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Technology integration and teachers' competency in the development of 21st-century learning in EFL classroom

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ABSTRACT

This study examined the role of technology integration and teachers' professional competence in developing 21st-century learning. Present studies show a significant gap between technology integration and teachers' competency in developing 21st-century learning. This study highlights the pivotal roles of technology integration and teacher competence in modern education. In an era where technology has transformed teaching and learning, understanding the synergy between these two factors is crucial for educational advancements. The study employs a descriptive quantitative approach. It seeks to understand the current state of technology integration and teacher competence by collecting data from in-service teachers within the English teacher's forum. The data collection methods encompass questionnaires and interviews to gain comprehensive insights into the subject matter. The research design of this study primarily relies on a descriptive approach, which involves the systematic collection and analysis of data to describe and understand the existing situation. The data-gathering process, through questionnaires and interviews, ensures a comprehensive exploration of the research questions. The results show that technology integration and teacher competency significantly influence the development of 21st-century learning.

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1. INTRODUCTION

A movement exemplifies the significance of 21st-century learning in education from traditional to contemporary methods [1]–[3]. This new strategy focuses on preparing students for the future by providing them with the skills necessary for success in a global market. The 21st-century learning approach refers to teaching and learning methods that focus on developing skills and competencies relevant to the demands and challenges of the 21st-century [4], [5]. In english foreign languages (EFL) class, the approach emphasizes active participation, collaboration, critical thinking, communication, and creativity. Learning in the 21st century is not about memory or recitation but critical thinking, creativity, and collaboration. It is not just about preparing students for an exam but also about the actual world [6], [7].

Erdoğan [8] stated that technology integration in the classroom has become increasingly important in the 21st century, especially in EFL classes. It is common knowledge that technology may improve language acquisition in several ways, including allowing students to practice their language abilities in real-world settings, enhancing group work and interaction possibilities, promoting learner autonomy, and boosting students' motivation and interest levels [9]–[11]. However, the ability of the teacher to make

effective and productive use of technology is essential to successfully integrating technology in EFL classes. Teachers need to be skilled in selecting and adapting appropriate technologies, designing effective learning activities, managing and troubleshooting technical issues, and guiding learners' use of digital tools.

Moreover, technology integration in EFL classes requires a pedagogical shift towards a learner-centred approach emphasizing collaboration, creativity, critical thinking, and communication. Teachers need to be able to design authentic and meaningful learning tasks that integrate technology, use formative assessment strategies that provide timely feedback to learners, and facilitate a reflective practice that fosters self-awareness and self-regulation. In conclusion, technology integration and teachers' competency are crucial factors in developing 21st-century learning in EFL classes. Effective technology integration requires technical skills, pedagogical knowledge, reflective practice, and a learner-centred approach. Teachers must be supported with professional development opportunities and resources that enhance their digital literacy and pedagogy.

However, considering the preliminary research conducted by the researchers, teachers face challenges associated with 21st-century learning in EFL classes. One such challenge is the availability of technology, which can vary from school to school and student to student and often depends on social class status. Older teachers might also need help with technology literacy, hindering their learning experience. Teachers should consider these discrepancies and provide accommodations to ensure equitable access to learning tools for all students. Integration of technology into educational settings presents yet another obstacle. Some teachers may need more training or experience to incorporate technology effectively into their lesson plans. Professional development and training courses should be provided to broaden teachers' use of technology, enabling them to turn technology from passive entertainment to interactive learning tools. Considering the abovementioned problem, this study examined the role of technology integration and teacher competence in developing 21st-century learning.

In recent years, there has been a notable surge in the proliferation of technology devices, which has had a transformative impact on the methods employed for delivering education [12]–[14]. The integration of technology in EFL classrooms has yielded a multitude of advantages, including expanded accessibility to resources, increased student involvement, individualized learning opportunities, and the facilitation of worldwide collaborative efforts. The advancement of technology has facilitated the engagement of EFL learners with the English language outside the confines of the traditional classroom setting. This has enabled them to enhance their language proficiency through interactive online resources, including language applications, educational films, and websites. Technology integration in EFL classes has demonstrated a notable enhancement in student enthusiasm and engagement [15]–[18]. There is a heightened level of student engagement observed when technology devices are incorporated into the classroom setting. The integration of interactive whiteboards, tablets, and instructional software has enhanced the visual aspects of learning, hence fostering a more engaging and pleasurable educational setting for students. The integration of technology has additionally facilitated personalized learning experiences, affording individual students the ability to exercise autonomy over the speed, timing, and location of their learning [19]–[21]. In the present educational landscape, students have various options to cater to their unique learning requirements. Technology integration in EFL classrooms has led to a significant transformation, moving away from the conventional classroom setting and towards a more globally oriented educational context. The advancement of technology has facilitated worldwide collaboration, thereby providing EFL learners with the opportunity to engage and interact with fellow learners from different parts of the world. This contact has facilitated the exposure of EFL learners to diverse cultures, languages, and perspectives, thereby equipping them with a global mindset, which is deemed essential in the contemporary period.

The integration of technology into the teaching and learning process during the COVID-19 epidemic has had a dramatic impact on education. The aforementioned trend is particularly evident when educators take into account the various challenges they have faced as a result of the COVID-19 pandemic [22]. The transition from face-to-face meetings to remote emergency training has been seen, and more recently, a hybrid learning environment has emerged as an alternative approach. The unforeseen alterations have had a substantial effect on individuals' interaction with technology. The integration of this technology into our pedagogical practices holds significant value. Amidst the epidemic, the extensive incorporation of technology plays a crucial role in sustaining employment, education, and interpersonal connections. These modifications persist as integral components of our everyday existence, with certain adaptations expected to endure in our perceptions of technology and education.

The current global epidemic has brought attention to lessons that remain unlearned about the extensive education technology (ed-tech) landscape and its application in pedagogy [23]. The exploration and utilization of diverse technology tools are imperative in acquiring knowledge and expanding one's learning capabilities. The integration of education within this environment should be prioritized, aiming to make it more pervasive in the daily lives of individuals. Educators must be able to regulate, manipulate, and effectively integrate these instruments within their pedagogical approaches. The possession of prior

experience with these technologies is optional for their successful implementation and the cultivation of effective learning environments [24]. As a result of these technologies, as mentioned above, educators are compelled to acquire novel competencies in order to instruct and support their students proficiently. In addition to facilitating the acquisition of knowledge, students must also possess the ability to grasp and effectively utilize the information presented to them in many ways.

Numerous methodologies exist for incorporating technology into educational settings, each possessing the capacity to foster the development of skills and abilities relevant to the demands of the 21st century. Cheung *et al.* [25] stated that digital technology enables personalized learning experiences for individuals. Using various instruments in the classroom enhances the effectiveness of customized learning. The advent of digital technologies has facilitated the implementation of instructional methods that leverage the unique attributes of both educators and students. The choices and characteristics of different information and communication technology (ICT) instruments enhance and refine these capabilities. The integration of technology facilitates the advancement of individual growth, rendering it a prudent choice that merits endorsement.

To effectively integrate technology in EFL classes, Falloon [26] stated that teachers require specific competencies such as effective planning and organization, integrating technological devices and tools, teaching digital literacy skills, and evaluating technology integration. Effective planning and organization are crucial as teachers need to plan the use of technology in their lessons to achieve their learning objectives. In line with McGrath *et al.* [27], Proper planning ensures that the technology is used to enhance learning rather than a mere tool for technology's sake. Teachers must also effectively integrate technological devices and tools to create a technology-rich learning environment. This involves understanding the devices' functions, identifying the best tools for learning outcomes, and using them to support and enhance learning. Teaching digital literacy skills is essential in the digital age. The use of technology in EFL classrooms may be limited if students do not have digital literacy skills. Teachers must teach young learners how to use technology efficiently, ensuring they understand its basic functions, features, and associated risks. Lastly, evaluating technology integration is essential to determine its effectiveness in achieving learning objectives. Teachers need to assess students' digital skills, using the information to identify areas where technology integration can be improved [28].

Hakim [29] state that professional teachers must possess four skills. These abilities consist of: i) Pedagogical competence, which includes a teacher's understanding of their students, planning and executing learning, assessing what students have learned, and cultivating students' potential. This ability includes the sub-sub abilities to organize classrooms, create an environment conducive to learning, motivate students to be passionate about learning, provide verbal and non-verbal reinforcement, provide clear instructions, respond to class disruptions, and revitalize a tired class; ii) Personal competence is a skill that indicates a strong, steady, mature, wise, and authoritative personality that acts as a role model for pupils and represents a noble character; iii) Social competence is the teacher's ability to communicate and interact effectively with students, colleagues, educational staff, parents/guardians, and the community; and iv) Understanding learning resources in a comprehensive and in-depth manner, such as the topic-curriculum materials used in schools and the scientific information covered by the materials, is an essential component of professional competency. This talent is also known as mastery of teaching material resources or subject matter expertise. Subject matter expertise is another name for this ability.

EFL classes have significantly transformed in the 21st century due to technological advancements and innovative teaching methodologies [30]–[32]. 21st-century learning has affected how students learn and EFL teaching and learning, providing exciting opportunities to revolutionize the classroom setting. The digital age has brought about a change in the way students access information, and EFL teachers can leverage the use of technology to make learning more interactive and engaging. With the advent of mobile devices and computers, learners can easily access digital resources such as podcasts, videos, e-books, and language learning apps, which provide an immersive experience for English language learners.

Moreover, Barrot [33] states that the use of social media platforms has also significantly impacted EFL learning, as they have the potential to provide an informal environment for language practice. For instance, teachers can use WhatsApp groups or a Facebook page to facilitate productive discussions and encourage students to interact with one another. In the 21st century, according to Baghoussi and El Ouchdi [34], content-based instruction has also emerged as a popular teaching methodology in EFL, which revolves around teaching language skills through authentic materials. This approach effectively teaches communicative competency, providing learners with language relevant to their interests and experiences.

In addition, Hemmati and Azizmalayeri [35] explained that another important development in 21st-century EFL learning is emphasizing student-centered learning, which shifts the focus from the teacher to the learner. This approach allows students to take charge of their learning, and teachers act as facilitators of knowledge. In student-centered learning, learners are encouraged to work collaboratively with their peers,

engage in problem-based activities, and learn through discovery. In addition to these developments, using assessment rubrics has become a popular tool for measuring learner performance. Instead of traditional testing methods, rubrics provide formative feedback and focus on the skills that students are expected to acquire. This approach recognizes students' progress rather than just their final grade. In light of the objectives of the study that were outlined above, the research attempts to respond to the following two questions:

− How is the role of technology integration in developing 21st-century learning in EFL classes?
− How is the role of teachers' competencies in developing 21st-century learning in EFL classes?

2.   METHOD

The study's aims were achieved, and its problems were clarified by applying the quantitative descriptive approach. This method is one of the organized scientific analyses and interpretations used to explain a particular phenomenon or problem through collecting, classifying, and examining standardized data. It is appropriate for describing the actuality of the investigated topic. The data were then analyzed, and the conclusions were drawn.

2.1. Sample of the study

This qualitative study intends to characterize the role that technology integration plays in the development of 21st-century learning in EFL classrooms, as well as the competency of teachers. The participants in this study were in-service English teachers from the English Teachers Forum in Majalengka, located in West Java, Indonesia. This study project will involve the participation of twenty-five in-service English teachers selected to participate in the study.

2.2. Instruments

In addition to conducting the data, the information was acquired through questionnaires. In order to gather information about the role of technology integration and teachers' competency in the development of 21st-century learning in EFL classes, the survey's objective was to collect information in the form of questions. To be more specific, the aim was to find out what kinds of technologies the teachers use and how they integrate them into the teaching and learning process. After that, semi-structured interviews were carried out to verify the data obtained from the questionnaire and fill in any gaps that may have been present. After the responses to the questionnaire had been coded, categorized, and finally interpreted, the next step was to analyze the results. Following that, the results of the interviews were transcribed, processed, categorized, and interpreted in some fashion. Following that, semi-structured interviews were carried out to double-check and fill in the gaps in the data collected from the questionnaire. Questions concerning incorporating technology into English as a Foreign Language (EFL) remote learning were asked throughout the interviews. First, the responses to the questionnaire were coded, then they were categorized, and last, they were interpreted. After that, the outcomes of the interviews were transcribed, coded, organized into categories, and interpreted.

3.   RESULTS AND DISCUSSION

3.1. The role of technology integration in the development of 21st-century learning in EFL lass

The research findings indicate that technology integration has transformed traditional approaches to teaching and learning in EFL classrooms into 21st-century based learning. The technical equipment teachers use in EFL classes is outlined in Table 1, which can be found below. Laptops, desktop computers, and smartphones were the three most common types of technology devices employed. To encourage students' development of 21st-century learning skills, teachers of EFL classes used a variety of applications in teaching and learning. The Table 2 provides a list of applications used by teachers in EFL classes. Whatsapp, Zoom, Edmodo, Canva, and Kahoot are some applications utilized in this process. Figure 1 shows the implementation of ICT in EFL classes.

Table 1. Technological device used by the teachers in EFL classes

Device	Frequency
Laptop	7
Desktop computer	3
Smartphone	15

Table 2. List of applications used by the teachers in EFL classes

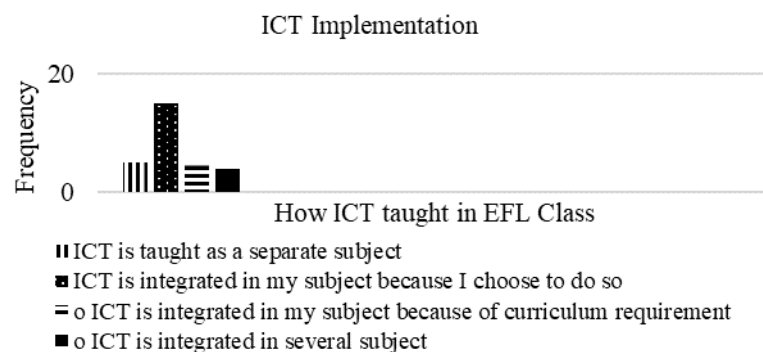| Applications	Frequency
Whatsapp	10
Zoom	5
Edmodo	3
Canva	4
Kahoot	3

Figure 1. ICT implementation in EFL class

Table 3 summarises the perceived abilities and competencies produced in 21st-century EFL teaching and learning when technology is utilized. The questionnaire results indicated that active participation, collaboration, critical thinking, communication, and creativity were the most prominently recognized skills and competencies developed by incorporating technology in EFL teaching and learning. This was the case despite critical thinking being the least recognized of the five.

Table 3. 21st-century learning competencies in EFL classes

Competencies	Frequency
Active participation	8
Collaboration	7
Critical thinking	6
Communication	2
Creativity	2

Technology integration, coupled with teachers' competencies, has proved essential in developing 21st-century learning in EFL classrooms. The interview results show that the role of technology integration in EFL teaching and learning impacts the development of 21st-century learning. Some of the critical findings are discussed below:

3.1.1. Improves student-centered learning

Learning focused on the students' needs is facilitated by using technology in the classroom. Learners become responsible for their learning process, and they have the freedom to explore topics in-depth. They can interact with their peers on various discussion forums and work together on projects, developing team-building and critical thinking skills. Incorporating technology tools in teaching provokes high collaboration among learners and creates a sense of engagement and motivation during EFL learning.

3.1.2. Enhances digital literacy skills

Technology in EFL classrooms supports active participation in the creation, analysis, evaluation, and communication of information. Students are equipped with digital skills and educated on using digital tools effectively, which is crucial today. Multifaceted technology tools and platforms can help learners create authentic artifacts, evaluate online sources, develop visual thinking skills, and comprehend multimedia texts.

3.1.3. Integrates blended learning

Blended learning shows the integration of both online and traditional classroom teaching methods. Integrating technology into teaching supports blended learning, which offers more flexibility and choice to students, resulting in an enhanced learning experience. The implementation of blended learning in the EFL classroom provides opportunities for students to learn at their own pace and access content, materials, and other relevant resources that are accessible online.

3.1.4. Teacher education

Instructors' training on innovative digital tools helps them to integrate technology effectively in EFL classroom teaching strategies. Teacher education in EFL classrooms has to consider constant updates and emerging trends in technology tools and platforms. This will equip instructors with the necessary knowledge

and skills to create interactive activities, collaborate with their colleagues and students, provide assessments and feedback, and keep up with the student's learning.

3.2. The role of teachers' competencies in developing 21st century learning in EFL class

In EFL classes, the teachers' abilities play a crucial role in developing learning appropriate for the 21st century. Teachers' competencies directly impact the quality of instruction provided in the classroom and, by extension, how effectively students learn in the 21st century. Research studies have shown that teachers to effectively cultivate their students' fundamental knowledge, talents, and skills, they must have a spectrum of competencies relevant to the 21st century. These competencies include understanding the technological, pedagogical, and subject matter and critical thinking, communication, creative thinking, and working with others.

Technological knowledge and skills are essential for teachers to use various technology tools to engage their students and promote a more interactive learning environment. Pedagogical knowledge ensures that students receive stimulating, relevant, and learner-centered instruction. Content knowledge is equally important as it enables teachers to deliver content-rich activities that enhance students' learning outcomes. Critical thinking, communication, creativity, and collaboration are the core competencies that must be integrated into the EFL instructional environment. Teachers who possess these competencies are more creative, innovative, and engaging in their approach to teaching, ensuring that their students develop a range of essential 21st-century skills.

Furthermore, research has indicated that teacher training is crucial in developing teachers' competencies. Professional development programs, mentoring, and coaching are essential to provide teachers with the knowledge, skills, and abilities required for 21st-century learning. Collaborative professional development activities with other teachers and observation of highly effective teachers can also enhance teacher competencies.

4. CONCLUSION

According to the study, most EFL teachers favour using cell phones in the classroom. This demonstrates that mobile devices, including smartphones, are increasingly being used to facilitate learning in EFL classes. This could be due to their high levels of flexibility and accessibility. According to other findings, EFL teachers most regularly use the WhatsApp app. This demonstrates the importance of online conferencing and communication tools like WhatsApp in EFL instruction. In addition, "active participation" is the one that shows up the most often. This emphasizes how crucial it is for EFL learners to enhance their active involvement, teamwork, and critical thinking skills. In the 21st century, however, there is room for improvement in communication and creativity when learning EFL.

The research findings explain that technology integration in EFL classrooms has revolutionized traditional teaching methods into 21st-century learning. Implementing technology tools and platforms promotes student-centred learning, enhances digital literacy skills, integrates blended learning, and encourages teacher education. Thus, developing 21st-century learning in EFL classrooms is essential to equip students with communication, collaboration, critical thinking, and problem-solving skills that will benefit them. Furthermore, teachers' competencies are crucial in developing 21st-century learning in EFL classes. Teachers' 21st-century competencies, including technological, pedagogical, and content knowledge, critical thinking, communication, creativity, and collaboration, must be developed through teacher training and professional development. Because of this, teachers will be able to successfully equip students with the knowledge, skills, and capabilities necessary for success in the 21st century.

In conclusion, 21st-century learning in EFL classes can significantly impact students' learning experiences by providing engaging and interactive learning opportunities, supporting language acquisition outside the classroom, and broadening their perspectives on different cultures. However, it is important to recognize and address the challenges of integrating technology into teaching and learning. Professional development and training should be provided to build teachers' capacity in this area. Ultimately, the implications of 21st-century learning in EFL require a student-centred approach that empowers and adapts to the learner's needs. In addition, 21st-century learning has transformed the EFL classroom, making it more interactive, engaging, and learner-centred. The integration of technology and the use of authentic materials has significantly enhanced the learning experience for students. Educators are now better equipped to prepare students for the challenges of the global world by providing them with relevant knowledge and skills. Adopting these new teaching methodologies has the potential to revolutionize EFL learning, transforming it into a more dynamic and effective educational experience.

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