Original Research Article

**TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE AND REFLECTIVE TEACHING PRACTICES AS PREDICTORS OF WORKPLACE RETENTION AMONG PUBLIC SECONDARY SCHOOL TEACHERS**

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ABSTRACT

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| This study aimed to determine if technological pedagogical content knowledge and reflective teaching practices significantly predict workplace retention among teachers in public secondary institutions. A descriptive-correlational research design was employed, involving a sample of 145 teachers from public secondary schools in Paquibato District, Division of Davao City, Philippines. Standardized questionnaires were administered through face-to-face surveys. The mean, standard deviation (SD), Pearson product-moment correlation, and multiple linear regression analyses were utilized to analyze the collected data. The findings revealed that technological pedagogical content knowledge, reflective teaching practices, and workplace retention were rated as high. Correlation analysis indicated significant relationships between technological pedagogical content knowledge and reflective teaching practices on workplace retention. Furthermore, both technological pedagogical content knowledge and reflective teaching practices significantly predicted workplace retention. It is recommended that school administrators continue to enhance technological pedagogical content knowledge and reflective teaching practices among teachers by offering professional development programs that focus on strengthening technological skills and reflective practices. Encouraging teachers to engage in regular self-assessment, peer collaboration, and continuous learning opportunities may improve job satisfaction and contribute to a supportive teaching environment. |

*Keywords*: Technological Pedagogical Content Knowledge, Reflective Teaching Practices, Workplace Retention, Descriptive Correlational, Education

1. INTRODUCTION

Teacher retention has long been a pressing concern in education systems worldwide, as the loss of experienced and competent teachers disrupts continuity in instruction, burdens remaining faculty, and affects student learning outcomes (Miller et al., 2020). High turnover rates are often linked to burnout, lack of professional growth, poor working conditions, and limited institutional support (Casely-Hayford et al., 2022). In many cases, teachers leave the profession within the first five years due to dissatisfaction and stress, leading to significant human resource and financial costs for school systems (Maready et al., 2021). This issue threatens the sustainability and effectiveness of schools, especially in underserved and remote areas, where teacher shortages are more prevalent and replacements are difficult to find.

Globally, the issue of teacher retention remains critical across various countries. In the United States, teachers frequently cite overwhelming workloads, inadequate compensation, and insufficient administrative support as reasons for leaving the profession (Hester et al., 2020). In the United Kingdom, the Education Department reports that nearly one in three new teachers leave within five years of entering the profession, often due to stress and lack of work-life balance (Worth & Faulkner-Ellis, 2021). Similarly, in South Africa, teachers face challenging working environments and safety concerns, which contribute to early exits from the profession (Nkambule, 2022). These international cases demonstrate that despite contextual differences, the challenges related to workplace retention of teachers share common themes and warrant strategic solutions.

In the Philippines, teacher retention is also a growing concern, particularly in public schools where class sizes are large, teaching loads are heavy, and opportunities for professional development are limited (Bulawat, 2020). Many public secondary school teachers experience burnout and frustration, especially when they are assigned to far-flung communities with minimal access to resources (Fabella et al., 2023). While the Department of Education has initiated measures to enhance teacher welfare, such as salary adjustments and continuous training, challenges in work satisfaction and long-term commitment remain. This situation affects the quality of education delivery and hinders the goal of maintaining a stable and competent teaching workforce in the country.

Technological Pedagogical Content Knowledge (TPACK) and reflective teaching practices are two key professional competencies that may play a vital role in enhancing teacher retention. TPACK integrates content expertise, pedagogical strategies, and technological tools to facilitate effective teaching in the digital age, enabling teachers to adapt to new learning environments and student needs (Adipat et al., 2023; Nartey, 2023). Reflective teaching, on the other hand, allows educators to critically examine their practice, learn from experience, and continuously improve (Gross, 2020; Tompkins, 2023). Teachers who possess strong TPACK skills and engage in reflective practices are more likely to feel confident, empowered, and professionally fulfilled, potentially increasing their commitment to the profession and their workplace (Jacob et al., 2020; See et al., 2020).

Despite increasing interest in teacher retention, few studies have examined how the combination of technological pedagogical content knowledge and reflective teaching practices influence teachers' decisions to remain in the profession. While there is growing literature on TPACK and reflection individually, there is limited empirical research exploring how these factors interact and affect workplace retention, especially within the context of public secondary education in the Philippines. This research gap underscores the need for localized studies that investigate the predictive power of these professional competencies on teacher retention outcomes.

This study aimed to determine if technological pedagogical content knowledge and reflective teaching practices significantly predict workplace retention among teachers in public secondary institutions in Paquibato District, Division of Davao City, Philippines. By examining the relationships among these variables, the study intends to provide insights that can inform the design of professional development programs and retention strategies that support teachers' professional growth and long-term commitment to their schools.

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**Figure 1:** Conceptual Framework of the Study

**1.1 Statement of the Problem**

This study aimed to determine if technological pedagogical content knowledge and reflective teaching practices significantly predict workplace retention among teachers in public secondary institutions in Paquibato District, Division of Davao City. Specifically, it sought answers to the following questions:

1. What is the extent of technological pedagogical content knowledge of teachers in terms of:

1.1 Technology Knowledge,

1.2 Pedagogical knowledge, and

1.3 Content knowledge?

2. What is the extent of reflective teaching practices of teachers in terms of:

2.1 Surface reflection,

2.2 Pedagogical reflection, and

2.3 Critical reflection?

3. What is the extent of workplace retention in terms of:

3.1 Career Growth,

3.2 Incentive retention, and

3.3 Welfare?

4. Is there a significant relationship between:

4.1 Technological pedagogical content knowledge and workplace retention;

4.2 Reflective teaching practices and workplace retention?

5. Which domains of technological pedagogical content knowledge and reflective teaching practices significantly predict workplace retention?

**1.2 Hypotheses**

The null hypotheses were tested at 0.05 level of significance:

Ho1. There is no significant relationship between technological pedagogical content knowledge and reflective teaching practices on workplace retention.

Ho2. Technological pedagogical content knowledge and reflective teaching practices do not significantly predict workplace retention.

Ho3. There are no domains of technological pedagogical content knowledge and reflective teaching practices that significantly predict workplace retention.

2. methodology

**2.1 Research Design**

This study employed a non-experimental quantitative research design utilizing the correlational method. This design was appropriate for examining the degree of association between technological pedagogical content knowledge, reflective teaching practices, and workplace retention among public secondary school teachers. As Pregoner (2025) emphasized, variables may be correlated through shared patterns or by a common underlying influence. In this study, the correlational method enabled the researcher to determine whether the levels of technological pedagogical content knowledge and reflective teaching practices are significantly linked to the workplace retention of teachers. By exploring the relationship among these variables, the study aimed to generate insights that could support teacher development initiatives and long-term workforce stability in the Paquibato District, Division of Davao City.

**2.2 Research Respondents**

The respondents of this study were 145 public secondary school teachers from Paquibato District, Division of Davao City. All respondents were actively teaching and held various instructional responsibilities in their respective schools. Universal sampling was utilized, meaning all qualified public secondary teachers in the district were included in the study. The participants were informed about the study’s purpose, and their participation was voluntary, with confidentiality strictly observed. The study was conducted during the academic year 2024–2025.

**2.3 Research Instrument**

The main instruments used in this study were standardized survey questionnaires that assessed the levels of technological pedagogical content knowledge, reflective teaching practices, and workplace retention. These instruments were developed based on established theoretical frameworks and existing validated scales related to TPACK, teacher reflection, and retention. To ensure validity, the instruments underwent face and content validation by a panel of experts in Educational Technology, Teacher Education, and Educational Management. Revisions were made based on expert feedback to ensure clarity, relevance, and alignment with the study’s objectives.

A pilot test was also conducted among 30 teachers from a neighboring district who were not part of the final study. Results from the pilot test indicated high internal consistency, with a Cronbach’s Alpha of 0.912 for the Technological Pedagogical Content Knowledge scale, 0.918 for the Reflective Teaching Practices scale, and 0.925 for the Workplace Retention scale.

**2.4 Data Gathering Procedure**

The data gathering process followed proper ethical and procedural standards. The researcher first obtained an endorsement from the Dean of the Graduate School and secured ethical clearance from the Ethics Review Committee of the institution. A formal letter of request was then submitted to the Schools Division Superintendent of Davao City. Upon approval, the Division Office issued an endorsement to the school heads in Paquibato District, allowing the conduct of the study within their respective schools.

Following approval, a pilot test was administered to validate the instruments. The final versions of the questionnaires were then distributed to the 145 teachers identified through universal sampling. Respondents were oriented on the nature and purpose of the study and were guided on how to answer the instrument. All completed questionnaires were personally collected by the researcher. The collected data were submitted to a professional statistician for proper coding, tabulation, and statistical treatment.

**2.5 Data Analysis**

To analyze the data and address the research objectives, the following statistical tools were employed:

Mean. This was used to determine the levels of technological pedagogical content knowledge, reflective teaching practices, and workplace retention among public secondary school teachers.

Standard Deviation (SD). This was applied to understand the variability of responses from the mean.

Pearson Product-Moment Correlation Coefficient (Pearson r). This was employed to examine the relationships between technological pedagogical content knowledge, reflective teaching practices, and workplace retention.

Multiple Regression Analysis. This was conducted to determine the extent to which technological pedagogical content knowledge and reflective teaching practices significantly predict workplace retention, and to identify which of the variables had a stronger predictive influence.

3. results and discussion

**3.1 Level of Technological Pedagogical Content Knowledge among Public Secondary School Teachers**

Table 1. *Level of Technological Pedagogical Content Knowledge among Public Secondary School Teachers*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Domains** | | **SD** | **Mean** | | **Descriptive Level** |
| Technology Knowledge | | 1.08 | 4.13 | | High |
| Pedagogical Knowledge | | 1.03 | 4.15 | | High |
| Content Knowledge | | 1.05 | 4.16 | | High |
| **Overall** | **1.03** | | **4.15** | **High** | | |

Presented in Table 1 is the summary of the indicators in the level of technological pedagogical content knowledge among public secondary school teachers, including technology knowledge, pedagogical knowledge, and content knowledge, based on the mean scores and standard deviations. The indicator content knowledge received the highest mean of 4.16, categorized as “high,” followed by pedagogical knowledge with a mean of 4.15. The indicator technology knowledge obtained a mean score of 4.13, also categorized as “high.” The overall mean of 4.15 is described as “high,” indicating that teachers generally demonstrate a strong level of technological pedagogical content knowledge.

The overall standard deviation of 1.03 indicates that responses were relatively consistent across the indicators. This finding suggests that teachers tend to possess adequate command of content, pedagogy, and technology integration in the classroom. Enhancing these areas can improve instructional delivery, student engagement, and curriculum adaptability.

This finding corresponds with the research of Asad et al. (2021), who emphasized that technological pedagogical content knowledge is foundational in preparing educators for 21st-century teaching environments. Their study found that when teachers effectively integrate content expertise with pedagogy and digital tools, it significantly enhances student outcomes. Similarly, the work of Liesa-Orús et al. (2020) revealed that teachers with strong TPACK are better equipped to implement learner-centered strategies and innovative instruction. Additionally, Wu et al. (2023) concluded that sustained TPACK development through training programs supports teachers in navigating changing instructional demands and technologies.

**3.2 Level of Reflective Teaching Practices among Public Secondary School Teachers**

Table 2. *Level of Reflective Teaching Practices among Public Secondary School Teachers*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Domains** | | **SD** | **Mean** | | **Descriptive Level** |
| Surface Reflection | | 1.02 | 4.14 | | High |
| Pedagogical Reflection | | 1.05 | 4.19 | | High |
| Critical Reflection | | 1.04 | 4.19 | | High |
| **Overall** | 1.00 | | 4.17 | **High** | | |

Presented in Table 2 is the summary of the indicators in the level of reflective teaching practices among public secondary school teachers, including surface reflection, pedagogical reflection, and critical reflection, based on the mean scores and standard deviations. The indicators pedagogical reflection and critical reflection received the highest mean of 4.19, categorized as “high,” followed by surface reflection with a mean of 4.14. The overall mean of 4.17 is described as “high,” indicating that teachers generally demonstrate a strong level of reflective teaching practices.

The overall standard deviation of 1.00 indicates that responses were relatively consistent across the indicators. This finding suggests that teachers engage in continuous self-assessment, analysis of teaching strategies, and thoughtful evaluation of student responses. Enhancing these areas can promote instructional refinement, personal growth, and responsiveness to learner diversity.

This finding corresponds with the research of Farrell (2020), who emphasized that reflective teaching practices enable educators to make informed instructional decisions based on past experiences and student feedback. His study found that consistent pedagogical and critical reflection improves teacher adaptability and classroom management. Similarly, the work of Colomer et al. (2020) revealed that reflective teachers exhibit increased awareness of instructional effectiveness and learner needs. Additionally, McGarr (2021) concluded that reflective teaching supports professional identity formation, critical thinking, and lifelong learning in the teaching profession.

**3.3 Level of Workplace Retention among Public Secondary School Teachers**

Table 3. *Level of Workplace Retention among Public Secondary School Teachers*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Domains** | | **SD** | **Mean** | | **Descriptive Level** |
| Career Growth | | 1.04 | 4.10 | | High |
| Incentive Retention | | 1.07 | 4.11 | | High |
| Welfare | | 1.05 | 4.15 | | High |
| **Overall** | 1.06 | | 4.12 | **High** | | |

Presented in Table 3 is the summary of the indicators in the level of workplace retention among public secondary school teachers, including career growth, incentive retention, and welfare, based on the mean scores and standard deviations. The indicator welfare received the highest mean of 4.15, categorized as “high,” followed by incentive retention with a mean of 4.11. The indicator career growth obtained a mean score of 4.10, also categorized as “high.” The overall mean of 4.12 is described as “high,” indicating that teachers generally report a strong sense of workplace retention.

The overall standard deviation of 1.06 indicates that responses were relatively consistent across the indicators. This finding suggests that teachers perceive their workplace as supportive in terms of professional development opportunities, financial incentives, and overall well-being. Enhancing these areas can contribute to long-term commitment and reduce teacher attrition.

This finding corresponds with the research of Casely-Hayford et al. (2022), who emphasized that career growth, adequate incentives, and welfare provisions significantly influence a teacher’s decision to stay in the profession. Their study found that positive workplace conditions lead to higher job satisfaction and institutional loyalty. Similarly, the work of Miller et al. (2020) revealed that retention improves when educators experience meaningful support systems and professional pathways. Additionally, Maready et al. (2021) concluded that improving retention through well-being initiatives contributes to sustainable school improvement and student performance outcomes.

**3.4 Significant Relationship Between Technological Pedagogical Content Knowledge (TPACK) and Workplace Retention among Public Secondary School Teachers**

Table 4. *Significant Relationship Between Technological Pedagogical Content Knowledge (TPACK) and Workplace Retention among Public Secondary School Teachers*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Variables** | **Mean** | **SD** | **R** | **R²** | **Degree of Relationship** | **p-value** | **Decision** |
| Technological Pedagogical Content Knowledge (TPACK) | 4.15 | 1.03 |  |  |  |  |  |
|  |  |  | 0.69 | 0.48 | High | 0.000 | Reject Ho₁ |
| Workplace Retention | 4.12 | 1.06 |  |  |  |  |  |

Presented in Table 4 is the correlation analysis between technological pedagogical content knowledge (TPACK) and workplace retention among public secondary school teachers. The computed correlation coefficient (R) is 0.69, with a p-value of 0.000, which is significantly lower than the 0.05 threshold for statistical significance. This result indicates a high and statistically significant positive relationship between TPACK and workplace retention. The coefficient of determination (R²) is 0.48, which implies that 48% of the variance in workplace retention can be explained by the extent to which teachers integrate technology, pedagogy, and content in their instructional practices. Given that the p-value is below the 0.05 level, the null hypothesis (Ho₁) is rejected, thereby confirming that TPACK is significantly related to workplace retention among teachers.

This finding implies that teachers who possess a more advanced level of technological pedagogical content knowledge are more likely to remain committed to the teaching profession. When educators are proficient in integrating appropriate technological tools with sound pedagogy and strong content expertise, they experience greater instructional success and professional satisfaction. This competence enhances their confidence and reduces feelings of burnout and frustration, which are critical factors influencing retention in the workplace.

This result aligns with the findings of Adipat et al. (2023), who emphasized that teachers with higher TPACK levels tend to demonstrate more satisfaction in their roles and express stronger professional commitment. Similarly, Jacob et al. (2020) highlighted that TPACK proficiency supports instructional flexibility and innovation, which contribute to a more rewarding teaching experience. Furthermore, Nartey (2023) found that the effective integration of TPACK fosters teacher efficacy, motivation, and long-term engagement in their schools. These findings confirm that enhancing TPACK among teachers is an important strategy to improve teacher retention and ensure consistent educational quality.

**3.5 Significant Relationship Between Reflective Teaching Practices and Workplace Retention among Public Secondary School Teachers**

Table 5. *Significant Relationship Between Reflective Teaching Practices and Workplace Retention among Public Secondary School Teachers*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Variables** | **Mean** | **SD** | **R** | **R²** | **Degree of Relationship** | **p-value** | **Decision** |
| Reflective Teaching Practices | 4.17 | 1.00 |  |  |  |  |  |
|  |  |  | 0.70 | 0.49 | High | 0.000 | Reject Ho₁ |
| Workplace Retention | 4.12 | 1.06 |  |  |  |  |  |

Presented in Table 5 is the correlation analysis between reflective teaching practices and workplace retention among public secondary school teachers. The computed correlation coefficient (R) is 0.70, accompanied by a p-value of 0.000, which is well below the 0.05 significance threshold. This indicates a high and statistically significant positive correlation between reflective teaching practices and workplace retention. The coefficient of determination (R²) is 0.49, meaning that nearly half (49%) of the variance in workplace retention can be attributed to the level of reflective teaching exhibited by the teachers. Given this result, the null hypothesis (Ho₁) is rejected, confirming that reflective teaching practices have a significant relationship with workplace retention.

This result implies that teachers who actively and consistently reflect on their instructional strategies, student engagement, and personal growth are more likely to stay in the teaching profession. Reflective practices allow educators to better understand their professional identity, identify areas for improvement, and make informed changes that enhance their effectiveness. This ongoing process of self-evaluation contributes to professional resilience, reduced stress, and a stronger sense of fulfillment, all of which are critical to teacher retention.

This finding is supported by the research of Tompkins (2023), who asserted that reflective teaching is essential in promoting job satisfaction and long-term engagement in the teaching profession. See et al. (2020) similarly emphasized that reflective educators develop stronger coping mechanisms, greater adaptability, and a deeper connection to their roles, leading to sustained career longevity. Additionally, Gross (2020) observed that when teachers align their daily classroom practices with broader pedagogical goals through reflection, they experience a sense of purpose and belonging in their institutions. Altogether, these findings affirm that reflective teaching practices are a key driver of teacher retention and institutional continuity.

**3.6. Significant Influence of Technological Pedagogical Content Knowledge (TPACK) and Reflective Teaching Practices on Workplace Retention among Public Secondary School Teachers**

**Table 6.** *Significant Influence of Technological Pedagogical Content Knowledge (TPACK) and Reflective Teaching Practices on Workplace Retention among Public Secondary School Teachers*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Domains** | **B** | **BE** | **Beta** | **t-stat** | **p-value** | **Decision** |
| Constant | 1.97 | 0.66 |  | 2.98 | 0.004 | Significant |
| TPACK | 0.51 | 0.47 | 0.44 | 5.91 | 0.000 | Significant |
| Reflective Teaching Practices | 0.57 | 0.49 | 0.46 | 6.08 | 0.000 | Significant |
| **Regression Model** | | | | | | |
| Workplace Retention = 1.97 + 0.51 (TPACK) + 0.57 (Reflective Teaching Practices) | | | | | | |
| R = 0.70; R² = 0.49; F = 76.23; p-value = 0.000 | | | | | | |

Presented in Table 6 is the regression analysis examining how technological pedagogical content knowledge (TPACK) and reflective teaching practices significantly influence workplace retention among public secondary school teachers. The regression equation, which predicts workplace retention based on these two independent variables, is expressed as: Workplace Retention = 1.97 + 0.51 (TPACK) + 0.57 (Reflective Teaching Practices). The model accounts for 49% of the total variance in workplace retention, as indicated by the R² value of 0.49. The overall model is statistically significant with an F-value of 76.23 and a p-value of 0.000, indicating a strong predictive capacity and meaningful contribution of both factors to workplace retention.

These findings highlight that both TPACK and reflective teaching practices play crucial roles in promoting workplace retention among teachers. When educators demonstrate competence in integrating technology, pedagogy, and content, they are more likely to feel professionally equipped and confident, which enhances their desire to stay in the profession. In addition, teachers who regularly engage in reflective practices are more likely to evaluate and improve their teaching strategies, leading to increased job satisfaction and a stronger commitment to their roles. Together, these factors provide a solid foundation for sustainable career engagement in the teaching profession.

This result supports the research of Meletiou-Mavrotheris and Paparistodemou (2024), who emphasized that the development of TPACK leads to increased professional competence, which contributes to teacher retention. Likewise, Neumann and Tillott (2022) underscored that reflective teaching enhances teacher self-awareness and resilience, helping educators navigate the challenges of the profession more effectively. Furthermore, Yaacob et al. (2021) concluded that when teachers possess advanced instructional competencies and engage in reflective thought, they are more likely to remain committed to their educational communities. The combination of strong TPACK and reflective teaching thus creates a robust framework for improving teacher retention and fostering institutional stability.

**5. CONCLUSIONS**

Based on the findings of the study, the following conclusions were formulated:

Firstly, the level of technological pedagogical content knowledge (TPACK) among public secondary school teachers is often observed, indicating that teachers are generally proficient in integrating technology with content and pedagogy. This suggests that they are capable of using digital tools to enhance instruction while maintaining a strong grasp of their subject matter and teaching strategies. When teachers possess high levels of TPACK, they are more confident in the classroom, more adaptable to changes, and more effective in delivering meaningful learning experiences. This competency contributes to their overall job satisfaction and encourages long-term engagement in the teaching profession.

Secondly, the level of reflective teaching practices among public secondary school teachers is also often observed. Teachers consistently engage in self-evaluation, pedagogical analysis, and critical reflection, allowing them to identify areas for improvement and build upon successful strategies. Reflective practices empower teachers to become more intentional and responsive in their instruction. By continually assessing their work, educators are better equipped to manage challenges, enhance student outcomes, and sustain professional growth, which in turn supports their continued presence and commitment in the school system.

Thirdly, the level of workplace retention among teachers is generally high, suggesting that teachers are inclined to remain in their positions when their professional needs are met. Factors such as career growth opportunities, adequate incentives, and welfare support contribute to this retention. Teachers who experience a positive work environment and access to professional development are more likely to stay committed to their schools. This retention not only benefits individual educators but also strengthens institutional continuity and student learning outcomes.

Fourthly, a significant relationship between technological pedagogical content knowledge (TPACK), reflective teaching practices, and workplace retention was observed. This means that teachers who demonstrate strong TPACK and actively engage in reflective teaching are more likely to stay in their positions. The combination of instructional competence and reflective capacity enhances their satisfaction, motivation, and resilience. These findings affirm that well-developed teaching competencies and reflective habits are integral to sustaining teacher engagement and institutional stability.

Finally, both TPACK and reflective teaching practices significantly influence workplace retention, with reflective teaching practices emerging as the stronger predictor. This underscores the importance of promoting a culture of continuous self-improvement and introspection among teachers. While mastery of instructional technology and content ensures classroom effectiveness, it is the ability to reflect critically and adapt meaningfully that most strongly supports teachers’ long-term commitment. Schools that invest in TPACK development and encourage reflective practice are more likely to foster a thriving, enduring, and professionally fulfilled teaching workforce.

**6. RECOMMENDATIONS**

Based on the findings and conclusions of this study, the following recommendations were proposed:

For DepEd officials, it is recommended to institutionalize teacher development programs that emphasize the integration of technology with pedagogy and content. These programs should include national standards and training frameworks that develop TPACK competencies across subject areas. In addition, DepEd should promote policies that encourage reflective practice as a core component of instructional excellence and teacher retention. Allocating resources for regular training, digital infrastructure, and reflection-based teaching modules will enhance teacher effectiveness and reduce attrition rates.

School administrators are advised to implement structured professional development initiatives that focus on enhancing both TPACK and reflective teaching practices. This includes organizing in-service training on digital integration, lesson study cycles, and reflective journaling. Administrators should also create opportunities for peer collaboration through mentoring programs, faculty learning circles, and classroom-based research. Providing supportive environments where teachers can reflect on their practice and improve instructional delivery will not only promote workplace satisfaction but also increase retention.

For teachers, the study recommends actively engaging in professional learning communities that foster collaborative learning and reflective dialogue. Teachers are encouraged to enhance their TPACK skills by integrating digital tools into lesson planning and by seeking feedback from peers and mentors. Practicing regular self-reflection through teaching journals, peer observations, or action research can also help teachers refine their instructional strategies. These practices contribute to a more fulfilling teaching experience and reinforce long-term commitment to the profession.

Lastly, for future researchers, it is recommended to explore the role of mediating variables such as job satisfaction, teacher identity, or institutional support in the relationship between TPACK, reflective practice, and workplace retention. Comparative studies across subject areas, school levels, or regions may uncover contextual factors that influence teacher retention. Longitudinal and qualitative approaches may also offer deeper insights into how continuous professional development and reflective growth contribute to teachers’ decision to remain in the profession over time.

Consent (where ever applicable)

This research was carried out in strict adherence to established ethical standards to safeguard the rights, dignity, and well-being of all participants. Prior to the collection of any data, the researcher secured the required approvals from relevant institutional bodies, including an endorsement from the Dean of the Graduate School and clearance from the designated Ethics Review Committee. The procedures were guided by the ethical framework outlined by Pregoner et al. (2025), aligning with contemporary protocols for research involving human subjects in educational settings. Participation in the study was completely voluntary, and all respondents were fully informed of the study’s objectives, processes, and their right to refuse or withdraw at any time without facing any negative consequences. Informed consent was obtained to ensure participants' clear understanding and agreement. No personal identifiers were gathered, and strict confidentiality was observed throughout the study. All collected data were used exclusively for academic and research purposes. These ethical measures ensured the study was conducted with transparency, responsibility, and full respect for participant autonomy.

Disclaimer (Artificial Intelligence)

The author(s) hereby declare that generative AI technologies have been used during the writing and editing of this manuscript. The details of the AI usage are as follows:

1. Grammarly: Used for grammar and spellchecking, as well as suggestions for improving sentence structure and overall clarity.
2. Quillbot: Employed for paraphrasing and refining sentence flow to enhance readability and coherence.

References

Adipat, S., Chotikapanich, R., Laksana, K., Busayanon, K., Piatanom, P., Ausawasowan, A., & Elbasouni, I. (2023). Technological pedagogical content knowledge for professional teacher development. *Academic Journal of Interdisciplinary Studies*, *12*(1), 173-182. <https://econpapers.repec.org/article/bjzajisjr/2348.htm>

Asad, M. M., Aftab, K., Sherwani, F., Churi, P., Moreno-Guerrero, A. J., & Pourshahian, B. (2021). Techno‐Pedagogical Skills for 21st Century Digital Classrooms: An Extensive Literature Review. *Education Research International*, *2021*(1), 8160084. <https://onlinelibrary.wiley.com/doi/full/10.1155/2021/8160084>

Bulawat, A. (2020). Teachers’ Turnover Among Public Schools: Basis for Teachers’ Retention Programs. *International Journal of Scientific Research and Engineering Development*, *3*(2). <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3744193>

Casely-Hayford, J., Björklund, C., Bergström, G., Lindqvist, P., & Kwak, L. (2022). What makes teachers stay? A cross-sectional exploration of the individual and contextual factors associated with teacher retention in Sweden. *Teaching and Teacher Education*, *113*, 103664. <https://www.sciencedirect.com/science/article/pii/S0742051X2200035X>

Colomer, J., Serra, T., Cañabate, D., & Bubnys, R. (2020). Reflective learning in higher education: Active methodologies for transformative practices. *Sustainability*, *12*(9), 3827. <https://www.mdpi.com/2071-1050/12/9/3827>

Fabella, F. E. T., Agascon, N. V., & Litao, D. M. (2023). Teacher Burnout and Aggression among Selected Public School Teachers in the Philippines. *Cognizance Journal*, *3*(7), 446-456. <https://cognizancejournal.com/vol3issue7/V3I744.pdf>

Farrell, T. S. (2020). Professional development through reflective practice for English-medium instruction (EMI) teachers. *International Journal of Bilingual Education and Bilingualism*, *23*(3), 277-286. <https://www.tandfonline.com/doi/abs/10.1080/13670050.2019.1612840>

Gross, T. L. (2020). *Building the Best: A Quantitative Evaluation of a State-Level Teacher Retention Strategy Designed to Increase Self-Efficacy, Reflective Capacity, and Job Satisfaction Through Effective Professional Development* (Doctoral dissertation, University of Missouri-Columbia). <https://www.proquest.com/openview/200c1b8d4be057f434e28a6eee79cc18/1?pq-origsite=gscholar&cbl=18750&diss=y>

Hester, O. R., Bridges, S. A., & Rollins, L. H. (2020). ‘Overworked and underappreciated’: special education teachers describe stress and attrition. *Teacher Development*, *24*(3), 348-365. <https://www.tandfonline.com/doi/abs/10.1080/13664530.2020.1767189>

Jacob, F. I. L. G. O. N. A., John, S. A. K. I. Y. O., & Gwany, D. M. (2020). Teachers’ pedagogical content knowledge and students’ academic achievement: A theoretical overview. *Journal of Global Research in Education and Social Science*, *14*(2), 14-44. <https://ikprress.org/index.php/JOGRESS/article/view/5405>

Liesa-Orús, M., Latorre-Cosculluela, C., Vázquez-Toledo, S., & Sierra-Sánchez, V. (2020). The technological challenge facing higher education professors: Perceptions of ICT tools for developing 21st century skills. *Sustainability*, *12*(13), 5339. <https://www.mdpi.com/2071-1050/12/13/5339>

Maready, B., Cheng, Q., & Bunch, D. (2021). Exploring mentoring practices contributing to new teacher retention: An analysis of the beginning teacher longitudinal study. *International Journal of Evidence Based Coaching and Mentoring*, *19*(2), 88-99. <https://radar.brookes.ac.uk/radar/items/e98bbf15-b504-4b31-8d2f-502146eb1934/1/>

McGarr, O. (2021). The use of virtual simulations in teacher education to develop pre-service teachers’ behaviour and classroom management skills: implications for reflective practice. *Journal of Education for Teaching*, *47*(2), 274-286. <https://www.tandfonline.com/doi/abs/10.1080/02607476.2020.1733398>

Meletiou-Mavrotheris, M., & Paparistodemou, E. (2024). Sustaining teacher professional learning in STEM: Lessons learned from an 18-year-long journey into TPACK-guided professional development. *Education Sciences*, *14*(4), 402.<https://www.mdpi.com/2227-7102/14/4/402>

Miller, J. M., Youngs, P., Perrone, F., & Grogan, E. (2020). Using measures of fit to predict beginning teacher retention. *The Elementary School Journal*, *120*(3), 399-421. <https://www.journals.uchicago.edu/doi/abs/10.1086/707094>

Nartey, P. (2023). *Technological, pedagogical and content knowledge (tpack) as predictors of turnover intention among Tutors in the colleges of education, ghana* (Doctoral dissertation, University of Cape Coast). <https://ir.ucc.edu.gh/xmlui/handle/123456789/11782>

Neumann, M. M., & Tillott, S. (2022). Why should teachers cultivate resilience through mindfulness?. *Journal of Psychologists and Counsellors in schools*, *32*(1), 3-14. <https://journals.sagepub.com/doi/abs/10.1017/jgc.2021.23>

Nkambule, T. (2022). Exploring working conditions in selected rural schools: teachers’ experiences. *South African Journal of Education*, *42*(1). <https://www.ajol.info/index.php/saje/article/view/229366>

Pregoner, J. D. (2024). Research approaches in education: A comparison of quantitative, qualitative and mixed methods. *IMCC Journal of Science*, *4*(2), 31-36. [https://hal.science/hal-04655066](https://hal.science/hal-04655066/)/

Pregoner, J. D., Leopardas, R., Ganancial, I. J., Baguhin, M., & Sedo, F. (2025). Ethical Issues in Conducting Research Using Human Participants in the Post-COVID Era. *IMCC Journal of Science*, *5*(1), 1-9. [https://hal.science/hal-05073466](https://hal.science/hal-05073466/)/

See, B. H., Morris, R., Gorard, S., Kokotsaki, D., & Abdi, S. (2020). Teacher recruitment and retention: A critical review of international evidence of most promising interventions. *Education Sciences*, *10*(10), 262. <https://www.mdpi.com/2227-7102/10/10/262>

Tompkins, A. (2023). Breaking the cycle of teacher attrition: Suggested policies and practice for retention. *Journal of School Administration Research and Development*, *8*(1), 24-35. <https://ojed.org/JSARD/article/view/3960>

Worth, J., & Faulkner-Ellis, H. (2021). Teacher Labour Market in England: Annual Report 2021. *National Foundation for Educational Research*. <https://eric.ed.gov/?id=ED615303>

Wu, W. C. V., Manabe, K., Marek, M. W., & Shu, Y. (2023). Enhancing 21st-century competencies via virtual reality digital content creation. *Journal of Research on Technology in Education*, *55*(3), 388-410. <https://www.tandfonline.com/doi/abs/10.1080/15391523.2021.1962455>

Yaacob, A., Mohd Asraf, R., Hussain, R. M. R., & Ismail, S. N. (2021). Empowering Learners' Reflective Thinking through Collaborative Reflective Learning. *International Journal of Instruction*, *14*(1), 709-726.<https://eric.ed.gov/?Id=EJ1282379>