Innovative Pedagogical Approaches in Gamified Learning: Insights from Malaysia's Inaugural Quizizz Super Trainers

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ABSTRACT

This study investigates how expert educators, identified as "Quizizz Super Trainers" in Malaysia, conceptualize, design, and implement effective pedagogical practices using the Quizizzgamified learning platform. Employing a convergent parallel mixed-methods approach, data were collected from 19 purposively sampled trainers across primary, secondary, and tertiary education via a structured online questionnaire aligned with relevant theoretical frameworks. Quantitative data were analyzed descriptively, while qualitative data underwent thematic analysis. Results reveal that these expert educators prioritize Quizizz features related to artificial intelligence and analytics to enhance instructional efficiency and support data-driven decision-making. They strategically apply gamification grounded in Self-Determination Theory (SDT) to foster student motivation and engagement, demonstrating sophisticated pedagogical adaptability. Notably, they utilize tools such as "Paper Mode" to address contextual challenges common in Malaysian classrooms, including unstable internet connectivity and limited access to digital devices. The study further identifies a clear developmental pathway to expertise, highlighting the critical roles of formal certification and informal peer-learning communities. These findings offer practical insights into the integration of gamified learning technologies and provide a framework for targeted professional development programs. Theoretically, this research enriches empirical understanding of how established learning theories suchlike Technological Pedagogical Content Knowledge (TPACK), SDT, and Cognitive Load Theory (CLT) are operationalized within a modern, gamified educational environment. Ultimately, this study contributes to advancing pedagogical innovation in digital learning contexts, particularly within resource-constrained settings.

Keywords: gamification, pedagogical strategies, educational technology, teacher expertise, Quizizz

INTRODUCTION

The pervasive integration of digital technologies is reshaping contemporary education, driven by the evolving needs of 21st-century learners and global shifts in instructional delivery (Quest International University Perak, 2022). Within this technological infusion, gamification has emerged as a significant pedagogical strategy, lauded for its potential to enhance student engagement and motivation by applying game design elements in non-game contexts (Kapp, 2012). Game-based student response systems (GSRs), such as Quizizz, exemplify this trend, offering interactive platforms for learning and assessment that have seen widespread adoption by educators globally (Göksün&Gürsoy, 2019), including in Malaysia where ICT integration is a national priority.

Despite the increasing body of research on gamification and platforms like Quizizz (e.g., Huda et al., 2024; Sanchez et al., 2020), a significant lacuna exists concerning the sophisticated pedagogical strategies employed

by expert practitioners. Much of the existing literature focuses on implementation challenges or the impact on student outcomes from a general user perspective. Consequently, there is a dearth of studies investigating how highly proficient educators—termed "Super Trainers" in the context of this study—design, implement, and adapt tools like Quizizz to achieve specific pedagogical goals within the Malaysian educational landscape. These expert users likely possess a rich repertoire of tacit knowledge regarding instructional design, student engagement techniques, differentiation strategies, and methods for navigating contextual challenges unique to settings like Malaysia.

This study addresses the insufficient understanding of the specific pedagogical strategies, instructional design principles, and adaptive practices employed by Quizizz Super Trainers in Malaysia. The research aims to illuminate how these expert educators conceptualize, design, and implement effective pedagogical practices using the Quizizz platform to foster student engagement and optimize learning outcomes.

This study is guided by the following primary research question: How do Quizizz Super Trainers in Malaysia conceptualize, design, and apply effective pedagogical practices using the Quizizz platform to foster student engagement and improve learning outcomes?

This general question is further delineated into the following specific research questions (SRQs):

1. SRQ1: What specific Quizizz features do Malaysian Super Trainers deem most critical for effective teaching and learning, and what is their rationale for this prioritization?
2. SRQ2: What diverse pedagogical approaches do Malaysian Super Trainers employ when using Quizizz to enhance student engagement, motivation, and active participation?
3. SRQ3: How do Malaysian Super Trainers design Quizizz activities to support varied learning objectives, including knowledge acquisition, conceptual understanding, and skill development?
4. SRQ4: In what ways do Malaysian Super Trainers adapt their Quizizz practices to address contextual challenges (e.g., internet instability, device heterogeneity, diverse student needs) prevalent in the Malaysian educational setting?
5. SRQ5: What are the perceived developmental pathways and pivotal experiences that contribute to an educator in Malaysia becoming a "Quizizz Super Trainer"?

The primary objectives of this study are:

1. To identify and analyze the key Quizizz features prioritized by Malaysian Super Trainers and their pedagogical justifications.
2. To explore and document the specific pedagogical strategies Malaysian Super Trainers utilize to optimize student engagement and motivation via Quizizz.
3. To investigate the instructional design principles applied by Malaysian Super Trainers when creating Quizizz activities aligned with diverse learning objectives.
4. To examine the adaptive strategies employed by Malaysian Super Trainers to effectively navigate contextual constraints within the Malaysian classroom.
5. To understand the developmental pathways and experiences perceived by educators in Malaysia as crucial for achieving expertise as a Quizizz Super Trainer.

LITERATURE REVIEW

Gamification and Game-Based Student Response Systems (GSRs)

Gamification in education involves integrating game elements (e.g., points, badges, leaderboards) and mechanics into learning environments to foster motivation and desired learning behaviours (Dichev&Dichev, 2017; Kapp, 2012). This approach aims to make learning more intrinsically appealing by tapping into psychological needs for competence, autonomy, and relatedness (Mekler et al., 2017; Ryan &Deci, 2000). While many studies report positive effects on engagement (Hamari et al., 2014), the efficacy of gamification is context-dependent and requires careful pedagogical design to avoid superficial “pointsification” (Dichev&Dicheva, 2017; Zainuddin et al., 2020).

GSRs like Quizizz are a subset of gamified tools facilitating interactive classroom participation and formative assessment (Wang & Tahir, 2020). Quizizz allows self-paced responses, provides immediate feedback, and incorporates customizable elements, supporting both synchronous and asynchronous learning. Empirical studies generally affirm its positive impact on student motivation and engagement (Pintor et al., 2021; Sanchez et al., 2020), with some suggesting improvements in learning outcomes (Pňačeková&Pňaček, 2021). However, these studies often lack detailed exploration of the pedagogical strategies underpinning effective use.

Educational Technology in the Malaysian Context

Malaysia has demonstrated a sustained commitment to integrating ICT into its education system (Ministry of Education Malaysia, 2013), leading to the adoption of various digital tools, including Quizizz (Quest International University Perak, 2022). The COVID-19 pandemic further accelerated this trend (Khalil et al., 2022). Studies within Malaysia indicate positive student perceptions of Quizizz (e.g., Alias et al., 2022). However, challenges such as variable internet access, device availability, and diverse digital literacy levels persist (Huda et al., 2024; Lumayag, 2021), necessitating adaptive pedagogical strategies. While some research has touched upon teacher perspectives (e.g., Che Omar et al., 2021), a comprehensive investigation of expert Quizizz users' strategies in Malaysia is lacking.

Theoretical Framework

This study is underpinned by a synthesis of four key theoretical frameworks:

1. Self-Determination Theory (SDT): According to Ryan and Deci (2000), fulfilling the innate psychological needs for autonomy, competence, and relatedness enhances intrinsic motivation. This study will explore how Super Trainers' Quizizz strategies (e.g., offering choices, providing meaningful feedback) address these needs.
2. Flow Theory: Defined by Achology (2023), "flow" refers to optimal engagement achieved through a balance between perceived challenges and skills, clear goals, and immediate feedback. This theory will guide the examination of how Super Trainers design Quizizz activities to foster flow.
3. Cognitive Load Theory (CLT): Sweller (1988) and Sweller et al. (2019) emphasize optimizing instructional design to manage working memory constraints by reducing extraneous cognitive load and enhancing germane load. CLT will inform the analysis of how Super Trainers structure Quizizz elements to facilitate learning without overwhelming students.
4. Technological Pedagogical Content Knowledge (TPACK): Mishra and Koehler (2006) describe TPACK as the integration of technological, pedagogical, and content knowledge necessary for effective technology use in teaching. This framework will be applied to analyze how Super Trainers combine these knowledge domains when using Quizizz.

Synthesis and Identified Gaps

The literature confirms the growing role of gamification and tools like Quizizz in education. However, key gaps remain: (1) a predominant focus on novice or general user experiences rather than expert practice; (2) insufficient exploration of the "how" and "why" behind effective use, particularly the instructional design principles employed by expert users; (3) limited research on contextual adaptation strategies used by experienced Malaysian educators to overcome local challenges; and (4) a lack of understanding regarding the developmental pathways to becoming an expert user of such tools. This study aims to address these gaps by providing a detailed account of expert pedagogical practice with Quizizz in Malaysia, linking these practices to established learning theories.

DATA AND METHODOLOGY

This study employed a convergent parallel mixed-methods design to systematically characterize the practices of Malaysian Quizizz Super Trainers. The target population comprised Malaysian educators formally registered in the Quizizz Certification program, identifying them as "Quizizz Super Trainers." A purposive sampling strategy was used, aiming for a sample of approximately 50 active trainers, from which 19 participated.

The sole instrument for data collection was a structured online questionnaire developed in English and administered via a secure online platform. The questionnaire was organized into five sections aligned with the research questions and theoretical framework, combining Likert-scale items and open-ended questions. Ethical approval was obtained, and informed consent was secured from all participants. Data collection occurred over a six-week period.

Quantitative data from closed-ended questions were analyzed for descriptive statistics (frequencies, percentages, means) using SPSS software or an equivalent. Textual data from open-ended questions were subjected to thematic analysis following Braun and Clarke's (2006, 2019) six-phase process. In line with the study's design, quantitative and qualitative data were then integrated during the interpretation phase to provide a comprehensive and nuanced understanding.

Respondent Profile

The sample comprised 19 educators with diverse teaching backgrounds: 64.7% primary school teachers (n = 11), 23.5% tertiary educators (n = 4), and 11.8% secondary school teachers (n = 2). Notably, 47.1% (n = 8) reported over 15 years of teaching experience, while 41.2% (n = 7) have used Quizizz for five years or longer, indicating an experienced cohort well-positioned to provide authoritative insights (see Table 1).

Table 1 Respondent Demographics (N=19)

Characteristic	Category	Frequency (n)	Percentage (%)
Teaching Level	Primary School	12	63.2
	Secondary School	3	15.8
	University / College	4	21.1
Teaching Experience	More than 15 years	9	47.4
	11-15 years	5	26.3
	6-10 years	3	15.8
	3-5 years	1	5.3
	Less than 3 years	1	5.3
Quizizz Usage	5 years or more	8	42.1
	3-4 years	5	26.3
	1-2 years	4	21.5
	Less than 1 year	2	10.5

Note. All demographic data was self-reported by the 19 respondents.

FINDINGS AND RESULTS

This chapter synthesizes the quantitative and qualitative findings obtained from19 Malaysian Quizizz Super Trainers through a mixed-methods survey. The presentation aligns with the five specific research questions (SRQs) and emphasizes the integration of empirical data with theoretical frameworks introduced in Chapters 1–

3. The findings provide evidence of the trainers' expert pedagogical practices shaped by contextual challenges and professional development pathways.

SRQ1: Critical Quizizz Features and Pedagogical Rationale

Analysis revealed that assessment, analytics, and AI features were prioritized by Super Trainers, reflecting a pedagogical emphasis on data-driven instruction and efficiency. The three most frequently identified critical features were Summative Assessment (41.2%), Quizizz AI (35.3%), and Formative Assessment (29.4%) (see Figure 1).

Efficiency and Time-Saving: As one respondent explained, "Technology Al dalamQuizizzmembantumenjanasoalansecaraautomatik... Inimenjimatkan masa guru" [The AI technology in

Quizizz helps generate questions automatically... This saves the teacher's time].

Effective Assessment: The features were used as "evidenspentadbirandanmenjimatkan masa" [administrative evidence and it saves time].

Enhancing Pedagogy: They were seen as "sangatmembantu murid. murid sangataktifdalampdpc" [very helpful for students. students are very active in teaching and learning].

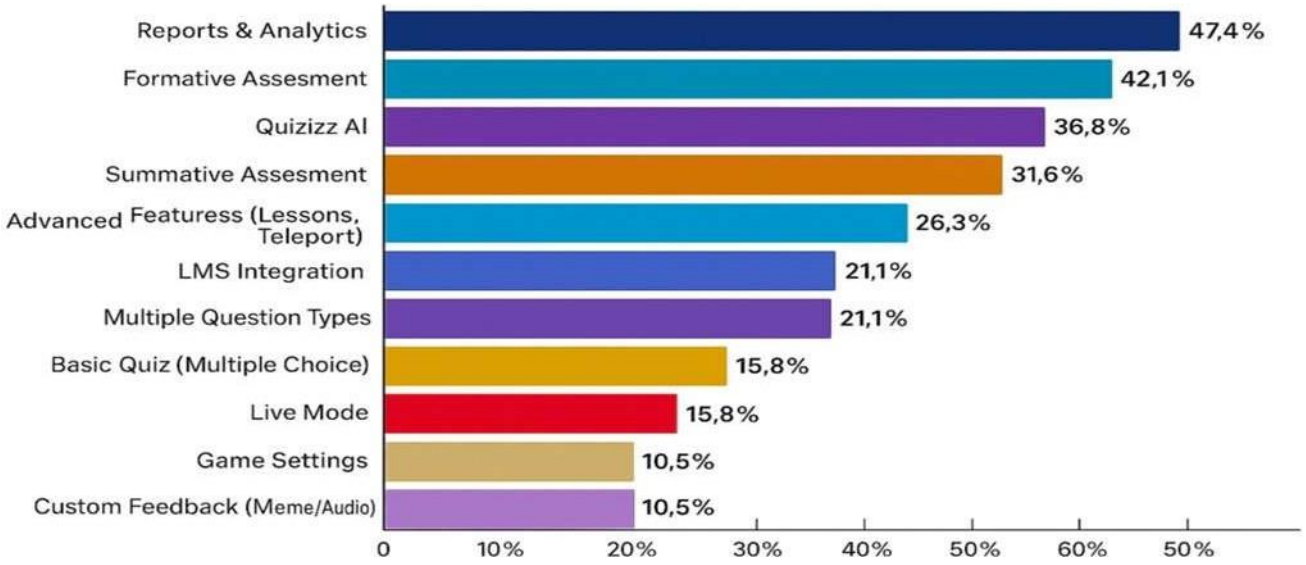

Figure 1. Most Frequently Selected Critical Quizizz Features by Super Trainers

Source: Authors' own work

Figure 1 shows the frequency count for each feature selected by Super Trainers (N=19) as one of their top three most critical pedagogical features on the Quizizz platform. This prioritization underscores the trainers' focus on leveraging technological affordances to streamline question creation and optimize instructional time, consistent with findings from Mekler et al. (2017) and Pňačeková and Pňaček (2021). The use of analytics for formative and summative assessments further supports evidence-based pedagogical adjustments, aligning with modern data-informed teaching paradigms.

SRQ2: Pedagogical Strategies for Enhancing Engagement

Super Trainers employ gamification strategically, grounded in Self-Determination Theory (Ryan &Deci, 2000), to satisfy students' needs for autonomy, competence, and relatedness. Key strategies include:

Autonomy: Involving students in quiz design by soliciting topic and question-type preferences to foster ownership. "Sayamelibatkanpelajardalam proses merancangkuiz..." ("I involve students in the quiz design process..."). Competence: Utilizing mastery modes with immediate feedback to build confidence and reinforce learning. "Ciri-ciriulangan@modemasterimembolehkanmerekamenguasaipelajaran..." ("Mastery mode features enable them to master lessons..."). Relatedness: Promoting collaboration through Team Mode to encourage discussion and collective problem-solving. "Sayaseringmenggunakan mod pasukan (Team Mode)..." ("I often use Team Mode..."). These practices demonstrate a sophisticated, theory-driven application of gamification that transcends superficial incentives, fostering intrinsic motivation and active participation (Kapp, 2012).

SRQ3: Activity Design Aligned with Learning Objectives

Super Trainers demonstrate deliberate alignment of Quizizz activity modes with diverse instructional goals, exemplifying mature Technological Pedagogical Content Knowledge (TPACK) integration (Mishra & Koehler, 2006). For example, lesson mode is preferred for introducing new concepts, while live games reinforce knowledge retention. "Sayamemilih mod pelajaranuntukpengenalankonsepbaharu...

manakalapermainanlangsunglebihsesuaiuntukmengukuhkanpengetahuan." ("I choose lesson mode for introducing new concepts... live game mode for reinforcing knowledge.")

Moreover, trainers consciously manage cognitive load by ensuring clarity and brevity in instructions and question design, consistent with Cognitive Load Theory (Sweller et al., 2019): "Memastikansoalandanarahanadalahringkas, jelas, dantidakmengelirukan..." ("Ensuring questions and instructions are simple, clear, and not confusing...") Such careful instructional design facilitates optimal cognitive processing and enhances learning effectiveness.

SRQ4: Contextual Adaptations in Malaysian Classrooms

Technical limitations—specifically limited device access (65%) and unstable internet connectivity (59%)—pose significant challenges (see Figure 2).

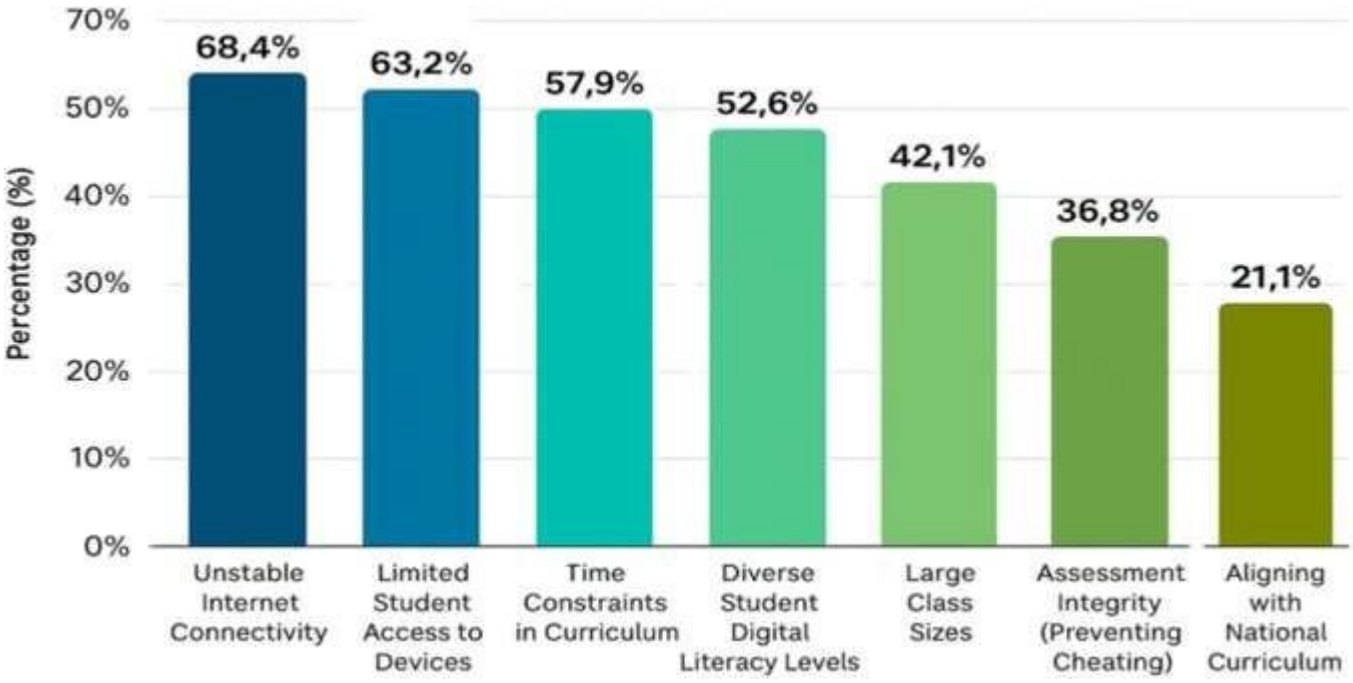

Figure 2. Key Contextual Challenges Faced by Super Trainers in Malaysia (N=19)

Source: Authors' owns work.

Figure 2 displays the percentage of respondents who identified each specific issue as a significant challenge. The most frequently cited challenges were the limited student access to devices (63.2%) and unstable internet connectivity (68.4%). Super Trainers respond flexibly by adopting features such as Paper Mode, which supports active student participation without reliance on real-time connectivity: "Penglibatan murid adalahsangataktifketikaadakanQuizizz paper mode." ("Student engagement is very active when using Quizizz Paper Mode.")

Additionally, asynchronous learning via homework mode allows students to complete assignments flexibly, mitigating digital divide issues: "Mod tugasan (assignment mode) yang bolehdijawabpadabila-bila masa dalamtempohtertentu." ("Assignment mode that can be completed anytime within a given period.")

These adaptive strategies exemplify contextually responsive pedagogy, affirming the necessity for flexible technological integration in resource-constrained settings (Huda et al., 2024; Khalil et al., 2022).

SRQ5: Professional Development Pathways

The developmental trajectory to Quizizz Super Trainer status typically begins with a motivation to enhance

teaching interactivity, often accelerated by the COVID-19 pandemic: “Asalnya.. sayamulaQuizizziniketikapandemikdan lock down.” ("Initially, I started using Quizizz during the pandemic and lockdown.").

“Program PensijilanQuizizzmeningkatkantahapkepakaran... denganlebihmendalamdansistematik.” ("Quizizz Certification Program improves expertise in a deeper and systematic manner.") Core competencies identified include advanced technical skills, critical pedagogical thinking, and mentoring abilities:

“Kemahiranteknikallanjutan, pemikiranpedagogikritikal, dankemampuanmenjadi mentor danjurulatih.” ("Advanced technical skills, critical pedagogical thinking, and the ability to be a mentor and coach.") These findings highlight the multidimensional nature of expertise development, emphasizing continuous learning and community engagement (Mishra & Koehler, 2006).

Overall, the findings illustrate how Malaysian Quizizz Super Trainers strategically integrate technology, pedagogy, and content knowledge to foster engaging, adaptive, and data-informed learning environments. Their practices reflect a sophisticated application of established theories (TPACK, SDT, CLT) and demonstrate resilience against contextual challenges typical in Malaysian classrooms.

DISCUSSIONS

This chapter interprets the findings presented in Chapter 4 through the lens of the theoretical frameworks outlined earlier—Technological Pedagogical Content Knowledge (TPACK), Self-Determination Theory (SDT), and Cognitive Load Theory (CLT). It discusses the significance of the Quizizz Super Trainers’ expert pedagogical practices within the Malaysian educational context and broader gamified learning literature. Implications for theory, practice, and professional development are articulated, followed by acknowledgment of study limitations and recommendations for future research.

Pedagogical Integration and Expertise through TPACK

The findings provide compelling empirical evidence that Malaysian Quizizz Super Trainers embody a mature and integrated TPACK framework in their instructional design and delivery. Rather than treating Quizizz as a standalone tool, trainers embed it within a coherent pedagogical ecosystem that balances technological affordances, content requirements, and instructional strategies. For example, one respondent detailed the design of a science lesson on plant parts by aligning content accuracy, active learning pedagogies, and Quizizz features such as interactive quizzes and analytics to achieve learning objectives.

This alignment demonstrates advanced technological knowledge (TK) combined with deep pedagogical (PK) and content knowledge (CK), confirming Mishra and Koehler’s (2006) assertion that effective technology integration necessitates this synthesis. The trainers’ ability to select appropriate Quizizz modes (lesson mode for conceptual introduction, live game mode for reinforcement) further exemplifies strategic pedagogical decision-making informed by TPACK.

Motivational Strategies Aligned with Self-Determination Theory

Consistent with Ryan and Deci’s (2000) SDT, trainers deliberately design gamified learning experiences that fulfil students’ psychological needs for autonomy, competence, and relatedness, thereby fostering intrinsic motivation. The provision of student choice in quiz topics and question types enhances autonomy, empowering learners to take ownership of their learning paths. The use of mastery modes and immediate feedback supports competence by enabling incremental success and confidence building. Team Mode fosters relatedness by encouraging collaboration and social engagement.

These practices reject the notion of gamification as superficial “pointsification” (Dichev&Dicheva, 2017), instead illustrating a nuanced, theory-driven application that promotes sustained engagement and deeper learning. This aligns with prior research emphasizing the importance of motivation in gamified education (Kapp, 2012; Mekler et al., 2017).

Cognitive Load Management and Flow Experience

The trainers' conscious efforts to design clear, concise, and non-confusing instructions reflect an intuitive or deliberate application of Cognitive Load Theory (Sweller et al., 2019). By reducing extraneous cognitive load, they optimize students' working memory capacity to process essential learning content effectively.

Moreover, the balance between challenge and skill level, as evidenced by thoughtfully designed activities progressing from simple to complex, fosters an optimal psychological state of flow (Csikszentmihalyi, 1990). Trainers report observing students' heightened focus, enjoyment, and competitiveness during Quizizz sessions, indicative of this immersive learning experience. This synthesis of CLT and flow theory highlights the trainers' pedagogical sophistication and responsiveness to learners' cognitive and emotional states.

Adaptive Pedagogy in Response to Contextual Challenges

The study highlights the contextual constraints faced by Malaysian educators, notably unstable internet connectivity and limited access to digital devices. Super Trainers respond with pragmatic and flexible adaptations, such as employing Quizizz's Paper Mode and asynchronous homework assignments. These strategies ensure equitable access and sustained engagement despite infrastructural limitations.

This contextual sensitivity exemplifies resilient pedagogical practice, underscoring the necessity for adaptable technology integration tailored to local realities (Khalil et al., 2022; Huda et al., 2024). It also reflects an important extension of TPACK that incorporates environmental and infrastructural considerations into expert teaching knowledge.

Professional Development and Expertise Cultivation

The developmental trajectory to becoming a Quizizz Super Trainer is marked by intrinsic motivation to innovate, catalyzed by the COVID-19 pandemic's demand for digital teaching solutions. Formal certification programs provide structured knowledge and skill-building, while informal peer learning and community engagement reinforce continuous professional growth.

The identified core competencies including advanced technical skills, critical pedagogical thinking, and mentoring capacity illustrate the multifaceted nature of expertise in educational technology. This aligns with broader literature on teacher professional development emphasizing ongoing learning and collaborative knowledge construction (Wang & Tahir, 2020).

Theoretical Implicationsn

This study enriches the empirical literature by demonstrating how expert educators operationalize multiple learning theories within a modern gamified platform. The integration of TPACK, SDT, and CLT offers a comprehensive framework for understanding expert pedagogical practice in digital environments, advancing theoretical discourse beyond basic technology adoption to sophisticated, contextually responsive use.

The identified practices serve as a blueprint for educators seeking to elevate their use of gamified learning tools. By emphasizing strategic feature use, alignment with learning objectives, motivational design, and contextual adaptation, teachers can transform Quizizz from a mere quiz tool into a dynamic pedagogical resource that enhances student engagement and learning outcomes.

The findings call for professional development programs to transcend technical training and focus on pedagogical integration, data literacy, and adaptive strategies. Facilitating formal certification alongside peer-learning communities can nurture the complex skill sets essential for expert use of educational technology.

CONCLUSION AND RECOMMENDATION

This study successfully elucidates how Malaysian Quizizz Super Trainers enact complex, strategic pedagogical practices that integrate technology, pedagogy, and content knowledge within a challenging educational context.

Their adept use of AI and analytics, motivational gamification aligned with SDT, cognitive load management, and contextual adaptations exemplify expert teaching in the digital era. The developmental pathways identified underscore the importance of motivation, continuous learning, and collaborative professional communities. Collectively, these findings contribute to advancing pedagogical innovation and provide actionable insights for educators and policymakers aiming to harness gamified learning technologies effectively.

While offering valuable insights, this study is limited by its small sample size (N=19), which constrains generalizability. Reliance on self-reported data may introduce bias, and the absence of classroom observations limits validation of reported practices. Furthermore, the exclusive focus on Super Trainers may not capture the full spectrum of user experiences, particularly novices or typical users. Future studies should employ larger, more diverse samples and incorporate ethnographic classroom observations to triangulate self-reports with actual practice. Comparative analyses between expert and novice users could illuminate developmental gaps and inform targeted interventions. Additionally, longitudinal research examining the sustained impact of gamified pedagogies on student outcomes in varied contexts is warranted.

Co-Author Contribution

The authors declare no conflict of interest in relation to this article. Author 1 led the overall coordination of the research, overseeing all phases from the initial proposal development through to the final review prior to submission. Author 2 contributed to the design and validation of the questionnaire, ensuring its reliability and suitability for addressing the research questions. Authors 3 and 4 facilitated the pilot testing phase and actively engaged with respondents during the interview sessions. Authors 5 and 6 provided critical support in the editing and proofreading of the manuscript. All authors contributed to the analysis and interpretation of the research findings and participated in the revision of the manuscript.

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