the level of information and communication technology proficiency possessed by the respondents, as well as their methods for learning English. High numbers are those that fall between 4,2 and 5,0, medium ranges are those that fall between 3,2 and 4,1, low ranges are those that fall between 2,2 and 3,1, and extremely low ranges are those that fall between 1,1 and 2,1. These are the four categories that can be taken advantage of. To calculate the percentage, numerical processes were applied, and the results of the survey served as the foundation for the calculation. Following the

application of the Excel chart data series tool to analyze the percentage distribution, the findings were presented for qualitative evaluation.

4. Findings

The majority of this section is devoted to the findings on the capabilities of the respondents with regard to information and communication technology as well as the challenges they find themselves facing. The Table 2 below provides a summary of the information and communication technology literacy skills of the respondents from the survey.

Table 2. ICT literacy skills of the respondents

No	Item	Mean
1	I can operate Graphical programs	2,6
2	I can operate software apps for English learning	2,5
3	I can operate Google Voice programs	3,7
4	I can operate the Blog	3,8
5	I can operate computer games	3,7
6	I can operate an electronic dictionary	4,4
7	I can operate the Skype application	2,7
8	I can operate Dropbox apps	2,5
9	I can operate Photo-sharing programs	4,6
10	I always learn English through YouTube	4,3
11	I can operate the Google Classroom Program	3,4
12	I always elevate my English through the Google Classroom Program	2,8
13	I always elevate my English through Ruang Guru apps	3.2
14	I can operate the Edmodo apps	2,6
15	I can operate the WhatsApp video call group to practice my English	4,4
16	I can operate the Zoom program to elevate my English knowledge	4,6
17	I can operate the Duolingo app to assist my English mastery	3,2
18	I can operate the Kahoot app to assist my English ability	3,1
19	I can operate CanvaAI apps to develop my English vocabulary	2,8
20	I can operate the ChatGPT app to help with my English difficulties	2,8
	Average	3,4

Source: Researchers' Data

The degree of ICT literacy that 560 respondents have acquired is illustrated in Statements 1–20 of Table 2. The average score for the 560 respondents' ICT skills was 3.4, which classified them as Middle capability level.

Several factors contributed to the findings of the study, which revealed that respondents had a medium level of information and communication technology (ICT) literacy. These factors included a lack of access to digital media computers, inadequate internet connectivity, insufficient time to use specific applications during English classes, high costs for internet data packages, limited ICT infrastructure, and a lack of enthusiasm for learning or creativity. This study focuses on the six needs that students in secondary schools need to fulfill to be literate in information technology despite the many challenges they face. Guttman scales, which only allowed for yes/no answers, were utilized by the researcher to evaluate these six limiting factors

[37]. Diagram 1 below illustrates the standard percentage of inquiries regarding the six limiting challenges.

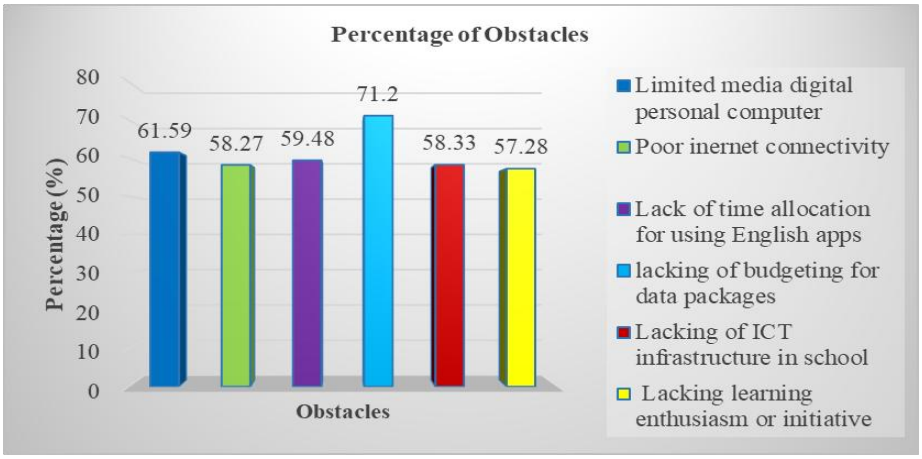

Diagram 1. ICT barriers (Source: Researchers' data)

5. Discussion

According to Table 2, the respondents had a level of proficiency in information and communication technology (ICT) that is said to be moderate. The cost of obtaining data packages on the internet accounted for 71.20% of the total, making it the contributing factor that was the most significant. In addition, the second issue was limited media, which included digital personal computers, which accounted for 61.59% of the total. The findings of the research reveal that there are elements that hinder learning and restrict the advancement of students' English proficiency as well as their ability to adapt how they learn. This makes it more difficult to achieve a reasonable level of information and communication technology literacy. Consider the possibility that students are proficient in several information and communication technologies. If this is the case, then it provides them with the best possible opportunity to independently investigate and develop English language skills to their individual preferences and interests [38].

Among the criteria that will determine what happens is the student's level of English comprehension as well as their capacity to make efficient use of and utilize information and communication technology. Because of the current educational system, it is anticipated students that will immediately be literate in digital information and communication technologies to acquire proficiency in the English language [39], [40]. It is considered reasonable to anticipate that students will have an understanding of how various learning apps operate on their present desktop or laptop equipment. Students must have a strong command of the English language for them to be able to appreciate the numerous facets and potential of modern information and communication technology devices. For students to be able to properly handle the information and communication technology tools that they use every single day, they need to have a proficient command of the English lexicon [41], [42]. There is a clear correlation between the student's proficiency in information and communication technology and the accompanying abilities required to operate it, and the student's ability to comprehend and make use of fundamental parts of the English skills and English components [41], [43].

Enhancing one's competency in information and communication technology has a positive impact on several areas, including the capacity to study and assess oneself independently, as well as the development of creative and innovative abilities, which assists students in rapidly acquiring the essential competencies. The reason for this concept is that the mindsets that pupils have about learning are changing as a result of this improvement. To overcome the many obstacles that stand in the way of acquiring appropriate information and communication technology literacy, it may be helpful to make regular adjustments to learning patterns. As a result of the growing demand for more complex applications of information and communication technology in the classroom, students can swiftly display inventive solutions to a variety of challenges that they face when learning English [24], [44]. Students can gain insight, assess, and enhance their knowledge through the utilization of the Internet—provided that they demonstrate passion and take responsibility for their learning [17], [45].

Additionally, it is imperative to recognize that the transforming nature of students' learning environments should be distinguished from the growing importance of acquiring information and communication technology literacy skills. The acquisition of the English language is considerably different among kids who are immersed in an ICT-based classroom compared to those who do not have the benefit of using ICT to facilitate their learning [46]. This concept should be extensively investigated and familiarized by all individuals who are eligible to capitalize on it. The rate at which individuals can develop proficiency in information and communication technology is considerably accelerated by several variables. Six specific characteristics within the scope of this study present a challenge to students in their pursuit of information and communication technology proficiency. Additionally, the researcher administered a questionnaire to the respondents to assess these six limitation factors.

The questionnaire was backed up by in-depth interviews with a total of 72 students and 12 representatives from each of the six secondary schools that were a part of this research. The number of students who have access to computers, the availability of information and communication technology (ICT) infrastructure across the entire school, the dependability of internet connections, the absence of regulations regarding the utilization of particular programs for English language learning, the funds that are allocated for data packages, and, last but not least, the enthusiasm and dedication of students toward the incorporation of technology in English language learning are all factors that are considered substantial. The requirement for a greater presence of computers in the classroom is one of the factors that contributes to the low proportion of students who can achieve competency in information and communication technology (ICT). The stakeholders are urged to identify and address the many factors that may hamper the progression of students' information and communication technology (ICT) literacy abilities, as well as to design solutions to address these difficulties.

The results showed that the average information and communication technology abilities of the 560 participants, who were anticipated to have knowledge and proficiency in digital technology, were rated at 3.4. This result exceeds the threshold for intermediate-level proficiency. The primary obstacle to acquiring ICT competency was the excessive cost of internet data packages, which accounted for 71.20%. Educators, particularly those in the English language classroom, are actively evaluating the survey results. English teachers successfully addressed the significant issues associated with information and communication technologies, thereby facilitating the development of their students' self-directed learning abilities and improving their proficiency in utilizing these tools. As a result, these obstacles were converted into advantageous opportunities for the acquisition of English in the age of artificial intelligence.

What are the repercussions that the conclusions of this study could have? The strong relationship between AI and the requirement for ICT literacy transformation among students is

unshakable. We as educators can't ignore the impact that applications that are mediated by AI play in accelerating the English proficiency of high school students. Artificial intelligence is only a supporting medium. So, the question that arises is, is artificial intelligence more creative than an English teacher? As long as all parties are willing to work together to solve the six obstacles that stand in the way of children's ICT literacy transformation, the answer is that the English teacher is more creative than artificial intelligence. It is also recommended that teachers encourage students to make reasonable modifications in their use of information and communication technology (ICT) and to emphasize critical thinking regardless of whether or not they employ artificial intelligence. The ability of students to comprehend language skills and components will improve as their literacy in information and communication technology (ICT) develops.

6. Conclusion

Innovative educators possessing digital awareness remain an obstacle for the teaching profession nowadays. The teaching profession remains burdened by several AI-mediated applications that endanger its future sustainability. Education stakeholders advocate for teachers to enhance their digital proficiency and reinforce students' ethical values. The ICT skill of students is an integral component of digital literacy, catalyzing and enhancing their proficiency in English. Using information and communication technology (ICT) is demonstrated by twenty questions in the questionnaire. It was found that the majority of the 560 high school students who were surveyed from six different schools had scores that fell within the intermediate range (3,4) on the competency scale for information and communication technology competence ratings. The findings of this moderate category are consistent with the six barriers that prevent individuals from becoming literate in information and communication technologies. The interests and efforts of students, the budgetary constraints of internet data packages, the absence of laws on the use of particular programs in English learning, the instability of internet connections, and the limited availability of computers in schools are all examples of the obstacles that are being faced. Because it is anticipated by educators and students that they will be able to facilitate the acquisition of information and communication technology skills by students and to encourage their development in this sector, it is necessary for all parties concerned to work together and make substantial contributions. When this is done, the difficulties that are experienced can be transformed into great chances for accelerating English mastery in the age of artificial intelligence.

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