

Investigating Pre-Service Teachers' TPACK Competence in ELT Practicum Settings: A Mixed-Method Exploration

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ABSTRACT

This study investigates the Technological Pedagogical Content Knowledge (TPACK) competence of pre-service teachers during their English Language Teaching (ELT) practicum using a mixed-method design. Five pre-service teachers participated in a one-month teaching practicum at MTs N 2 Banyuwangi. Quantitative data were collected through a 15-item TPACK self-assessment questionnaire, measuring four core domains: Technological Knowledge (TK), Pedagogical Knowledge (PK), Content Knowledge (CK), and the integrative TPACK construct. Qualitative data were obtained from document analysis of lesson plans, instructional materials, teaching media, and reflective reports. The results show that participants demonstrated strong CK (Mean = 4.3) and solid PK (Mean = 4.05), while TK emerged as the weakest domain (Mean = 3.3). The integrative TPACK score (Mean = 3.55). These findings indicate clear differences across TPACK domains, with CK being the strongest and TK the weakest after the one-month practicum. The study contributes to understanding TPACK development in Indonesian ELT practicum settings and underscores the importance of institutional support for meaningful technology integration.

Keywords: TPACK, pre-service teachers, mixed-method

INTRODUCTION

Integrating technology into English Language Teaching (ELT) has become a fundamental requirement for 21st-century educators. The Technological Pedagogical Content Knowledge (TPACK) framework (Mishra & Koehler, 2006) provides a conceptual foundation for understanding how teachers meaningfully combine technological tools, pedagogical strategies, and content expertise to enhance learning. However, research consistently shows that pre-service teachers often demonstrate uneven TPACK profiles, with strong content and pedagogical foundations but weaker technological competence (Eliyanto et al., 2021; Jaeni & Ghufon, 2024).

In the Indonesian context, technology integration in ELT remains varied due to differences in institutional readiness, availability of digital infrastructure, and teacher training quality. These gaps suggest that the ability to use technology effectively in ELT settings is shaped not only by individual competence but also by contextual factors such as school facilities and institutional policy.

Teaching practicum programs serve as a critical platform for pre-service teachers to develop and apply their TPACK in authentic classroom environments. Yet, empirical studies focusing on TPACK development during ELT practicum—particularly in Islamic junior high schools—remain limited. Moreover, few studies combine quantitative assessment with qualitative document analysis to examine how pre-service teachers' TPACK is reflected in lesson planning and instructional practice.

Responding to this gap, the present study investigates the TPACK competence of pre-service teachers during a one-month ELT practicum at MTs N 2 Banyuwangi. Using a mixed-method approach, the study examines their levels of technological, pedagogical, and content knowledge, as well as how these domains are demonstrated in teaching materials, lesson plans, and reflective reports. The study is guided by two research questions: (1) What is the level of pre-service teachers' TPACK competence during ELT practicum?, (2) Which of the TPACK domains (TK, CK, PK) shows the

strongest and weakest development?. This study contributes to the ongoing discussion on technology integration in ELT by providing empirical evidence from an authentic practicum setting and offering insights for improving technological preparation in pre-service teacher education programs.

METHOD

This study employed a mixed-method design that integrated quantitative measurement and qualitative document analysis to obtain a comprehensive understanding of pre-service teachers' TPACK competence during their ELT practicum. The use of mixed methods was intended to ensure that numerical patterns emerging from the questionnaire could be triangulated with contextual evidence drawn from instructional documents, thus enabling deeper interpretation of how technology, pedagogy, and content were enacted in real teaching situations. The participants were five pre-service teachers who completed a one-month teaching practicum at MTs N 2 Banyuwangi, an Islamic junior high school.

The quantitative component relied on a 15-item TPACK self-assessment questionnaire adapted from Schmidt et al. (2009), which covered four core domains: Technological Knowledge (TK), Pedagogical Knowledge (PK), Content Knowledge (CK), and the integrative TPACK construct. Using a five-point Likert scale, the instrument measured participants' perceived competence in each domain and aligned well with the study's focus on foundational TPACK components during a short practicum period. Descriptive statistical analysis was conducted to calculate mean scores for each domain, providing a clear overview of the strengths and weaknesses across participants' TPACK profiles.

Complementing the quantitative strand, the qualitative component involved a document analysis of teaching materials, lesson plans, instructional media, and reflective reports. Guided by procedures outlined by Bowen (2009) and Miles et al. (2020), the analysis proceeded through data reduction, data display, and conclusion drawing. Relevant segments related to content mastery, pedagogical strategies, technology use, and instructional decision-making were first identified and extracted, then organized into thematic displays corresponding to CK, PK, TK, and integrative TPACK. This process enabled identification of evidence relating to the development of CK, PK, and TK during the practicum.

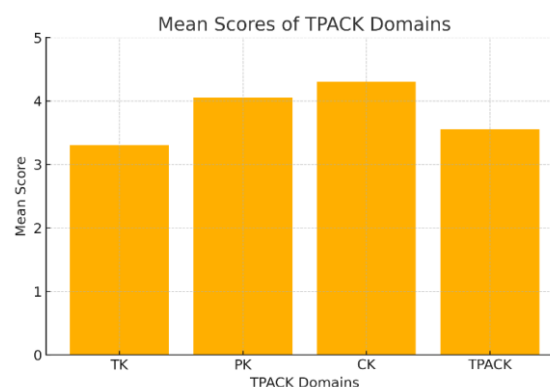
Integration of the quantitative and qualitative findings occurred at the interpretation stage using a triangulation strategy. Quantitative results offered an overview of participants' perceived TPACK levels, while the qualitative evidence provided contextual explanations that either supported or nuanced these numerical patterns. For instance, the relatively low TK scores were interpreted alongside document-based observations showing limited use of digital tools in the teaching process. Through this combined analysis, the study was able to draw more valid and grounded conclusions regarding how TPACK was developed and demonstrated during the ELT practicum, ultimately offering a richer and more holistic understanding of pre-service teachers' competencies.

FINDINGS

This study examined pre-service teachers' TPACK competence during their ELT practicum through integrated quantitative and qualitative data. The descriptive statistics from the TPACK questionnaire revealed clear variations across the four assessed domains. As illustrated in the bar chart, Content Knowledge (CK) achieved the highest mean score (4.3), followed by Pedagogical Knowledge (PK) with a mean of 4.05. These results indicate that pre-service teachers demonstrated strong mastery of subject content and solid pedagogical readiness during their practicum.

Technological Knowledge (TK), however, received the lowest mean score (3.3), confirming that participants felt less confident in using digital tools to support ELT instruction. The integrative TPACK domain—reflecting the ability to combine technology, pedagogy, and content—showed a moderate level (3.55), suggesting that participants understood the theoretical importance of technology integration but had limited opportunities or skills to enact it in classroom practice.

The bar chart below visually compares the mean scores across all TPACK domains:



Their PK was visible in lesson plans that followed appropriate phases—opening, core activities, and closure—and included varied strategies such as group discussions, presentations, and task-based activities. When digital tools were used, they were limited to basic PowerPoint slides or short videos, and often constrained by classroom facilities and internet instability. Some reflection reports explicitly mentioned difficulties operating devices or preparing technology-based materials within limited practicum time.

The mixed-method integration shows that high CK and PK scores were consistently reflected in documentation, while low TK scores corresponded to limited classroom technology integration. This alignment strengthens the validity of the findings and underscores structural constraints, such as limited ICT facilities, as contributing factors to low TK and TPACK enactment. Overall, the findings suggest the need for stronger technological preparation within teacher education programs to better support ELT practicum performance.

DISCUSSION

The findings of this study reveal a distinct pattern in the TPACK competence of pre-service teachers during their ELT practicum. Consistent with prior studies, participants demonstrated strong Content Knowledge (CK) and Pedagogical Knowledge (PK), yet showed weaker Technological Knowledge (TK). This imbalance reflects trends reported in Indonesian teacher education research, where pre-service teachers often possess adequate mastery of content and teaching strategies but remain less confident in integrating technology meaningfully into instruction (Eliyanto et al., 2021; Jaeni & Ghufro, 2024).

The strong CK observed—evidenced by accurate explanations, structured materials, and the ability to clarify student misconceptions—supports earlier findings indicating that pre-service teachers generally enter the practicum with solid subject-matter preparation (Saputro et al., 2025). Similarly, their PK performance aligns with studies showing that Indonesian pre-service teachers are typically competent in planning lessons, managing classrooms, and selecting pedagogical strategies suitable for secondary-level learners.

In contrast, TK emerged as the weakest domain, with both quantitative scores and document evidence reflecting limited use of digital tools. Several contextual factors likely contributed to this pattern. These constraints echo previous research noting that Indonesian schools—especially those in Islamic or rural settings—often face infrastructure challenges that hinder technology integration (Lubaba & Andriani, 2025).

Institutional and cultural factors may also play a role. Teacher education programs in pesantren-based environments sometimes regulate or restrict device use during early semesters, potentially delaying exposure to digital tools and lowering technological confidence during practicum. This reinforces the notion, highlighted in Ahmada & Rizkiyah, (2025), that effective technology integration depends on both teacher competence and institutional readiness.

The findings clearly show uneven development across TPACK domains. CK emerged as the strongest component, reflecting pre-service teachers' confidence in subject mastery. PK was also strong, supported by structured lesson planning and appropriate teaching strategies. In contrast, TK remained the weakest domain, indicating limited technological readiness after the one-month practicum. This imbalance highlights the need for targeted technological training in teacher education programs (Mishra & Koehler, 2006; Downie et al., 2021).

Overall, the results highlight the need for more systematic and sustained technological preparation within teacher education programs. Providing earlier exposure to educational technologies, expanding access to school-based ICT resources, and embedding TPACK-focused practicum mentoring may help bridge the gap between theoretical understanding and practical implementation. For ELT contexts specifically, training that emphasizes technology-supported interaction, multimodal language input, and digital learning platforms may offer additional support for pre-service teachers.

In sum, this study contributes to the understanding of TPACK development in ELT practicum settings by showing how competence varies across domains and by identifying contextual factors that influence technology integration. Future research could extend this work by examining longer practicum durations, comparing schools with different ICT readiness levels, or tracking TPACK growth through longitudinal designs.

CONCLUSION

This study explored pre-service teachers' TPACK competence during their ELT practicum using a mixed-method approach that combined questionnaire results and document analysis. However, Technological Knowledge (TK) emerged as the weakest domain, and the integrative TPACK score remained moderate, indicating that TK remained the weakest TPACK component compared to CK and PK after the one-month practicum. Qualitative evidence further confirmed limited use of digital tools in practicum settings, largely due to contextual challenges such as restricted ICT facilities, limited internet access, and insufficient technological training.

The study underscores the importance of strengthening technological preparation within teacher education programs, particularly by providing earlier exposure to educational technologies, improving access to ICT resources in partner schools, and offering targeted mentoring focused on TPACK development. Enhancing these elements is essential to ensure that pre-service teachers are fully equipped to integrate technology effectively into ELT classrooms. Future research may examine TPACK development over longer practicum periods or across institutions with varying levels of technological readiness.

REFERENCES

- Ahmada, A., & Rizkiyah, F. (2025). TECHNOLOGY INTEGRATION IN ENGLISH LANGUAGE LEARNING BASED ON THE TPACK-SAMR FRAMEWORK AT THREE INDONESIAN UNIVERSITIES. *IJEE (Indonesian Journal of English Education)*, 357–368. <https://doi.org/10.15408/ijee.v11i2.37996>
- Bowen, G. A. (2009). Document Analysis as a Qualitative Research Method. *Qualitative Research Journal*, 9(2), 27–40. <https://doi.org/10.3316/QRJ0902027>
- Downie, S., Gao, X., Bedford, S., Bell, K., & Kuit, T. (2021). Technology enhanced learning environments in higher education: A cross-discipline study on teacher and student perceptions. *Journal of University Teaching and Learning Practice*, 18(4). <https://doi.org/10.53761/1.18.4.12>
- Eliyanto, E., Adesta, E., & Fatimah, S. (2021). Islamic Education Teachers'™ Technological Pedagogical Content Knowledge (TPACK): A Study In Indonesia. *Edukasia Islamika*, 6(2), 144–163. <https://doi.org/10.28918/jei.v6i2.4245>
- Jaeni, M., & Ghufro, M. A. (2024). Developing technological pedagogical content knowledge skills during teaching practicum. *International Journal of Evaluation and Research in Education (IJERE)*, 13(3), 1865. <https://doi.org/10.11591/ijere.v13i3.26995>
- Lubaba, T., & Andriani, Z. Z. D. (2025). Navigating English teachers' perspectives on integrating technology in Islamic high schools in the digital age. *Celtic : A Journal of Culture, English Language Teaching, Literature and Linguistics*, 12(1), 178–195. <https://doi.org/10.22219/celtic.v12i1.40654>
- Miles, M. B. ., Huberman, A. M. ., & Saldaña, J. (2020). *Qualitative data analysis : a methods sourcebook*. SAGE.
- Mishra, P., & Koehler, M. J. (2006). Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge. *Teachers College Record: The Voice of Scholarship in Education*, 108(6), 1017–1054. <https://doi.org/10.1111/j.1467-9620.2006.00684.x>
- Saputro, Y. M., Asmara, L., & Fiddarain, Z. (2025). Implementation of the TPACK Approach in Islamic Religious Education Learning at SMA Negeri Karanganyar. *Multicultural Islamic Education Review*, 3(1), 87–98. <https://doi.org/10.23917/mier.v3i1.10079>
- Schmidt, D. A., Baran, E., Thompson, A. D., Mishra, P., Koehler, M. J., & Shin, T. S. (2009). Technological Pedagogical Content Knowledge (TPACK). *Journal of Research on Technology in Education*, 42(2), 123–149. <https://doi.org/10.1080/15391523.2009.10782544>