



Self-perceived digital competence level of pre-service English teachers and its relation to their attitude towards ICT use in language teaching

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Abstract:

This study aims to find the correlation between digital competence and attitude towards ICT use in English Language Teaching among pre-service English Teachers. It employed a quantitative method with a correlational design. There were two instruments used, namely self-assessment questionnaire based on DigCompEdu framework and an attitude questionnaire. The data were collected through survey method, and the sample was chosen using a simple random sampling technique. A total of 59 pre-service English teachers at Universitas Negeri Padang enrolled in 2021 participated in this research. The finding revealed that most of pre-service English teachers (42.37%) are in level B2 (Expert) with average score 51.12 and had a positive attitude towards ICT use in English language teaching (96.61%) with average mean 3.4. Based on the Pearson Product-Moment Correlation analysis, the results showed that there was a correlation between digital competence and attitude towards ICT use in English Language Teaching among pre-service English teachers. The correlation coefficient was $r = 0.471$ with a significance value of $p = 0.000 (< 0.05)$, indicating that the null hypothesis was rejected. This result suggests a moderate positive correlation, meaning that higher levels of digital competence are associated with more positive attitudes towards ICT use in English language teaching.

Keywords:

Digital competence, DigCompEdu framework, pre-service English teachers, attitude, ICT in ELT.

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1. INTRODUCTION AND LITERATURE REVIEW

Information and Communication Technology (ICT) integration has greatly benefited educators and learners in the process of English language teaching and learning nowadays. According to Poudel (2022), the usage of ICT can assist teachers to create more engaging and effective presentations, motivate students, increase their concentration, foster learning environment that focus on the student, and provide many learning materials. Similarly, Azmi (2017) explained that using ICT in the EFL classroom can positively influence students' interest and motivation, encourage their independent learning, boosts interaction and meaningful communication, and students' English performance. Furthermore, Alkamel et al., (2018) state that ICT can improves students' motivation for learning, independent learning, collaboration,

communication, and learning outcomes. It indicates that ICT integration in the process of teaching English brings many advantages that support teachers and also students.

Pre-service English teachers, those that currently studying at university to gain knowledge and skills for teaching, will be teaching students who are familiar with and close to digital technology. Their digital competence is crucial to ensure ICT can effectively integrated into their teaching practice. In this study, digital competence refers to pre-service teachers' self-perceived ability to use digital technologies for pedagogical purposes, as reflected through their own evaluation of their skills and practices. Since ICT is really important in today's teaching activity, English teachers should be equipped with the ability to use digital technology. Fominykh et al., (2019) stated that teachers' digital competence is essential for the successful adoption and application of technology-based teaching methods. It aligns with Sumarni et al. (2023), who state that it is important to enhance pre-service language teachers' digital competence for better quality of language education and provide students with a better learning experience.

According to some research, pre-service English teachers still have some challenges when they use ICT in teaching. As explained in Leba and Temi (2023), pre-service English teachers still encounter challenges in integrating ICT into when teaching. They revealed that approximately one-fourth of these pre-service teachers reported low confidence and felt uncertain about their readiness to apply ICT in teaching in terms of ICT skills and knowledge. This problem is also evident with Nabhan (2021) that found that pre-service teachers' conceptions of digital literacy tend to be limited to basic tool use, with weak understanding of critical thinking and digital culture. Similarly, Limbong and Wadham (2023) reported that although pre-service English teachers demonstrated adequate skills in designing interactive instructional materials, they frequently encountered practical challenges, especially regarding internet connectivity and access to necessary software subscriptions.

Furthermore, the increasing exposure of students to social media and digital games presents additional challenges for English teachers, such as maintaining students' learning motivation, ensuring data security and privacy, and managing responsible technology use in the classroom. Moreover, teachers must pay attention to ethical and moral considerations and make sure that the implementation of digital technology does not reduce meaningful interpersonal interaction during teaching and learning (Sari & Cahyono, 2019). As a result, current pre-service English teachers are required to have appropriate pedagogical digital competence, both in terms of their general ICT skills and how they can apply the technology to their teaching practice.

Given the current worldwide situation, it raises the question of whether pre-service English teachers, particularly those from Universitas Negeri Padang, are already prepared to face the challenges related to today's teaching activities. Nowadays, English teachers are no longer expected to use only traditional teaching methods. Instead, they are required to integrate project-based learning, collaborative learning, and digital technology to create fun and interactive learning activities. They are also expected to assist students in understanding and utilizing relevant digital tools for searching information, communicating, collaborating, and creating learning products (Husna et al., 2023). It makes teachers now must consistently implement changes in their teaching and demonstrate innovation to continuously meet the evolving demands of technological development over time.

However, despite the importance of ICT and digital competence that previously has been mentioned, gaps still exist in the actual implementation of ICT in English language teaching at some schools. Based on the researcher's observations during the teaching practicum, it was found that in-service teachers still did not use ICT or any digital or interactive

media in their teaching activities. Instead, teachers still use conventional media such as textbook, and only occasionally employ whiteboards. In fact, although they have access to technological tools like a computer laboratory or a projector, they did not use them. As a result, the students' learning motivation towards the English subject was low.

Several studies discovered that if teachers did not integrate ICT into classroom, students found problems in their learning process at classroom. For instance, research from Kharizmi et al. (2024) found that using gamification on English language teaching improved students' learning motivation which was initially low due to conventional teaching methods used by teachers. Similarly, a study from Ruchana, Hartono, and Rozi (2024) revealed that some students from one of secondary school in Rembang were found passive in learning English due to teachers' lack of ICT integration that led to students' low participation and poor reading skill. To address this, the researcher implemented Kahoot as an innovative media to enhance students' participation and reading skill, which resulted in effectively improving students' participation and reading ability. Therefore, these studies indicate that teaching without support of ICT may hinder student motivation or reduce the classroom interaction, which negatively affects the overall teaching effectiveness and students' learning outcomes.

Previous studies have consistently explained that the implementation of ICT in classroom practices is shaped by various factors, with teachers' attitudes being one of the most influential. Teachers who perceive ICT positively tend to integrate technology more actively in their teaching. Buabeng-Andoh (2012) emphasized that the manner in which technology is incorporated in classrooms is largely affected by teachers' attitudes toward ICT. He stated that positive perceptions of educational technology encourage teachers to explore effective ways of incorporating ICT into teaching and learning activities. Similarly, Player-Koro (2012) argued that teachers' attitudes toward the pedagogical value of ICT, including its perceived advantages for instruction and student learning outcomes, significantly affect their decisions to integrate technology in classroom settings. This perspective is further supported by Ikwuka et al., (2020), who reported that teachers' readiness and intention to employ digital tools are closely linked to their attitudes toward technology in instructional activities. Overall, these studies suggest that a positive attitude toward ICT incorporation in teaching is a crucial factor in motivating teachers to utilize digital technology effectively in their classroom practices.

Based on the evident above, it raises the questions of whether pre-service English teachers from Universitas Negeri Padang have positive attitude and will actually want to use digital technology when they become real teachers in the future. The Theory of Planned Behaviour explains that a person's attitude serves as a crucial factor in shaping their intentions and actions (Ajzen, 1991). Therefore, although digital competence is an important requirement for integrating ICT effectively in the classroom, attitude also becomes a key factor in determining pre-service English teachers' intention to adopt ICT when they teach in the future. In other words, having sufficient digital skills alone is not enough if it is not supported by positive attitudes.

Previous researches have tried to see the digital competence and attitude of pre-service English teachers in different educational settings. A study from Wardani & Santosa (2022) has measured the level of digital competence among 102 English education students based on the Digital Competence of Educators framework. According to the report, most students have a level B2 which indicates they are fluent, creative, and critically apply a variety of digital technologies to enhance their teaching practice. Another study by Fernandez (2023) was conducted to measure the implementation of ICT by pre-service teachers from one of the universities in Indonesia within an online teaching environment. The result indicated that these

pre-service teachers perceived digital competence as a crucial element in supporting the effectiveness of their online instructional activities.

The previous research has also identified some aspect that has relation to teachers' attitudes toward ICT, including computer attributes, computer competences, cultural perceptions, and cultural aspects (Makhlouf and Bensafi, 2021). It is found that computer competences have a correlation with teachers' attitude. This study suggests that seeing factors influencing teachers ICT attitude is important to foster a more positive attitude. However, the research that focusing on the correlation between digital competence and attitude of pre-service English teachers is still limited. Therefore, this research aims to fill the gap by finding the pre-service English teachers' digital competence and the relationship with their attitude. This research wants to see whether the more competent pre-service teachers are in using digital tools, the more positive they use ICT into the classroom, which could lead to their willingness in integrating technology in the classroom. The findings of this research will provide insights that can contribute to the improvement of pre-service English teachers' digital competence and foster a positive attitude toward ICT use.

2. METHOD

This research utilized a quantitative approach with a correlational research design. This research aimed to find the correlation between digital competence level and the attitudes of pre-service English teachers toward the utilization of ICT in English language teaching. In this study, digital competence was treated as the independent variable, while attitudes toward ICT use served as the dependent variable. The research was conducted among English Education students of Universitas Negeri Padang from the 2021 academic cohort. The population consisted of pre-service English teachers distributed across five classes who had completed teaching practicum and had experience in teaching activities. The sample of the research was taken using the Slovin formula with a 10% margin of error and a 90% confidence level. Simple random sampling was applied to select the participants that resulting in a total sample of 59 pre-service English teachers.

Two instruments were used to collect the data. The first instrument was a self-assessment questionnaire adapted from DigCompEdu framework, which consists of 22 items that measure six areas of digital competence. This instrument was selected because the framework is specifically designed to assess educators' pedagogical digital competence and provides a comprehensive description of teachers' ability to incorporate digital technology into instructional activities. It categorizes educators' digital competence into six progressive levels, ranging from A1 (Newcomer) to C2 (Pioneer) (Redecker, 2017). The second instrument was an attitude questionnaire adapted from Albirini (2006), which consists of 20 items covering the affective, cognitive, and behavioural components of attitudes toward ICT use in English Language Teaching. A four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree) was used, without a neutral option to encourage clear responses. The mean scores were calculated and classified into four categories: negative (< 2.0), tends to negative (2.1–2.4), tends to positive (2.5–2.9), and positive (> 3.0). This categorization was used to describe the overall tendency of pre-service English teachers' attitudes toward ICT use in English language teaching.

Both instruments were validated through content validity by an expert lecturer in Universitas Negeri Padang to ensure their appropriateness for the research context. The validation process involved reviewing the items in terms of their alignment with the research variables and their suitability for pre-service English teachers. Based on the expert's feedback, some revisions were made to improve the wording and clarity of several items. Furthermore, the reliability of the instruments was tested using Cronbach's Alpha to determine the internal

consistency of the items. The results indicated that the digital competence questionnaire demonstrated excellent reliability, with Cronbach's Alpha values ranging from 0.914 to 0.923. Meanwhile, the attitude questionnaire showed good to excellent reliability, with values ranging from 0.894 to 0.905. These results suggest that both instruments are reliable and consistent in measuring the intended constructs, and therefore appropriate for use in data collection.

After the data were collected, descriptive statistics were used to find the levels of digital competence and attitudes toward ICT use. Prior to examining the link between the variables, the requirement for data analysis that include normality and linearity tests were conducted. The result of the requirement test shown that both of data are normally distributed. Therefore, the relationship between digital competence and attitude was analysed using the Pearson Product-Moment Correlation test through SPSS.

3. RESULTS AND DISCUSSION

The section presents and interprets the findings of this study concerning the relationship between digital competence and attitudes of pre-service English teachers toward ICT use in English language teaching. The findings of this research are presented in the following sections.

Research Findings

1. Digital Competence Level among Pre-service English Teachers

The digital competence level of pre-service English teachers was identified from the total scores obtained through the self-assessment questionnaire. These scores were then categorized into six competence levels according to the DigCompEdu framework. A summary of the distribution of digital competence levels among pre-service English teachers is presented in the following table.

Table 1. Distribution of Pre-service English Teachers' Digital Competence Levels

NO.	COMPETENCE LEVEL	RANGE	FREQUENCY	PERCENTAGE
1	A1 (Newcomer)	0-20	1	1.69%
2	A2 (Explorer)	21-33	5	8.47%
3	B1 (Integrator)	34-49	19	32.20%
4	B2 (Expert)	50-65	25	42.37%
5	C1 (Leader)	66-80	8	13.56%
6	C2 (Pioneer)	81-88	1	1.69%

As shown in Table 1, most of the pre-service English teachers were at the B2 (Expert) level (42.37%), followed by the B1 (Integrator) level (32.20%). This indicates that the majority of pre service English teachers already have adequate digital competence to integrate digital technologies effectively in teaching. Furthermore, a smaller proportion of pre service English teachers reached the C1 (Leader) (13.56%) and C2 (Pioneer) (1.69%) levels, suggesting that only a few pre-service teachers have advanced to leadership or innovative use of digital technologies. Meanwhile, relatively few respondents were categorized at the A2 (Explorer) (8.47%) and A1 (Newcomer) (1.69%) levels, meaning that few of them still demonstrating low digital competence and need to have more development. They still use simple digitals tools and their use of digital technology is still limited. Overall, the results of digital competence levels among

pre-service English teachers shows that they generally demonstrate an intermediate level, with strong readiness to integrate digital technology into classroom.

2. Attitude towards ICT Use in ELT among Pre-service English Teachers

The data of pre-service English teachers' attitude towards ICT use in language teaching were obtained from the mean score of each pre-service teachers, which was calculated from the questionnaire responses. Based on the result of the mean scores, the distribution of attitude towards ICT use among pre-service English teachers can be seen in the following table.

Table 2. Distribution of Pre-service English teachers' Attitude towards ICT Use in ELT

NO.	ATTITUDE LEVEL	RANGE	FREQUENCY	PERCENTAGE
1	Positive	> 3.0	57	96.61%
2	Trends to Positive	2.5-2.9	2	3.39%
3	Trends to Negative	2.1-2.4	0	0%
4	Negative	< 2.0	0	0%

Based on the distribution table above, it can be seen that the majority of pre-service English teachers (96.61%) found having a positive attitude towards the utilization of ICT in pedagogical practice, with mostly of the scores higher than 3.0. Additionally, it was found that only a small proportion of the respondents showed a trend towards a positive attitude (3.39%). None of the respondents have fall into the categories of trends to negative or negative attitudes. The findings concludes that a large number of pre-service English teachers have favourable or positive attitudes toward using ICT in teaching. It also reflects those pre-service English teachers from Universitas Negeri Padang recognized the usefulness, efficiency, and role of digital tools in instructional practices. They also generally willing and ready to implement technology in their future English instructional practices.

3. The Correlation Between Digital Competence Level and Attitude towards ICT Use in English Language Teaching

This research employed the Pearson Product-Moment Correlation as a parametric test to examine the relationship between digital competence and attitude towards ICT use in English language teaching. The result of the correlation test is presented in Table 3 below.

Table 3. The Result of the Correlation Test

		Digital Competence	Attitude
Digital Competence	Pearson Correlation	1	.471**
	Sig. (2-tailed)		.000
	N	59	59
Attitude	Pearson Correlation	.471**	1
	Sig. (2-tailed)	.000	
	N	59	59

** . Correlation is significant at the 0.01 level (2-tailed).

Based on the result of the correlation test above, it was found that the significance value (p-value) of the correlation test was 0.000. According to the decision-making rule, if the p-value is < 0.05 , it means that H_0 is rejected and H_1 is accepted. Since the p-value that is obtained in this research was < 0.05 , it means that the null hypothesis H_0 is rejected and H_1 is accepted. Therefore, it can be concluded that there is a significant correlation between digital competence level (X) and attitude (Y) towards ICT use in English Language Teaching.

Furthermore, the Pearson correlation coefficient obtained was $r = 0.471$. According to the correlation interpretation guidelines, a correlation value within the range of 0.40–0.59 is considered moderate. Therefore, based on the correlation coefficient ($r = 0.471$), the strength of the relationship between digital competence and attitude towards ICT use in English Language Teaching is categorized as moderate. In addition, the positive value of the correlation coefficient indicates that the relationship between the variables is positive. This means that a higher level of digital competence is associated with a more positive attitude towards the use of ICT in English Language Teaching.

Discussion

The results of this research reveal that most of pre-service English teachers demonstrated an intermediate level of digital competence. Most of the respondents were categorized at the B2 (Expert) level (42.37%), followed by B1 (Integrator) (32.20%) and C1 (Leader) (13.56%). Only a small number of respondents were at the lower levels (A1 and A2), suggesting that very few pre-service English teachers have limited digital competence. These findings imply that pre-service English teachers at Universitas Negeri Padang already possess a strong ability to integrate digital technology into their teaching, although further development toward higher-level strategic and innovative use is still needed. This finding is consistent with the study conducted by Wardani and Santosa (2022), which reported that approximately 48% of pre-service English teachers across Indonesian universities were also categorized at the B2 (Expert) level. Both studies show that while most pre-service English teachers reach the B2 level, only a small proportion advance to the C1 (Leader) or C2 (Pioneer) levels, which may be explained by limited opportunities to apply digital technology in authentic teaching contexts beyond teaching practicum activities.

The dominance of the B2 (Expert) level is mainly influenced by strong performance in the Teaching and Learning and Digital Resources competence areas. In contrast, other areas such as Professional Engagement, Assessment, Empowering Learners, and Facilitating Learners' Digital Competence showed more varied results, with many respondents remaining at the B1 (Integrator) level. This indicates uneven development of digital competence, where pre-service English teachers are more confident in using ICT as supporting tools for instruction than in more complex pedagogical applications. A similar pattern was also reported by Benali et al. (2018) in their study of Moroccan English teachers, where strengths were found in teaching and digital resources, while lower competence appeared in digital assessment and learner empowerment. This suggests that these advanced competences require more experience, practice, and professional support.

In addition to finding the level of digital competence, this research also revealed that mostly, pre-service English teachers demonstrated positive attitudes towards implementation of digital technology for teaching purpose, which can be seen across the affective, cognitive, and behavioral components. It means that generally, they want to use ICT into their future English teaching practice. This positive attitude should be maintained as it is one of the essentials predictors of teachers' ICT integration. These findings are in line with research conducted by

Koçer (2014), which compared pre-service and in-service English teachers' attitudes toward ICT and found that both groups generally held positive attitudes, and showed a positive correlation between teachers' positive perceptions of computers and their actual ICT use. Similarly, recent research in higher education contexts confirms that teachers' attitudes toward technology are decisive predictors of their intention and willingness to integrate ICT in classroom practices (Moradi, 2025). It reinforced the argument that teachers' attitudes strongly influence their readiness and willingness to integrate ICT into their teaching practice.

Finally, the results of this study show a moderate correlation between pre-service English teachers' attitudes toward the implementation of ICT in English language instruction and their level of digital competency. This finding suggests that the higher digital competence they have, the more optimistic outlook pre-service English teachers have. The majority of them indicated favourable attitudes regarding the application of ICT in English language instruction, despite their varying degrees of digital competence, which ranged from A1 (Newcomers) to more experienced users. This implies that pre-service English teachers may still understand the value of ICT and demonstrate a desire to include it into their future teaching methods even if their digital competence is still developing.

When compared to the study by Dianti et al., (2025) on secondary school teachers, a similar trend can be observed. Their study discovered a strong correlation between teachers' level of digital competence and their feelings and opinions regarding ICT integration in the classroom. According to the findings, teachers who were more proficient in using technology in the classroom also tended to have more positive attitudes. Teachers' technological skill was positively connected with their views toward adopting ICT (Ayub et al., 2015). In a similar vein, Makhoulouf and Bensafi (2021) discovered statistically significant positive associations between computer proficiency, computer access, and computer training and teachers' attitudes toward ICT. These studies support the finding that greater levels of digital competence are linked to more positive attitudes on the integration of ICT in the classroom.

Previous research has found that the resistance to integrate some educational technology can occur when teachers lack confidence and do not see clear educational benefits of ICT. A study by Taneri and Seferoglu (2013) about the incorporation of ICT among teachers found that their reluctance to adopt ICT was linked to their lack of enthusiasm, insufficient skills, and the perception that technology did not offer clear advantages over traditional methods. This resistance reflects how internal factors such as low confidence in using technology and doubts about its value for teaching and learning can contribute to negative attitudes toward ICT integration, especially when teachers feel unprepared or unsupported in developing their digital competence.

In conclusion, the positive attitude towards ICT uses among pre-service English teachers demonstrated their recognition of ICT as a useful tool for teaching. Without sufficient digital competence, pre-service English teachers may find it difficult to put their positive beliefs into practice. Therefore, the positive connection between digital competence and attitude points the importance for teacher education programs to continue strengthening ICT training. Improving digital competence will not only enhance technical skills but also increase pre-service English teachers' confidence and readiness to use ICT in meaningful ways. Providing adequate training, access to digital tools, and a supportive learning environment will help ensure that their positive attitudes can be effectively implemented in real classroom settings.

4. CONCLUSION

This research demonstrated that higher levels of digital competence pre-service English teachers possess are related to more positive attitudes toward ICT application in instructional

practice. It can be means that the readiness of pre-service teachers to use ICT in teaching depends on both their digital competence and also their attitude towards technology. This suggests that developing both skills and mindset at the same time is crucial for the successful of ICT integration. Furthermore, the positive attitudes found in this study suggest that, when these pre-service teachers become in-service teachers, they are likely to use ICT in their teaching. This result is encouraging because previous observation has shown that some teachers still not use ICT in classrooms. These results imply that concerns about low ICT adoption can be reduced if teacher education program successfully develop digital competence and positive attitude. Therefore, teacher education programs should go beyond the development of technical abilities and also fostering students' confidence and motivation in adopting digital technology for teaching. Overall, this research highlights the importance of teacher education program to strengthening digital competence, providing continuous ICT training, and meaningful teaching practice opportunities to future English teachers to successfully implementing ICT into real classroom settings. As recommendation, future researchers should look into other variables that may lead to a positive attitude toward ICT in teaching in order to acquire a better understanding of how such factors promote pre-service English teachers' readiness to integrate ICT.

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