

INTEGRATING PRE-SERVICE TEACHER TRAINING WITH 21st CENTURY SKILLS: A GLOBAL CLASSROOM PERSPECTIVE

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Abstract

This study aims to analyze how the pre-service teacher training program in the English Education Program, Faculty of Teacher Training and Education, Islamic University of Kadiri (UNISKA) Kediri, facilitates the development of 21st-century skills and the extent to which students' teaching practices align with the needs of learners. A qualitative method and descriptive approach were implemented. Data were collected through in-depth interviews, classroom observations, and document analysis. The study found that the integration of 21st-century skills in the pre-service teacher training at UNISKA has started to be implemented, particularly through microteaching courses and the School Environment Introduction (PLP) program. Findings indicate a gap between the training design and classroom practices. Students are capable of using technology and engaging in creative activities, but they still face challenges such as limited facilities, time constraints, and a conventional school culture. On the other hand, students who received reflective guidance from lecturers and mentor teachers demonstrated high adaptability in managing classrooms and integrating technology according to the context. The findings emphasize that the success of 21st-century teacher training is greatly influenced by three key factors: a practice-based reflective training design, collaborative mentor support, and a learning environment that fosters innovation. It can be concluded that the pre-service teacher training at UNISKA is moving toward the 21st-century education paradigm, although it still requires systemic strengthening. This outcome is expected to serve as a foundation for the development of a more contextual, reflective, and adaptive teacher training curriculum that meets the needs of contemporary learners.

Keywords: *4c skills, 21st-century, curriculum, pre-service teacher, training programs*

Introduction

Technological advancements and globalization have brought significant changes to various aspects of life, including education. To address the challenges of the 21st century, skills such as critical thinking, creativity, collaboration, and communication—commonly known as the 4Cs—have become essential competencies that students must acquire (Frida Nurmariana & Mirna Nur Alia Abdullah, 2024; Ifah et al., 2025; Syarifuddin et al., 2023). In this context, the role of teachers is crucial in fostering these skills through relevant and innovative learning processes. Therefore, pre-service teacher training is key to ensuring that future teachers possess the knowledge, skills, and strategies necessary to integrate 21st-century skills into their teaching practices (Burhamzah et al., 2023; Mantau & Talango, 2023; Purnama Sari SDN & Hilir, 2024). However, a gap exists between pre-service teacher training programs and the real-world needs in the field. In general, training programs emphasize educational theory, while practical experience required to teach 21st-century skills remains limited (Mardiana et al., 2021). As a result, many pre-service teachers feel unprepared or lack confidence in addressing challenges related to teaching skills relevant to the workforce and global society. This issue impacts the professional readiness of pre-service teachers and the quality of education that students receive (Hasibuan et al., 2023; Mia & Sulastri, 2023; Wijaya, 2023).

The reality in the field often differs from what is taught in training programs. Students in classrooms have diverse needs, and the educational environment presents opportunities to address challenges such as limited facilities and insufficient technological support (Aliyah & Masyithoh, 2024; Haryadi et al., 2023; Umar & Kata kunci, 2024). In these conditions, pre-service teachers require training that offers not only theoretical knowledge but also integrates real-world simulations and practices tailored to students' needs for 21st-century skills (González-pérez & Ramírez-montoya, 2022; Laius & Presmann, 2024). This approach ensures they can effectively bridge the gap between theoretical training and the demands in the field. Moreover, the rapid advancement of technology and increasingly easy access to

information demands that education adapt quickly. Today's students live in a world connected by technology, and traditional teaching methods that rely solely on conventional approaches no longer suffice. In this context, pre-service teachers must be trained not only in basic pedagogy but also in technological skills and the ability to facilitate technology-based learning and digital resource utilization. Effective training programs should prepare pre-service teachers to utilize digital tools and platforms in teaching while also introducing project-based learning, collaborative learning, and more flexible, dynamic learning approaches. Therefore, enhancing the quality and relevance of teacher training programs has become increasingly urgent to ensure they are prepared to face the demands of the ever-evolving educational landscape (Marselina et al., 2025).

Based on the results of a mini-research conducted, it is known that the English Education Program at FKIP UNISKA, as one of the teacher-preparing institutions, has yet to comprehensively implement training oriented toward developing 4Cs skills for its pre-service teacher graduates. These 4Cs are essential 21st-century competencies crucial for teachers to address the increasingly complex challenges of education and meet students' learning needs. Therefore, in-depth research is needed to identify and outline these issues. This study aims to evaluate the extent to which the pre-service teacher training program meets the 21st-century skill requirements and its relevance to classroom realities. By examining the perspectives of pre-service teachers, faculty trainers, mentor teachers, and students in schools, this study is expected to identify key challenges and opportunities for developing more effective training programs. The findings of this study will significantly contribute to educational policy development, curriculum updates, and the improvement of teacher training quality in supporting 21st-century education. The urgency of this research lies in its originality, as no in-depth study has analyzed the pre-service teacher training process before teaching in real classrooms. Furthermore, the results of this study can serve as a foundation for improving pre-service teacher training guidelines and shaping future teachers into ideal role models for 21st-century educators.

Methods

This study used a qualitative method with a descriptive approach. The qualitative was chosen to gain an in-depth understanding of the phenomena occurring in the field, particularly regarding the process of pre-service teacher training in integrating 21st-century skills into teaching practices. The qualitative descriptive method allows the data collected in the field to be presented in detail without manipulation or special treatment of the data. The main objective of this study is to describe the existing social order, explore the ongoing dynamics, and clarify the phenomena occurring in the context of pre-service teacher preparation in the English Education Program.

The research was conducted in the English Education Program, Faculty of Teacher Training and Education, UNISKA Kediri. The subjects of this study consist of several key informants, including pre-service English language teacher students who have participated in a series of classroom teaching preparation activities in real school settings. Additionally, the research informants also involve faculty policy makers, teaching lecturers, mentor teachers, and students in the school where the School Environment Introduction (PLP) takes place. The selection of respondents was carried out using purposive sampling, where the subjects were intentionally chosen based on specific criteria relevant to the research objectives. In this study, the subjects play a crucial role as data sources that will provide in-depth insights into the variables being observed.

Data collection was conducted using three main methods: in-depth interviews, observation, and documentation through questionnaires. These methods were selected to obtain comprehensive information regarding the English language learning needs at the pre-service teacher level. After the data were collected, validation was carried out using source triangulation to ensure the accuracy and credibility of the information obtained. Subsequently, the data will be analysed using interactive data analysis methods as by Miles and Huberman, which includes: (1) coding, (2) data reduction, (3) data display, and (4) drawing conclusions. This data analysis

process is expected to provide a deep understanding of the challenges and opportunities in developing a more effective and relevant pre-service teacher training program in line with the needs of 21st-century education.

Findings and Discussions

Based on the results of in-depth interviews, classroom observations, and document analysis, three main themes emerged that reflect the process of pre-service teacher training and the integration of 21st-century skills (4Cs) into teaching practice. The first theme highlights the integration of 21st-century skills in the design of pre-service teacher training, where the curriculum and program structure are strategically aligned to foster essential competencies like critical thinking, communication, collaboration, and creativity. The second theme focuses on the implementation of 4Cs skills and digital literacy in pre-service teachers' teaching practices, emphasizing the ways in which these skills are applied in real classroom settings to enhance student engagement and learning outcomes. Lastly, the third theme identifies the facilitating and obstructing factors in aligning the training with students' needs, where challenges such as limited resources and varying levels of teacher preparedness were noted, alongside strategies for overcoming these obstacles. In the following sections, each of these themes will be discussed in detail, highlighting their implications for pre-service teacher training and the development of 21st-century competencies.

1. Integration of 21st-Century Skills in Pre-Service Teacher Training

The results of interviews with microteaching lecturers indicate that the integration of 21st-century skills has begun in the training curriculum, although its implementation is still conceptual and has not been fully directed.

Informant 1 (I1) stated:

"We have indeed incorporated 21st-century skills in the RPS (Course Syllabus), for example by assigning students to create technology-based projects such as learning videos or digital quizzes. However, I admit that not all lecturers explicitly use the 4Cs framework. Sometimes it's just creative activities without deep reflection."

Informant 2 (I2) added:

"Microteaching here is actually student-centered, but student guidance sometimes still focuses on presentation techniques, not on their ability to facilitate collaboration or critical thinking among students."

Document analysis of the RPS and microteaching modules supports these findings. Most lecturers have included learning outcomes related to communication and creativity, but the indicators for collaboration and critical thinking are still less explicit.

These findings shows that the integration of 21st-century skills in many teacher education programs is still declarative and inconsistent in its implementation stage (Almazroa & Alotaibi, 2023). This reflects a transfer gap between the curriculum policy level and the training practice level. According to Transfer of Training theory, this condition indicates that the training design is still not strong enough to ensure knowledge transfer to real practice. The training design that still focuses on knowledge delivery rather than skill transformation becomes a major factor.

However, according to Informant 3 (I3), a more innovative approach has been attempted. The lecturer developed a collaborative peer teaching model, where students assess and provide feedback to each other.

Informant 4 (I4) revealed:

"We tried a group rotation system. Each student has a role: some teach, some assess, and some provide input on collaboration and creativity. The results were quite positive; they became more aware of the importance of teamwork." This approach reflects an effort to apply the principles of constructivism, which positions students as active subjects in learning, in line with the concept of Habits of Practice, where professional skills are developed through repeated reflective experiences (Bernacer & Murillo, 2014).

2. Implementation of 4Cs Skills and Digital Literacy in Teaching Practice

Observations during the teaching practice (PLP) revealed significant variation among students in applying 21st-century skills. Some students

effectively implemented collaborative and creative learning, while others still adhered to conventional patterns. I1 stated, "I attempted to create the 'English Through Song' project, where students worked in groups to write simple lyrics and perform them. They became enthusiastic and active, despite the limited time." I2 added, "I still face difficulties encouraging students to engage in English discussions. Students tend to be passive. In the end, I explained more than facilitated." Based on observation sheets from 8 students, the results showed that 5 students demonstrated a strong application of communication and creativity skills, while 3 students displayed good collaboration during group activities. However, only 2 students consistently promoted critical thinking through open-ended questions and student reflections. Additionally, the use of digital literacy was adequate, with students utilizing various media such as Kahoot, Padlet, Canva, and interactive PowerPoint presentations. Despite these positive aspects, challenges arose when school equipment was insufficient, such as slow internet or malfunctioning projectors. These findings underscore the variability in the application of 21st-century skills and highlight the need for more consistent support and resources to enhance student engagement and learning outcomes.

Moreover, digital literacy usage was adequate. Students utilized various media such as Kahoot, Padlet, Canva, and interactive PowerPoint presentations. However, challenges arose when school equipment was insufficient, such as slow internet or malfunctioning projectors.

I3 stated: "Some students are quite adept at using digital media. But at our school, the signal is sometimes problematic. So, they often have to change their plans unexpectedly and revert to the chalkboard."

These findings reinforce the TPACK theory (Koehler, 2006) which underscores the importance of balancing technological, pedagogical, and content knowledge. In this case, although students possessed technological skills, they were not fully able to adapt them to the contextual conditions in the school. Students who managed the class effectively typically demonstrated technological-pedagogical reasoning—the ability to adjust teaching strategies according to the availability of resources. This was

exemplified by I2, who used role play as an alternative to interactive videos:

I2 said: "Since the projector couldn't be used, I replaced it with a role-playing activity between students. They remained active and enthusiastic, even without technology." This demonstrates a pragmatic understanding of teaching for meaning, which is at the core of student-centered learning (Nur Laela et al., 2025; Tang, 2023)

3. Supporting and Obstructing Factors in Aligning Training and Practice

From the interviews and observations, four categories of factors were identified that influence the extent to which training can align with teaching practice in the field, namely:

Tabel 1: Supporting and Obstructing Factors in Aligning Training and Teaching Practice

Categories	Findings	Impact
Lectures & Teacher Mentors Supports	Active mentors engage in discussions and provide reflective feedback	Enhances pedagogical awareness among teacher candidates
Infrastructures & technology	Limitations in projectors, internet connectivity, or student devices	Restricts integration of digital literacy
School Culture	Schools are exam-oriented rather than exploring the 4Cs	Restricts instructional innovations
Students' readiness	Some students are still anxious and not flexible in facing real situations	Reduces training transferability

One of the students described the situation reflectively:

I3 stated: "At university, we learn to be facilitators, but in school, students are used to sitting and listening. Sometimes they are surprised when I ask so many questions."

These findings stated that the success of training transfer is significantly influenced by the work environment and opportunity to perform. In this context, the school environment, which is not yet prepared to support innovative teaching, becomes a key factor that weakens the effectiveness of

training.

However, mentor support has proven to be a major reinforcing factor. I5 said:

"I always give students space to try new things. As long as it is relevant to the material, let them experiment." Such support aligns with the concept of Habits of Practice, which emphasizes the importance of contextual mentoring in shaping the professional habits of pre-service teachers.

This discussion integrates the research findings with previous theoretical and empirical studies. The findings indicate a gap between the conceptual design of the training and its implementation in the field, both in terms of the integration of 21st-century skills and the use of digital literacy. Therefore, strengthening the training design with a more systematic approach, including measurable evaluation instruments for the 4Cs skills, as well as stronger support in terms of facilities and school culture, is required to effectively implement these skills (González-pérez & Ramírez-montoya, 2022; Odewole et al., 2023)

Conclusion

This study shows that although the pre-service teacher training program in the English Education Program at UNISKA has begun to integrate 21st-century skills, its implementation remains limited. Several elements of the 4Cs skills and digital literacy have been incorporated into the curriculum; however, their application remains conceptual and lacks measurable outcomes in the students' teaching practice. The greatest challenge identified lies in the misalignment between training design and field realities. The school environment, which continues to focus on conventional teaching methods, presents a barrier for students to implement creative and reflective learning strategies in the classroom. Nevertheless, some students successfully adapted their approaches to existing constraints, such as replacing digital media with alternative methods like role play, demonstrating high pedagogical flexibility. Support from lecturers and mentor teachers plays a crucial role in facilitating students' development.

When lecturers and mentor teachers provide reflective guidance and space for experimentation, students feel more confident and are better able to develop their skills. Overall, the success of this training depends on three key factors: (1) a more practical and reflection-based training design, (2) more collaborative supervision that supports professional development, and (3) a learning environment that is open and fosters innovation. With improvements in these three factors, the gap between campus training and school practice can be minimized, resulting in pre-service teachers who are better prepared to face the challenges of 21st-century education.

References

Aliyah, H., & Masyithoh, S. (2024). Tinjauan Literatur: Peran Teknologi Digital dalam Meningkatkan Kualitas Pembelajaran di Sekolah. *Teknologi Pendidikan Dna Pembelajarab*, 01(04), 681–687.

Almazroa, H., & Alotaibi, W. (2023). Teaching 21st Century Skills: Understanding the Depth and Width of the Challenges to Shape Proactive Teacher Education Programme. In *Sustainability (Switzerland)* (Vol. 15, Issue 9). MDPI. <https://doi.org/10.3390/su15097365>

Bernacer, J., & Murillo, J. I. (2014). The Aristotelian conception of habit and its contribution to human neuroscience. *Frontiers in Human Neuroscience*, 8(November). <https://doi.org/10.3389/fnhum.2014.00883>

Burhamzah, M., Novia, L., & Fatimah, S. (2023). Teacher Training for The Future: The Role of Emotional Intelligence in the Classroom for Success in 21st Century. *Pengabdian Kepada Masyarakat*, 1(5).

Frida Nurmarliana, & Mirna Nur Alia Abdullah. (2024). Keterampilan 4C Sebagai Strategi Pengembangan Kompetensi Critical Thinking Gen Z di Era Revolusi Industri 4.0 dan Society 5.0. *SABANA: Jurnal Sosiologi, Antropologi, Dan Budaya Nusantara*, 3(1), 66–71. <https://doi.org/https://doi.org/10.55123/sabana.v3i1.3299>

González-pérez, L. I., & Ramírez-montoya, M. S. (2022). Components of Education 4.0 in 21st Century Skills Frameworks: Systematic Review. In *Sustainability (Switzerland)* (Vol. 14, Issue 3). MDPI. <https://doi.org/10.3390/su14031493>

Haryadi, R. N., Utarinda, D., Poetri, M. S., & Sunarsi, D. (2023). Peran Teknologi Informasi dalam Meningkatkan Pembelajaran Bahasa Inggris. *Jurnal Informatika Utama*, 1(1), 28–35. <https://doi.org/10.55903/jitu.v1i1.76>

Hasibuan, R., Raflika, L., Hamdi Siregar, F., Avira, D., Basid, H., & Nasution, I. (2023). Pengaruh Pelatihan Profesional Pedagogik Guru Terhadap Keterampilan Mengajar. *Jurnal Pendidikan Berkarakter*, 1(6). <https://doi.org/10.51903/pendekar.v1i6.468>

Ifah, E. N., Ramadhani, R., Saraswati, R. U., Sarmin, S., Palentino, R., Bahri, F., Suhendra, I., & Riyanti, H. (2025). Memahami Critical Thinking: Soft Skill Esensial bagi Generasi Muda Memasuki Dunia Kerja dan Usaha. *INVESTASI : Inovasi Jurnal Ekonomi Dan Akuntansi*, 3(3), 225–234. <https://doi.org/https://doi.org/10.59696/investasi.v3i3.167>

Koehler, M. J. (2006). Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge PUNYA MISHRA. *Teachers College Record*, 108(6), 1017–1054.

Laius, A., & Presmann, M. (2024). The Pre-service Teachers' Perceptions of Integrated Teaching, Inquiry Learning, using ICT and Real-life Examples in Science Classes. *Science Education International*, 35(2), 92–101. <https://doi.org/10.33828/sei.v35.i2.3>

Mantau, B. A. K., & Talango, S. R. (2023). Pengintegrasian Keterampilan Abad 21 dalam Proses Pembelajaran (Literature Review). *IRFANI: Jurnal Pendidikan Islam*, 19, 86–107. <https://doi.org/https://doi.org/10.30603/ir.v19i1.3897>

Mardiana, D., Supriyanto, T. R. M., & Pristiwiati, R. (2021). The Challenge of 21st Century Learning: To Realize Classroom Teacher Competence in Applying the Method Of Language Teaching. *TUNAS: Jurnal Pendidikan Sekolah Dasar*, 6, 1–18.

Marselina, S., Prananda, G., Judijanto, L., Fauzi, M. S., Hendra, M., Tinggi, S., Sakti, I. E., & Kerinci, A. (2025). The Evolution of the Teacher's Role in the Technology Era: A Literature Study on the Adaptation of Teaching in the Development of the Digital Age. *The Future of Education Journal*, 4. <https://journal.tofedu.or.id/index.php/journal/index>

Mia, Y. G., & Sulastri, S. (2023). Analisis Kompetensi Profesional Guru. *Journal of Practice Learning and Educational Development*, 3(1), 49–55. <https://doi.org/10.58737/jpled.v3i1.93>

Nur Laela, Z., Prasongko, A., & Yuntoro Putri, K. (2025). Teacher And Students Perception: The Implementation of Project-Based Learning Method In Learning English for Vocational Students. *Academic Journal PERSPECTIVE: Language, Education and Literature*, 13(1), 1–9. <https://doi.org/10.33603/perspective.v13i1>

Odewole, P. O., Sobowale, T. O., & Uzzi, F. O. (2023). The Place of Design Education in Achieving 4IR Sustainability through the 4Cs Skill-sets. *Desain and Technology Education: An International Journal*, 28(2). <https://doi.org/https://orcid.org/0000-0002-0977-2993>

Purnama Sari SDN, D., & Hilir, P. (2024). Keterampilan Mengajar Guru Abad 21. *ANALYSIS: JOURNAL OF EDUCATION*, 2(2), 2024.

Syarifuddin, Iriani, & Ali Akbar, L. (2023). Characteristics, Approaches, and Competency Learning Processes of Students in The 21st Century. *12 WAIHERU*, 1(9), 35–44. <https://doi.org/https://doi.org/10.47655/12waiheru.v9i1.91>

Tang, K. H. D. (2023). Student-centered Approach in Teaching and Learning: What Does It Really Mean? *Acta Pedagogia Asiana*, 2(2), 72–83.
<https://doi.org/10.53623/apga.v2i2.218>

Umar, S., & Kata kunci, A. (2024). Peningkatan Mutu Pembelajaran Melalui Pengembangan Sarana dan Prasarana. *Jurnal Studi Kemahasiswaan*, 4(1), 16–28.
<https://doi.org/10.54437/irsyaduna>

Wijaya, L. (2023). Peran Guru Profesional untuk Meningkatkan Standar Kompetensi Pendidikan. *JMI: Jurnal Multidisiplin Indonesia*, 6(2), 1222–1230.
<https://doi.org/https://doi.org/10.58344/jmi.v2i6.273>