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RESEARCH ARTICLE

Developing a TPACK Integrated Classroom Observation Tool

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ABSTRACT

In the advent of the 21st-century educational needs, integrating technology into teaching and learning is essential. The Technological Pedagogical Content Knowledge (TPACK) model offers a comprehensive framework for enhancing instructional effectiveness by aligning content, pedagogy, and technology. However, educators often face challenges in implementing TPACK principles due to competency gaps, limiting their ability to integrate technology meaningfully in the classroom. This study addresses these gaps by developing a TPACK-integrated classroom observation tool specifically for Higher Education Institutions (HEIs). Utilizing a qualitative research approach, the study involved Focus Group Discussions (FGDs) with program coordinators and department heads across various disciplines to identify key competency gaps in Pedagogical Content Knowledge (PCK), Technological Pedagogical Knowledge (TPK), and Technological Content Knowledge (TCK). Findings revealed the need for professional development in promoting deeper conceptual understanding, differentiated instructional strategies, collaborative learning, and technology-enhanced assessments. The resulting observation tool provides detailed, actionable descriptors aligned with the TPACK framework to support faculty development and improve student learning outcomes. This study contributes to bridging the gap between theoretical frameworks and practical applications, advancing the integration of technology in HEIs to foster more dynamic and engaging learning environments.

INTRODUCTION

In the evolving landscape of 21st-century education, the integration of technology in teaching and learning has become crucial. Modern pedagogical frameworks increasingly emphasize the need for educators to blend their content expertise with both technological and pedagogical skills to enhance instructional effectiveness, engage students, and adapt to diverse learning needs (Mishra & Koehler, 2006). Among these frameworks, the Technological Pedagogical Content Knowledge (TPACK) model is widely recognized as a comprehensive approach that helps teachers align content knowledge, pedagogy, and technology in ways that transform learning experiences (Chai et al., 2013; Jibril & Adeodokun-Shittu, n.d.; Koehl er et al., 2016). Despite its potential, however, numerous studies reveal that teachers encounter persistent challenges in applying TPACK principles effectively, primarily due to competency gaps in specific areas, which often limit the meaningful integration of technology in their classrooms (Baran & Uygun, 2016; Tondeur, 2016; Taopan et al., 2020).

Addressing these gaps is a priority for educational institutions that aim to foster a technology-rich learning environment and ensure that instructional practices align with 21st-century standards. Research indicates that well-structured, TPACK-aligned classroom observation tools can be instrumental in evaluating and refining teaching practices by offering educators concrete feedback on their integration of technology, pedagogy, and content (Baser et al., 2016; Arslan, 2020; Kadluba et al., 2024). These tools not only support ongoing professional development but also help align teaching strategies with institutional goals and student learning outcomes. However, traditional observation tools often fall short in assessing the full spectrum of TPACK competencies, primarily because they lack detailed descriptors that capture the nuanced integration of technology within pedagogical and content-based contexts (Akyuz, 2018; Koh, 2013; Koehler et al., 2015). This limitation underscores a pressing need for observation tools that comprehensively reflect TPACK-aligned competencies.

To address this gap, the present study proposes a classroom observation tool, structured around the TPACK framework. This paper examined specific competency gaps related to Pedagogical Content Knowledge (PCK), Technological Pedagogical Knowledge (TPK), Technological Content Knowledge (TCK), and the integration of all three in Technological Pedagogical Content Knowledge (TPCK), this tool aims to provide actionable, meaningful feedback for educators specifically in Higher Education Institutions (HEIs). Focus group discussions (FGDs) with program coordinators and department heads provided insights into the current practices and challenges faculty members face in integrating TPACK in the classroom. These discussions revealed key areas of need, including fostering deeper conceptual understanding, promoting collaborative learning and reflection, implementing differentiated instructional strategies, and using technology to enhance authentic assessments and timely feedback.

The findings of this study offer a significant contribution to the development of a comprehensive classroom observation tool for HEIs that goes beyond assessment to actively support educators' professional growth within the TPACK framework. The researcher tried to incorporate detailed, actionable descriptors for each TPACK domain. The formulated tool is intended to guide faculty development, inspire innovative teaching practices, and improve overall student learning outcomes. Ultimately, this study seeks to bridge the gap between theoretical frameworks and practical classroom applications, contributing to a more integrated and effective use of technology in education.

METHODOLOGY

This study utilized a qualitative research approach, employing a triangulated method to create a classroom observation tool with the integration of the Technological Pedagogical Content Knowledge (TPACK) model. The triangulation involved three distinct stages to ensure comprehensive analysis and integration. The first stage involved an ethnographic approach, utilizing the etic perspective of individuals with position in HEIs to identify competency gaps relevant to TPACK. This perspective provided insights into the current skills and knowledge levels of teachers, serving as a foundation for the subsequent analysis. The second stage consisted of a comparative analysis of existing literature on the TPACK model. Here, findings from the first stage, derived from a Focus Group Discussion (FGD), were compared with established studies on TPACK to verify the alignment of observed competency gaps with documented research. Finally, the third stage synthesized the results from both the competency gap analysis and the comparative literature review. This process produced a classroom observation tool that effectively integrates TPACK principles. Each stage contributed uniquely to the tool's development, ensuring that it reflects both empirical insights and theoretical rigor.

Population and Sampling

Participants in the FGD were drawn from public and private HEIs located in the province of Bulacan, Philippines. Utilizing purposive sampling, the study focused on coordinators and program heads across various disciplines, including education, social sciences, arts, humanities, engineering, finance,

hospitality, and tourism. This selection allowed for a broad and informed perspective on faculty needs related to TPACK integration, especially given the middle-management roles of these informants. A total of 12 participants, representing these diverse fields, contributed to the study.

Instrument

A semi-structured question guide was created based on the work of Lyublinskaya and Kaplon-Schilis (2022), which provided teacher-related performance indicators for the application of TPACK at an advanced level. This guide was further refined through a peer debriefing process, wherein three experts—two in educational management and one in research—reviewed and validated its content. This ensured the relevance and clarity of the questions for eliciting meaningful responses.

Data Gathering and Processing

The study gathered data through an FGD, following which responses were subjected to thematic analysis. Key themes that emerged from the analysis were compared to existing literature on TPACK, establishing both coherence and novelty in the findings. Insights derived from this thematic analysis, supported by the literature review, informed the proposed revisions to the institutional classroom observation tool to incorporate TPACK dimensions effectively.

Ethical Considerations

In line with institutional requirements and ethical standards, this study adhered to the guidelines outlined by the World Health Organization for data collection and participant selection. Additionally, it complied with the Data Privacy Act of the Philippines and applied APA 7th edition formatting in all documentation.

RESULTS

Table 1: Thematic Analysis of Focus Group Discussion Responses

Codes	Condensed Meaning Unit	Subthemes	Themes
Surface-level instruction Conceptual gaps in understanding Limited real-life connections Emphasis on memorization over application	Teachers often focus on foundational knowledge but struggle to promote in-depth exploration and application of core concepts.	Promoting Deeper Understanding and Application	Pedagogical Content Knowledge (PCK) Gaps
Insufficient structured group work Lack of guided collaboration Limited reflective practices Minimal focus on metacognitive activities	Faculty show a need for better strategies to implement collaborative learning and integrate reflection into lessons to foster metacognitive growth.	Collaborative Learning and Reflection	
Rigid lesson formats Insufficient adaptation to diverse learning needs Limited use of higher-order questioning Lack of blended learning proficiency	Teachers need further development in adapting lessons for diverse learners and employing questioning techniques to deepen understanding across learning modalities.	Differentiation and Adaptive Teaching Strategies	Technological Pedagogical Knowledge (TPK) Gaps
Basic technology use only Technology not aligned with learning objectives Missed opportunities for tech-based critical thinking	Faculty often use technology in a limited manner, with few strategies for enhancing critical thinking or	Purposeful Technology Integration	

Underutilized digital tools	problem-solving through purposeful digital integration.		
Preference for traditional tests Minimal project-based assessments Lack of clear rubrics Limited real-world application in assessments	There is a need for faculty to develop authentic assessments and alternative evaluations that engage students in real-life applications and critical skills.	Authentic and Performance-Based Assessments	Technological Content Knowledge (TCK) Gaps
Limited formative assessment Delayed or minimal feedback Underutilized tech for feedback loops Focus on summative over formative evaluation	Faculty could benefit from enhanced skills in using technology to provide immediate, formative feedback that informs ongoing learning and development.	Formative Feedback Using Technology	
Lack of flexible learning spaces Limited tech-enabled independent learning Rigid lesson structures Minimal encouragement of collaborative digital work	Faculty need strategies to create adaptable, tech-supported learning environments that facilitate both independent and group-based exploration.	Flexible, Technology-Enhanced Learning Environments	Technological Pedagogical Content Knowledge (TPCK) Gaps
Limited student enthusiasm Task-focused rather than exploration-focused Lack of curiosity-driven instruction Minimal emphasis on lifelong learning	Teachers could enhance their instructional approaches to inspire curiosity, enthusiasm, and a long-term passion for learning.	Promoting Curiosity and Lifelong Learning	
Limited digital classroom routines Inconsistent engagement strategies Minimal tech-driven management techniques Few structured tech-based transitions	Faculty can improve classroom management by leveraging digital tools to maintain structure, engagement, and consistency in routines.	Classroom Management with Technology Support	Technological Literacy within Classroom Management and Teacher Qualities
Basic digital communication skills Limited teacher-student rapport via digital tools Weak tech-based instructional presence Infrequent use of tech for effective communication	There is a need for faculty to improve digital literacy and communication skills to build rapport and facilitate clear, effective interactions with students.	Professional Digital Literacy and Communication	

The analysis of the Focus Group Discussion with coordinators and program heads revealed key competency gaps among faculty in relation to the Technological Pedagogical Content Knowledge (TPACK) framework, underscoring areas for professional development in both content delivery and technological integration.

Pedagogical Content Knowledge (PCK) Gaps

The first set of findings highlights gaps in Pedagogical Content Knowledge, particularly in promoting deeper understanding and fostering collaboration. Informants noted that faculty often emphasize surface-level comprehension and memorization, falling short in fostering critical, real-world applications of knowledge. This indicates a need for professional development focused on designing learning activities that encourage students to engage deeply with concepts, connect theories to real-world scenarios, and innovate within the subject area. Additionally, a lack of structured guidance in

collaborative learning was noted, as teachers rarely implemented pair or group activities that support metacognitive growth. Reflection practices were also limited, with little systematic integration in lessons to support students' metacognitive development.

The second theme identifies gaps in Technological Pedagogical Knowledge, particularly in differentiating instruction and adapting teaching approaches to diverse learning modalities. Faculty members often lack strategies for tailoring instruction to the varied needs of students, especially within digital and blended learning contexts. Coordinators suggested that faculty could benefit from training in higher-order questioning techniques and adaptive lesson strategies to better meet diverse student needs, whether in face-to-face or digital environments. Another critical gap was observed in purposeful technology integration. Informants noted that faculty tended to use technology in a limited, basic capacity rather than as a strategic tool for fostering critical thinking or complex problem-solving.

The analysis of Technological Content Knowledge gaps identified a need for faculty to implement more authentic, performance-based assessments. Informants observed a preference for traditional assessments, with minimal use of alternative, real-life assessments such as projects and portfolios that align with TPACK's focus on technology integration in content learning. These findings led to the inclusion of descriptors in the observation tool that emphasize authentic assessments, rubrics, and diverse assessment forms to capture learning in a more meaningful, context-based manner. Additionally, leveraging technology to provide timely, formative feedback emerged as a critical area for improvement. Informants highlighted that faculty often miss opportunities to utilize technology for real-time feedback, relying instead on delayed, summative assessments.

Further gaps emerged in Technological Pedagogical Content Knowledge, specifically in creating flexible, technology-enhanced learning environments that support both independent and collaborative learning. Informants noted a general need for strategies to promote student exploration and independence within a tech-enabled setting. The revised tool now includes descriptors for a cooperative, flexible learning environment where technology is accessible and effectively supports learning objectives. Another gap identified was in promoting curiosity and lifelong learning. Informants observed that classrooms often had a task-focused atmosphere, lacking elements that inspire intrinsic motivation and a passion for continuous learning.

The final theme addresses competency gaps in using technology as part of classroom management and enhancing teacher qualities. Informants suggested that faculty could benefit from additional training on integrating technology as a supportive tool for classroom management. Faculty members were found to lack proficiency in using digital resources to maintain engagement and structure in the classroom. To address this, the revised tool incorporates descriptors that promote the effective use of technology in maintaining structured routines and supporting student engagement. Additionally, gaps in professional digital literacy and communication skills were noted. While faculty demonstrated strong content knowledge, some struggled to use digital tools to enhance communication and build rapport with students.

The literature on the TPACK framework will provide foundational insights into the complex relationship between teachers' content knowledge, pedagogical skills, and technological integration. Despite the framework's well-established relevance, numerous studies indicate that teachers face persistent challenges in aligning TPACK-related competencies within their practice. The findings from the Focus Group Discussion (FGD) conducted with coordinators and program heads from various HEIs illustrate similar gaps, reinforcing observations from the literature on TPACK integration.

Comparative Analysis of Existing Literature and FGD Findings

Pedagogical Content Knowledge (PCK) Gaps: The FGD findings highlight the need for faculty to foster deeper conceptual understanding and encourage reflection and collaboration in the classroom. This aligns with Chai, Koh, and Tsai (2013), who emphasize that PCK is foundational to engaging students in meaningful, application-based learning experiences. Research has shown that teachers

often struggle to move beyond surface-level instruction, frequently defaulting to rote memorization and lower-order thinking tasks (Ryken & Hamel, 2016; Spillane & Jennings, 1997). Similarly, the FGD findings indicate that faculty members tend to prioritize content comprehension over critical thinking, suggesting a gap in designing activities that promote complex engagement with subject matter. Studies like those by Ryken and Hamel (2016) suggest that structured reflection and collaboration can enhance students' understanding by encouraging them to connect theory with practice. Both the FGD results and literature recommend the integration of these practices to improve pedagogical efficacy within PCK domains.

Technological Pedagogical Knowledge (TPK) Gaps: Another significant gap identified in the FGD is in teachers' ability to differentiate instruction and adapt teaching strategies to accommodate varie d learning preferences, particularly within digital and blended learning formats. This finding echoes research by Koh, Chai, and Lim (2013), who argue that TPK is essential for designing flexible instruction that addresses diverse student needs across multiple modalities. The coordinators in the FGD noted a need for higher-order questioning and adaptive strategies, suggesting that current instructional approaches may not sufficiently support diverse learning experiences.

The literature further supports the FGD findings regarding purposeful technology integration. Baran and Uygun (2016), Tondeur (2016), and Taopan et al., (2020) report that teachers frequently struggle with applying technology beyond basic usage, often lacking the skills to leverage digital tools strategically for cognitive engagement. This challenge is mirrored in the FGD results, where coordinators observed limited instances of faculty using technology to enhance problem-solving and critical thinking. Both the literature and FGD findings underscore the importance of professional development to bridge this competency gap.

Technological Content Knowledge (TCK) Gaps: The FGD results reveal that faculty often default to traditional forms of assessment, with limited use of authentic, performance-based tasks. This gap aligns with findings by Chai et al. (2013), who note that teachers tend to favor familiar, standardized assessments over project-based or portfolio assessments, which more effectively align with TCK. Performance-based assessments allow students to demonstrate knowledge application in real-life contexts, a practice that encourages deeper learning and critical thinking (Lyublinskaya & Kaplon-Schilis, 2022). The FGD findings, like the literature, suggest that promoting authentic assessments and leveraging digital tools for feedback can support a more comprehensive evaluation of student learning.

Technological Pedagogical Content Knowledge (TPCK) Gaps: Both the literature and FGD findings indicate a gap in TPCK regarding the creation of a flexible, technology-enabled learning environment that encourages independent exploration and collaborative work. Studies have shown that teachers often lack confidence in implementing TPCK strategies, particularly in managing technology-enhanced learning environments that support self-directed learning (Koehler, Mishra, & Cain, 2013). The FGD findings corroborate this observation, as informants noted that faculty generally do not incorporate technology in ways that encourage students to actively explore and engage with content outside of traditional instructional formats. This aligns with research by Lyublinskaya and Kaplon-Schilis (2022), who argue that fostering TPCK requires intentional instructional planning to support both collaborative and independent technology-enabled learning. The tool thus aims to bridge the gap between theoretical TPCK knowledge and practical application, encouraging faculty to create dynamic, flexible classrooms.

Technological Literacy within Classroom Management and Teacher Qualities: The FGD findings identify gaps in faculty members' technical proficiency, particularly in using digital tools to enhance classroom management and student engagement. This reflects findings by Hamilton (2022) and Akinloye et al. (2020), who note that teachers often face challenges in balancing content delivery with technology-based classroom management. The revised tool incorporates descriptors for classroom routines supported by digital resources, emphasizing the use of technology as a management tool to maintain engagement and structure. Moreover, gaps in digital literacy affecting teacher-student rapport were noted in the FGD, as faculty were found to lack skills in using digital tools to foster open

communication and support student participation. This aligns with research by Vascov et al. (2021), which underscores the importance of digital literacy in effective communication and rapport-building.

Effective Components of Classroom Observation Tool: Teacher observation tools are central to evaluating and enhancing instructional quality, providing valuable insights into teaching practices that impact student learning outcomes. These tools allow for a systematic examination of the complex, multidimensional interactions within a classroom, capturing aspects such as instructional delivery, classroom management, and student engagement. Literature and studies suggest that effective teacher observation tools should balance quantitative and qualitative assessments of teaching, emphasize both instructional and socioemotional components, and adapt to diverse educational settings. For one, active learning classrooms, which are designed to support collaboration and engagement, demand observation tools that reflect their unique instructional approaches. Birdwell et al. (2016) developed the Active Learning Classroom Observation Tool (ALCOT) to address this need, incorporating categories that evaluate the support of active learning, creation of collaborative activities, formative assessment, and classroom management. ALCOT emphasizes the role of the physical and technological environment in shaping the learning experience, as these affordances are critical for maximizing student engagement and supporting active learning strategies. Further, instructional quality and effective classroom management are fundamental components for observation, especially in environments where socioemotional learning is emphasized. Molina et al. (2018) developed the TEACH Classroom Observation Tool, which evaluates teaching practices across three core domains: Classroom Culture, Instruction, and Socioemotional Skills. This tool assesses both the quantity and quality of instructional time, focusing on teacher-student interactions, student engagement, and the establishment of a positive learning environment. According to Molina et al., effective classroom management fosters a secure atmosphere where students feel motivated to participate, which is crucial for supporting their socioemotional and academic development. TEACH underscores the importance of a balanced approach to observation, capturing how instructional and management practices work in tandem to create a conducive learning environment (Molina et al.). Observation tools must also be adaptable to varying educational contexts, especially in low-resource settings where teacher-student interactions and classroom infrastructure may differ significantly. Filmer et al. (2020) explored the effectiveness of multiple observation tools, including the Service Delivery Indicators (SDI), Stallings, CLASS, and Teach, across schools in Tanzania. Each tool offers unique insights: for example, the CLASS tool evaluates emotional support, classroom organization, and instructional support, while the Stallings tool provides quantitative data on time on task and material usage. The study emphasizes that observation tools should capture contextual details that impact learning, suggesting that tools like SDI and Stallings, which measure both teacher behaviors and infrastructure, are particularly effective in resource-limited environments (Filmer et al., 2020). Additionally, an effective observation tool must account for differentiated instruction and the development of socioemotional skills, which are essential for creating an inclusive classroom environment. Molina et al. further mentioned that the structured assessment tool is used to gauge how teachers personalize instruction based on student needs and foster skills like autonomy, perseverance, and collaboration. Socioemotional skills are vital for long-term student success, and observation tools that capture these elements provide a more holistic view of teaching effectiveness. Lastly, it is important to remember that some institutions have their specific requirements for the teachers, such as but not limited to language or medium of instruction, grooming, classroom management, and environment. All of these should be considered as well in the formulation of a classroom observation tool to properly gauge the effectivity of the whole teaching and learning process.

The Observation Tool and the TPACK Model

Current classroom practices reveal significant gaps in faculty members' abilities to foster deep conceptual understanding, differentiate instruction, and leverage technology to enhance student engagement and critical thinking. Research highlights that many educators still rely on traditional, surface-level instructional methods, lacking strategies for promoting reflection, collaboration, and

real-world applications in their teaching. Furthermore, both literature and FGD findings point to a deficiency in using digital tools effectively for classroom management, personalized instruction, and authentic assessments, which are essential for meeting diverse student needs, especially in blended and digital learning environments. The integration of the TPACK model into a classroom observation tool addresses these gaps by providing a structured framework that evaluates not only content delivery but also the strategic use of technology and pedagogical methods. This tool can serve as a comprehensive instrument to assess faculty performance across multiple domains. By doing so, it aligns with the growing demand for professional development that empowers educators to create more engaging, student-centered classrooms that support lifelong learning and socioemotional growth. Ultimately, developing a TPACK-integrated Classroom Observation Tool not only supports institutional goals for academic excellence but also equips educators with the feedback and resources needed to adapt to 21st-century educational standards.

Figure 1: The TPACK Integrated Classroom Observation Tool

Instructions for Use:

1. Observers should rate each descriptor based on the observed lesson.

2. Provide additional information in the comments section if needed to justify ratings.

3. Use the overall score to guide discussions on professional development and targeted support.

Scoring Guide

Numerical Value	**Level**	**Descriptor**
1	Unsatisfactory	Minimal or no evidence of competence in this area.
2	Developing	Limited competence; needs significant improvement.
3	Basic	Meets some expectations but requires further development.
4	Proficient	Adequately meets expectations; consistent performance.
5	Strong	Exceeds expectations; demonstrates effective performance.
6	Exemplary	Far exceeds expectations; highly effective and consistent.
7	Outstanding	Exceptional; serves as a model of best practice.

Part I: Rating of Instructor

A. Learning Process

This section evaluates how well the teacher facilitates student understanding, critical thinking, and engagement with content.

Descriptor	Rating
1. Encourages students to think deeply about core concepts, theories, and real-life applications.	
2. Provides opportunities for students to create, innovate, and generate new ideas.	
3. Utilizes pair and group activities to support collaborative learning.	
4. Integrates reflection activities to support metacognitive growth.	
5. Fosters critical thinking and problem-solving skills through context-based activities.	
6. Promotes accurate, meaningful communication among students.	
7. Connects learning to students' prior knowledge and experiences.	

B. Instructional Deliveries

This section assesses the teacher's ability to deliver content effectively using both traditional and digital instructional methods.

Descriptor	Rating
1. Clearly explains learning outcomes aligned with program and institutional goals.	
2. Adapts teaching approaches to cater to diverse learning modalities (e.g., visual, auditory, kinesthetic).	
3. Integrates technology purposefully to enhance learning and engagement.	
4. Uses higher-order questioning techniques to stimulate deep thinking.	
5. Differentiates instruction to meet varied student learning needs and preferences.	
6. Incorporates real-life examples to increase content relevance and engagement.	
7. Uses a variety of digital resources to enhance content delivery.	

C. Assessment

This section evaluates the teacher's use of assessment methods to gauge student learning and provide feedback.

Descriptor	Rating
1. Designs assessment tasks that integrate multiple learning outcomes in real-life contexts.	
2. Utilizes formative assessments to gauge student readiness and misconceptions.	
3. Incorporates performance-based assessments (e.g., portfolios, projects) with clear rubrics.	
4. Employs multiple forms of assessment (self, peer, teacher evaluations) to capture learning depth.	
5. Uses technology for diverse assessment strategies (e.g., quizzes, digital portfolios).	
6. Provides timely and constructive feedback to support student progress.	
7. Reinforces or enriches learning through follow-up assessments and activities.	

D. Learning Environment (Technological Pedagogical Content Knowledge)

This section focuses on the overall learning environment and how technology supports an inclusive and engaging classroom.

Descriptor	Rating
1. Creates a flexible and cooperative learning space that supports independent and group learning.	
2. Encourages open communication among students using technology.	
3. Provides sufficient technological resources to meet learning objectives.	
4. Cultivates curiosity and enthusiasm for learning among students.	
5. Establishes a distraction-free, comfortable classroom environment.	
6. Utilizes technology to foster collaboration and student connections.	
7. Promotes a safe and inclusive atmosphere conducive to learning.	

E. Classroom Management (Technological Pedagogical Knowledge)

This section assesses the teacher's ability to manage the classroom effectively, using technology to enhance engagement and maintain order.

Descriptor	Rating
1. Establishes clear routines and expectations to create a structured learning environment.	
2. Uses technology to maintain student attention and engagement.	
3. Recognizes and encourages active participation from all students.	
4. Effectively manages classroom disruptions with minimal impact on learning.	
5. Demonstrates flexibility in handling unexpected classroom situations.	
6. Maintains a positive classroom atmosphere that supports student motivation.	
7. Uses digital tools to support classroom management (e.g., attendance, behavior tracking).	

F. Teacher Qualities

This section evaluates the teacher's professional qualities, including subject matter expertise, communication skills, and technological proficiency.

Descriptor	Rating
1. Demonstrates a deep understanding of subject matter and content expertise.	
2. Communicates clearly and effectively, fostering student understanding.	
3. Exhibits enthusiasm and passion for teaching.	
4. Shows adaptability and willingness to incorporate new teaching strategies.	
5. Demonstrates proficiency in using digital tools to enhance teaching and learning.	
6. Builds positive rapport with students, creating a supportive learning environment.	

Part II. Comments of Evaluator

This Classroom Observation Tool is designed to evaluate teaching practices based on the TPACK framework and existing related studies. Each section includes items that are rated on a scale of one to seven, where one represents the lowest level of performance and 7 represents the highest. The tool aims to provide a comprehensive assessment of teachers' abilities to integrate technology, pedagogy, and content knowledge effectively in the classroom. The second section also is included for other qualitative comments that the evaluator might add that was not emphasized or mentioned by the previous part.

DISCUSSION

The findings from this study highlight the critical need for integrating the Technological Pedagogical Content Knowledge (TPACK) framework into classroom observation tools to enhance instructional effectiveness in Higher Education Institutions (HEIs). The results underscore persistent competency gaps among faculty, particularly in their ability to align content knowledge, pedagogy, and technology to create engaging, student-centered learning environments. One of the primary challenges identified is the gap in Pedagogical Content Knowledge (PCK), where faculty often focus on surface-level instruction, emphasizing rote memorization rather than promoting deeper conceptual understanding. The FGD findings align with Chai, Koh, and Tsai (2013), who argue that PCK is foundational to engaging students in meaningful, application-based learning experiences. Similarly, studies by Ryken and Hamel (2016) and Spillane and Jennings (1997) confirm that many educators tend to prioritize content delivery over critical thinking and problem-solving, which limits students' ability to connect theories with real-world applications. This suggests a pressing need for professional development initiatives that equip educators with strategies to design activities fostering critical engagement and collaborative learning. The study also revealed significant gaps in Technological Pedagogical Knowledge (TPK), with faculty demonstrating limited proficiency in differentiating instruction and adapting teaching strategies to diverse learning modalities, especially in digital and blended learning contexts. These findings are consistent with the research of Koh, Chai, and Lim (2013), who emphasize the importance of TPK in designing flexible instructional approaches that cater to varied student needs. The FGD participants noted that higher-order questioning techniques and adaptive teaching strategies are often underutilized, reflecting a broader trend

identified by Tondeur (2016) and Baran and Uygun (2016), where educators struggle to move beyond basic technology use towards more sophisticated, pedagogically sound integration. Moreover, the limited use of technology to enhance problem-solving and critical thinking, as noted in the FGDs, aligns with findings from Taopan et al. (2020). These studies highlight the importance of purposeful technology integration in fostering cognitive engagement. Thus, there is a clear need for targeted professional development that focuses on leveraging digital tools to enhance both instructional delivery and student learning outcomes. The gap in Technological Content Knowledge (TCK) was evident in faculty's preference for traditional forms of assessment, with minimal use of performance-based tasks that encourage real-life application of knowledge. The FGD findings mirror those of Chai et al. (2013) and Lyublinskaya & Kaplon-Schilis (2022), who suggest that teachers often rely on standardized assessments rather than incorporating project-based learning and authentic assessments that align with TPACK principles. Furthermore, the study found that faculty often miss opportunities to utilize technology for formative assessments, resulting in delayed feedback that hinders student progress. This finding aligns with existing research emphasizing the value of timely, technology-enabled feedback in enhancing student learning (Koehler, Mishra, & Cain, 2013). A significant finding from the study is the gap in Technological Pedagogical Content Knowledge (TPCK), particularly in creating flexible, technology-enhanced learning environments that promote both independent exploration and collaborative learning. The FGD participants noted that faculty often lack confidence in implementing strategies that encourage students to actively engage with content through technology, a challenge echoed in studies by Koehler, Mishra, and Cain (2013). Research by Lyublinskaya and Kaplon-Schilis (2022) further supports the need for intentional instructional planning to fully integrate TPCK, enabling educators to foster dynamic and adaptive classrooms. This gap indicates a need for training that focuses on building faculty competence in using technology to support diverse instructional strategies, thus promoting lifelong learning and student autonomy. The study also identified gaps in technological literacy related to classroom management and teacher-student rapport. Faculty members demonstrated limited proficiency in using digital tools to maintain engagement, structure, and effective communication within the classroom. This finding aligns with Hamilton (2022) and Akinloye et al. (2020), who emphasize the role of digital literacy in enhancing classroom management practices. The FGD insights revealed that while teachers have strong content knowledge, they often lack the skills to use technology to build rapport and facilitate meaningful interactions with students. Vascov et al. (2021) highlight the importance of digital communication in fostering a positive learning environment, which supports the need for professional development in this area. The development of a classroom observation tool integrated with the TPACK framework is a significant step towards addressing these competency gaps. The tool offers a structured approach to evaluate faculty performance across the domains of PCK, TPK, TCK, and TPCK, providing actionable feedback that supports professional growth. By focusing on specific indicators such as adaptive teaching strategies, authentic assessments, and technology-enabled learning environments, the tool aligns with institutional goals to foster a more effective and engaging educational experience (Akyuz, 2018; Shinas et al., 2014). The findings from this study underscore the importance of a comprehensive observation tool that not only assesses existing competencies but also guides continuous improvement in teaching practices; meaning, there is really a call for evaluation frameworks that address the evolving needs of educators in integrating technology within their pedagogy. The tool's emphasis on reflective practices, collaborative learning, and differentiated instruction can significantly enhance instructional quality, thereby improving student learning outcomes in HEIs.

Recommendations

Several recommendations are proposed to enhance faculty competency in HEIs. First, targeted professional development programs should be implemented to strengthen faculty skills in TPACK domains, focusing on workshops for differentiated instruction, technology integration for critical thinking, and authentic assessment methods. Comprehensive training in TPACK is also necessary, covering not just basic digital tool usage but also strategic applications that promote deeper learning and student engagement, with a focus on adaptive instructional strategies for diverse and blended

learning environments. Additionally, faculty should be encouraged to incorporate technology in assessment, utilizing formative assessments and real-time feedback, alongside training on digital platforms for performance-based evaluations like portfolios and project-based learning to provide a more comprehensive evaluation of student outcomes. Institutions are further encouraged to invest in flexible, technology-enhanced classrooms that support independent and collaborative learning, equipping faculty with the necessary resources and strategies to foster dynamic, engaging environments that promote lifelong learning. Improving technological literacy in classroom management is also crucial, with training focused on digital communication tools that enhance classroom order and student engagement. Regular monitoring and feedback through a newly developed TPACK-integrated classroom observation tool can help assess current teaching practices, providing actionable feedback for continuous improvement in line with institutional goals for teaching excellence. Finally, fostering reflective teaching practices through peer coaching and collaborative reflection workshops will support continuous professional growth, ensuring that faculty integrate feedback effectively to enhance their teaching strategies. These comprehensive strategies for HEIs can significantly improve faculty capacity to integrate technology in their pedagogy, leading to enhanced student engagement and better learning outcomes in today's rapidly evolving educational landscape.

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