



ICT Integration and Students' 21st-Century Learning Skills in ELT

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<http://dx.doi.org/10.18415/ijmmu.v11i10.6331>

Abstract

Information and Communication Technology (ICT) has become essential in developing nations in recent years, greatly influencing a number of industries, including ELT and education. However, although incorporating technology into instruction is emphasized in today's educational environment, research on how these affects students' abilities for 21st-century learning has yielded mixed results that leads to the inconsistent information, including in Indonesia. Therefore, to address this issue, ICT integration in ELT and its impact on students' learning capabilities at SMA N 3 Yogyakarta are examined in this qualitative case study. Data from 10 grade X participants spread across five classrooms were collected through document analysis, classroom observation, and in-depth interviews. The results showed that ICT integration is common, mostly at the passive and amplification levels. Citizenship, collaboration, creativity, and communication all showed positive effects; however, critical thinking and character still need further evaluation. To get the most out of ICT and help instructors develop 21st-century abilities, effective teaching methods and frameworks are advised. It is also suggested that standardized rules and guidelines should be established for the incorporation of ICT in education.

Keywords: *21st-Century Learning Skills; ELT; ICT Integration; The Impact of ICT*

Introduction

In recent years, information and communication technology (ICT) has become increasingly prevalent in almost all developing countries (Falck, Mang, & Woessmann, 2018; Comi et al., 2017). This is because many of these countries have rapidly integrated ICT into almost every aspect of their lives, including education. Nevertheless, the modern educational age involves more than just integrating technology into lesson plans and instructional strategies. It involves more than merely integrating ICT; in order to meet expectations, there has to be a sustained significant development of digital skills in addition to the necessary skill increases. To investigate differences in digital abilities and develop interventions for skill improvements, a number of skill frameworks and definitions, such as 21st-century learning skills, have been developed recently (van Laar et al., 2020). These abilities also benefit education, which works to enhance students' learning capacities for the benefit of future generations.

Lewin and McNicol (2015: Chapter 9) contend that many individuals now think that 21st-century learning abilities are necessary, and that ICT plays a crucial role in fostering the development of these skills due to the growing influence of globalization and digital literacy in society. To put it another way, greater good will be possible if teachers are able to effectively integrate ICT into their lesson plans. Teachers and students are effectively brought into the 21st century through the use of ICT in education (Hafifah and Sulisty, 2020; Patel, 2020). It follows that many governments nowadays have allocated a significant amount of funds to providing ICT packages and devices to educational institutions. Without a doubt, internet, email, and computer-based learning, or PC laboratories. It follows that the greatest ICT-based learning outcomes for students as future generations are what most people want. According to Van Laar et al. (2017), the potential of education in the 21st century is that digital technology will transform conventional learning and apply the skills necessary in a quickly changing digital environment. The arguments were consistent with a number of studies (Varier et al., 2017; Zheng et al., 2016), which demonstrate a wide range of subjects on the use of technology in education and the factors that affect its implementation, as well as the impacts on student engagement and motivation and teaching. Because the goal is to educate students for their future careers and the real-world workplace, it follows that students should make the most of their opportunities to acquire 21st-century skills through ICT integration.

As has been previously mentioned, ICT integration plays a significant role in developing nations. This is also the case in Indonesia, where Nadiem Makarim, the minister of education, as quoted in Kemdikbud (2022), outlines the need for teachers to be aware of the best practices for ICT integration in the modern classroom. The government is now implementing a number of initiatives to raise educational standards, one of which is supporting the best possible ICT integration both within and outside of the classroom. However, many academics were unaware that the use of ICT extends beyond its positive effects on learning, especially for students, notwithstanding the advantages of ICT integration. Technology may have both positive and negative effects when used in education, therefore it's important to carefully weigh the pros and downsides of using it (Kurniawan et al., 2021; Al-Ansi, Suprayogo, & Abidin, 2019; Pandolfini, 2016). ICT has been found to improve students' learning abilities in a number of research (Qaddumi, 2023; Chen et al., 2022; Nguyen, 2021), although some studies found the opposite (Waluyo, 2020; Erarslan & Topkaya, 2017). Therefore, the effect of ICT on the educational process may want to turn out to be an enormously debatable issue. As a result, the researchers must carry out a pilot study on how ICT is integrated with 21st-century educational ideals, specifically with regard to 21st-century learning skills, especially in one of the schools in Yogyakarta. This research must be done to characterize the extent to which ICT is influencing the process of teaching and learning. Moreover, it must be evaluated how ICT integration affects students' acquisition of 21st-century learning abilities.

Literature Review

The Components of ICT in Education

Suleiman, Yahya, and Tukur (2020) describe the field of ICT as the range of technical tools and resources that individuals utilize to generate, transmit, and gather information. Moreover, ICT might also be defined as the catch-all word for state-of-the-art multimedia technologies, including computer programs, CD-ROMs, the internet, mobile devices, hardware, and a host of others. Alternatively said, it may be said that in practical terms, ICT refers to the application of various digital tools and platforms for communication, data management, and problem-solving. According to a study, the integration of ICT in education has a significant influence and holds potential for improving teaching and learning across all stages. Numerous research (Ghavifekr and Rosdy, 2015; Ghavifekr et al., 2014) that assert that the incorporation of ICT improved students' learning quality further corroborates this. This indicates that the importance of the advantages of ICT integration should be recognized by academics, governments, policy makers, and others. By concentrating on the advantages of ICT integration in the classroom, students' motivation and learning output can improve, leading to advanced and innovative learning.

According to the above sentence, there are many benefits to ICT integration in 21st-century education that can be maximized. In contemporary educational period, it is required of both instructors and students to be able to use technology in the classroom as well as to build and acquire values via the use of ICT. However, some older teachers continue to choose the conventional approach over ICT, citing a variety of reasons such as inadequate training on technology implementation, a lack of appropriate guidelines or regulations, and more (Vien, Ai, & Sung, 2019).

The Integration of ICT in Education

In order to understand how ICT is used in the classroom, Kimmons, Graham, and West (2020) explored the PICRAT theoretical model of ICT integration, which was first put out by Hughes Thomas and Scharber (2006). The researcher provides an overview of this model in this study. A replacement, amplification, and transformation are what RAT stands for, whereas PIC stands for passive, interactive, and creative. When students receive instruction or material passively—by viewing a movie, slideshow, etc.—they are said to be passive learners. Using technology, this interactive learning might involve manipulating simulations, playing games, completing computerized adaptive assessments, or using digital flash cards to aid with memory. Students can develop their own artifacts via the use of technology in teaching and learning activities, since creativity fosters creativity in technology use. This indicates that students may create their own ideas and knowledge via the use of technology and in the form of creative.

According to Kimmons, Graham, and West's (2020) research, the majority of educators who are new to technology often use it for replacement, such as when utilizing digital resources, projectors, and slide shows. The second level of RAT, amplification, describes how educators use technology to improve student outcomes or education. As an illustration, students may use digital probes to collect data for analysis or the review features in Google Docs to give each other more targeted and effective writing critiques. Regarding transformation, it allows for enhanced productivity or useful improvements to existing practices; nevertheless, there is disagreement about whether this may have a transformational learning impact. Innovative uses of technology in education might only refer to improved functionality or efficiency of existing techniques.

The 21st Century Education Era

In the 21st-century education era, students are supposed to have the 6Cs of deep learning, which are critical thinking, collaboration, communication, citizenship, creativity, and character. There are several advantages to incorporating the 6Cs into instructional strategies. First of all, it might help students advance their language proficiency, critical thinking abilities, and ability to be positive social change agents, according to Hodel et al. (2016). If students receive support throughout the 6Cs deep learning, they will be able to accomplish important goals for sustainability and reasonable growth (Sharratt and Fullan, 2022). Students will also need to gain the most recent and supplementary skills needed in today's environment. The concept of "21st-century skill" is not new; several references to it have been made. Chu et al. (2021:19) also make this claim. They note that while problem-solving and critical thinking skills have always been crucial, there are other skills that are equally important but are not new. It is also mentioned that there are a number of skills that we may need in the current circumstances.

According to Chvala (2020), the way people engage in social situations—especially those that include education—has altered as a result of technology breakthroughs and 21st-century education. These kinds of alterations to other customs that were formerly part of our everyday existence might be brought about, namely by the COVID-19 pandemic. The modifications have an impact on the educational system as well, where strategies, techniques, approaches, and other components might need to be improved or changed to better fit the times. Furthermore, according to Ekizer and Yildirim (2023), the 21st century has had a substantial impact on people's lives in a number of areas, including production, communication, education, and the economy. Due to the recent development of technological platforms and tools that are centered on the lives of individuals, as well as changes in other dimensions of society, social, economic,

and academic lives are now much more demanding and complicated than they were in the past (Sharratt and Fullan, 2022). As a result, in order to satisfy the demands of the 21st century, students must learn new skills. Either classic or 21st-century skills can be applied to these abilities. Therefore, rather than continuing to use a content-based approach, educational institutions have to concentrate on assisting students in acquiring these skills so that they would be prepared to take on the obligations that come with graduation, including those related to ELT.

Method

This study is qualitative in nature, it aims to analyze and interpret textual and written data. because the qualitative approach focuses on the subjective evaluation of attitudes, views, and behaviors that occur between ICT integration with EFL students in ELT, it was chosen as the research technique for this study. This study is regarded as a case study as the researcher's goal is to investigate and comprehend the phenomenon that is happening right now. One of Yogyakarta's senior high schools served as the site of this investigation. In particular, the study's results were collected at a Yogyakarta senior high school that uses the Merdeka curriculum in addition to ICT for teaching and learning activities. Furthermore, information for this study was only collected from a single school. Moreover, the data is collected using a single grade—in this example, grade X. *Kurikulum Merdeka* was incorporated into the teaching and learning activities of the grade X participant. The context of the research is comprised of five classes. In order to improve teaching and learning, ICT facilitations were also permitted and used in the classroom. Furthermore, one of the factors that led to the selection of SMA Rujukanas the study site was its standing.

Data Collection

In terms of the instruments for gathering data, the researcher required a specific method in collecting the data of the study. A protocol is required for qualitative research in order to direct the data collection procedure. The instruments used to capture data from documents analysis, observations, and interviews were employed through a form called the protocol. The researcher used a tool from Bowen (2009) for the document analysis component when examining the document. Using the equipment from Yusrina and Bima (2020), the observation sheet is constructed as a table. The researcher used protocols and procedures that were taken from Brounéus (2011) when performing the interview.

Data Analysis

The researcher applied two techniques of data analysis in this study, namely content analysis and thematic analysis. The first research question in this study is analyzed and addressed through the use of content analysis. Bengtsson (2016) states that doing content analysis in a qualitative study involves many processes which are planning, data collection, data analyzing, and reporting. In order to address the study's second and third research questions, the researcher used thematic analysis to examine the interview data, the process of thematic analysis are familiarizing with the data, generating initial codes, searching themes, reviewing themes, defining themes, and reporting Braun and Clarke (2006).

Result and Discussion

The Integration of ICT in ELT

The study's findings demonstrated that ICT was being used for both teaching and learning in every classroom. There is not much of a difference in how ICT is implemented because all classrooms are supervised by the same teacher. Since students are not constantly engaged in the learning process, the

instructor speaks a lot; this is the primary difference in the manner they are spoken with. There are several implementational similarities other from that. The results of document analysis from the teacher's lesson plan and from classroom observations, which indicate the degree of ICT integration in each class, are displayed in the following tables.

Table 1. List of ICT Component in Teacher's Lesson Plan

No	Teacher	ICT Component
1.	Teacher 1	a. Power Point b. Video c. Google Form d. Google Classroom e. Internet f. Laptop g. LCD Projector h. Speaker

Table 2. The Level of ICT Integration

No	Class	Type ICT Implementation
1.	X1	Passive – Amplification
2.	X2	Passive – Amplification
3.	X3	Passive – Amplification
4.	X4	Passive – Amplification
5.	X5	Passive – Amplification

Upon completing an observation at SMA 3 Yogyakarta, the researcher discovered that the facilities offered to students by the school are more than sufficient. An LCD projector, a speaker, and an internet provider were among the many technologies used to enhance teaching and learning procedures. The teacher made good use of it as well. The integrated ICT component is comparable to the idea put out by Suleiman, Yahya, & Tukur (2020), who claimed that it is a collection of digital resources and technology instruments utilized for information management, creation, interaction, and gathering of knowledge. A speaker, an LCD projector, a laptop, and other resources were employed by the teacher in certain basic classes to improve communication in the classroom through the use of Google Classroom and video. Additionally, the teacher employed ICT to generate and compile information by utilizing the internet and PowerPoint to enhance the activities for teaching and learning. The researcher classified the present state of instruction in the classroom based on observations made during this use, which led to the level of ICT application in the teaching and learning process.

The researcher categorized the different implementation styles as passive and amplified in light of the observations. Since the learner only gets material from the teacher through slideshows and videos during teaching and learning activities, the researcher categorizes it as passive. Additionally, according to the findings of the observation, students do not significantly interact directly with the teacher's slideshows or videos—instead, they only speak with her directly. For instance, even though the questions were displayed and presented from the slides, the students responded immediately to the questions when the teacher asked them several times. In other words, even if the students are responding to the questions on the slides, the interaction itself has nothing to do with the presentations. The researcher concludes that the type of ICT implementation that the teacher uses is amplification after making this observation. This is because the teacher enhanced the teaching and learning activities by using PowerPoint slides and a film by delivering audiovisual materials throughout the observation.

The Impact of ICT on Students' 21st Century Learning Skills

a. Collaboration

One of the learning skills that benefited most from ICT integration was collaboration. The results revealed that nearly all of the participants claimed that by using ICT, they were able to directly control group contributions, provide strong mutual support, and improve cooperation, which allowed them to manage the group project more effectively. This aligns with the competencies that students need to master in the 21st-century classroom: managing group dynamics, reaching consensus as a group, collaborating effectively in teams, and learning from and with others (Shabrina and Astuti, 2022; Boyraz, 2021).

b. Character

Character refers to the morals and ethics of the students, which are crucial components of their individual characteristics (Baehr, 2017). ICT has a very dynamic impact on students' character. This is due to the fact that, out of 10 participants, half said that ICT causes them to become much lazier and less honest. This is a result of the instantaneous, overloaded sources as well as the intervention of artificial intelligence (AI) tools like Chat-GPT, which lowers students' persistence in their studies. The findings appear to be at odds with other research (Ali et al., 2023; Hidayati, 2016) that suggested ICT and AI might improve students' enthusiasm to learn.

c. Citizenship

The only skill that benefited from ICT integration was citizenship. This is because the teachers showed a movie on a social and environmental issue, such as garbage and how to handle it, in an effort to raise students' awareness of issues in their community. Another participant mentioned that they were able to communicate with people worldwide and that they were more aware of global concerns and knew how to respond appropriately thanks to ICT. The outcome is consistent with other research (Hoang et al., 2020), which found that students' usage of ICT—including social media, online platforms, and other apps—largely influences how they act. The findings show that when students use ICT appropriately, they become more comprehensible and aware of current issues.

d. Communication

It appears that communication needs additional assessment since four students believe that they are less likely to take the benefit from ICT because it decreases the amount of time they spend interacting with others throughout the learning process and occasionally acts as a distraction that interferes with their ability to study. However, for a variety of reasons, the remaining students believe that it could enhance their communication. The study's findings roughly align with those of Pardede (2020), suggesting that while there is a favorable opinion of the role that ICT plays in student communication, in practice it is mostly used for social activities rather than academic pursuits. As the consequence, the researcher believes that the role of a teacher is needed again to guide the students properly (Patel, 2020).

e. Creativity

In terms of creativity, the methods it employs—such as brainstorming, divergent and convergent thinking, and idea analysis before specific development—also had the greatest positive effects (Shabrina and Astuti 2022; Khalil, 2018). This is because students can use ICT to express their ideas and gain knowledge from various viewpoints. One student, however, said that because the information was unrelated to his environment, utilizing ICT made him lose his cultural values. This suggests that while there are positive effects on students' creativity, there are situations where using ICT in the classroom needs to be balanced with other teaching strategies. According to Henriksen et al. (2018), there is a complicated aspect that educational policy has to handle, which is why the influence of ICT on creativity is still not entirely

cohesive in the educational area and still requires a new approach.

f. Critical Thinking

When it comes to critical thinking, students get dependent on ICT, particularly artificial intelligence (AI), which makes them lazier and incapable of thinking critically. The researcher contends, therefore, that Merta, Ratminingsih, and Budasi's (2023) claim that using technology, such as learning media, was successful in encouraging students' critical thinking and allowing them to explore their critical thinking abilities, is not entirely accurate and still requires more analysis and thought. Even while some students are able to benefit, this shows that students still require appropriate direction in order to use ICT in learning activities. The researcher generally agrees with Khodabandelou et al. (2016), who pointed out that students' morality and thought processes may be impacted by their use of modern technology. As a result, lawmakers and educators must establish guidelines and rules on how to appropriately integrate ICT into teaching and learning activities.

The Most Affected 21st Century Learning Skills Through ICT Integration

To determine the study's conclusiveness, the researcher wants to investigate which 21st-century learning abilities were most impacted by the use of ICT. Therefore, the researcher additionally gathered information by interviewing 10 participants in each class in order to draw a conclusion. According to eight students, critical thinking is the first ability that has been most impacted. Additionally, there are two opposing viewpoints on critical thinking itself. Four participants contended that critical thinking is one of the skills that is most negatively impacted by ICT use because it is so simple for them to obtain the information they need for learning and to complete assignments these days. As a result, they frequently feel that they do not need to think very hard and become much lazier. However, four other participants reported that ICT had the greatest positive impact on their critical thinking abilities because they realized that not all knowledge is taken for granted, which improved their ability to critically evaluate and carefully filter all of the information they were given. It concludes, however, that both positively and adversely, critical thinking is the 21st-century ability most impacted by the use of ICT in the teaching and learning process.

According to the results, many participants said that the ability to think critically was the one that was most impacted by the incorporation of ICT. There are two viewpoints on the impact: the positive and the negative. The detrimental effects cause students' thought processes to slow down, proving that there were no appreciable gains from using ICT to support students' learning activities. Positive effects, however, demonstrate that ICT really increases students' critical thinking since it raises their understanding of how to filter information. This suggests that regardless of the outcome, the problem stems from the students' improper use of ICT, necessitating an additional role for the instructor to play as a facilitator and mentor. The study's conclusions demonstrated that ICT's impact on critical thinking is continually evolving.

Consequently, the researcher concurs with Erarslan and Topkaya (2017) that pedagogical components play a crucial role in determining the results of students' 21st-century learning skills, regardless of the incorporation of ICT in teaching and learning activities. Comi et al. (2017), who emphasized that ICT use is not more successful than conventional teaching practices, also corroborate this. It suggests that teachers cannot fully utilize ICT without appropriate approaches, as it simply functions as a tool and a facilitation. In addition, teachers need to understand the dynamic function that ICT plays in teaching and learning activities if they are to fully benefit from ICT integration in the educational area (Patel, 2020). In order to effectively help students in navigating the challenges and opportunities of the 21st-century educational landscape, teachers must possess both digital literacy and the ability to use information and communication technology (ICT) (Ahmed and Nasser, 2015; Prinsloo and Sasman, 2015).

Conclusion

The only 21st-century learning skill that is completely enhanced by ICT integration is citizenship. The majority of the time, collaboration and creativity are enhanced; nevertheless, students' character and critical thinking are adversely affected, and communication needs more direction for effective implementation. Even though students can use ICT for learning, more assessment is required since character and critical thinking might be negatively impacted. To fully profit from ICT, effective teaching methods are necessary, demonstrating the technology's potential as a tool to improve educational quality. It is advised that teachers use a supporting framework, such TPACK (Technological Pedagogical Content Knowledge), to help students develop 21st-century learning abilities and use ICT more successfully.

The results of the study lead to the following recommendations: In order to improve students' 21st-century skills—particularly creativity and critical thinking—teachers should make greater use of ICT in the classroom. This should be done with the goal of transforming the learning process so that students build and grow their own knowledge. Considering that children are already comfortable with technology, a shift from passive to creative and participatory ICT use might further strengthen these abilities. When incorporating ICT into education, the government believes that character development and critical thinking should come first. To guarantee that students utilize ICT ethically and effectively while upholding high standards of moral behavior and critical thinking, uniform rules and guidelines should be set. Future studies should examine each component of 21st-century learning abilities separately, taking into account the dynamic impacts of ICT. The research findings will be further enhanced by extending the participant range to include students in other grades and institutions, since this would yield richer data and a larger sample size.

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