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# Teaching Business in a Digital World: A TPACK-Informed Phenomenological Study on Curriculum Alignment with Technology, Globalization, and Sustainability

*By:*

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## Abstract

This phenomenological study explored how business educators navigate curriculum alignment with technology, globalization, and sustainability within the framework of Technological Pedagogical Content Knowledge (TPACK). The research engaged 11 faculty members in business-related programs through purposive sampling and written interviews. Thematic analysis revealed key dispositional themes: adaptive mindset toward technological integration, global awareness and cultural sensitivity, commitment to sustainability and ethical responsibility, resilience amidst institutional constraints, and an equity-oriented perspective on digital access. While emerging technologies such as AI, blockchain, and data analytics are acknowledged, curriculum integration remains partial due to systemic barriers like limited faculty training, rigid approval processes, digital divide, and lack of institutional support. Strategies currently employed such as case studies, simulations, and localized examples are often hindered by outdated infrastructure and inconsistent faculty readiness. ESG principles are present but treated peripherally, calling for deeper, systemic embedding. The study concludes that full TPACK integration is essential to equip educators with the ability to deliver globally competitive, technologically fluent, and sustainability-driven business education. It recommends targeted professional development, curricular innovation, and infrastructure investments to bridge existing gaps. These insights provide guidance for policymakers, academic leaders, and faculty in transforming business education to meet 21st-century demands.

## Keywords:

*TPACK Framework, Business Education, Curriculum Innovation, Digital Transformation, Sustainability Integration.*

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### *Impacts of the Study*

- The study provides evidence-based insights for aligning business education curricula with emerging technologies, sustainability, and globalization, enabling institutions to modernize course content systematically.
- It identifies specific gaps in faculty training, offering a framework for designing targeted professional development programs that enhance technological, pedagogical, and content expertise.
- Findings inform higher education policymakers on the structural and systemic barriers to digital and sustainability integration, prompting governance reforms and budget prioritization.
- The research highlights the effects of the digital divide, promoting equity-oriented strategies and resource allocation to ensure all students gain access to relevant digital tools and training.
- It operationalizes the TPACK framework within a localized, real-world educational context in the Philippines, contributing to scholarly discourse and future research on tech-integrated pedagogy in business education.

## 1. Introduction

The growing demands of the digital economy and sustainability imperatives necessitate a reexamination of business education. The framework *Technological Pedagogical Content Knowledge* offers a robust lens for understanding educators' capacity to blend technology, pedagogy, and content knowledge to address complex learning domains—digital tools, global business, and ESG integration (Nantha, 2024).

Setoningsih (2023) demonstrated that even at secondary levels, teachers without sufficient TPACK struggle to implement digitalization in sustainable development contexts, underscoring the relevance of TPACK for higher education.

Tasdemir & Gazo (2020) had shown that integration of sustainability in curricula has shown positive outcomes when handled through transdisciplinary frameworks that engage students in hands-on problem-solving, which suggests opportunities for business education reform. These interdisciplinary and experiential approaches align with TPACK-informed pedagogy, emphasizing authentic engagement with AI, ESG, and global contexts.

However, educators continue to face barriers, including insufficient professional development, uneven institutional support, and digital inequities. The study of Meletiou-Mavrotheris & Paparistodemou (2024) highlighted that systemic, community - oriented faculty learning is more effective than isolated initiatives in building TPACK. Global sustainability integration often remains fragmented in curricula due to institutional inertia and lack of infrastructure.

This study adopts a hermeneutic phenomenology design to deeply explore educators lived experiences in navigating curriculum alignment with emerging technologies, global competencies, sustainability, and digital equity framed through TPACK. Such insights are essential to inform targeted faculty development, policy measures, and practice-based strategies that foster comprehensive, future-ready business education.

While international studies employing the TPACK framework demonstrate its value in enhancing educators' competence and readiness for digital instruction, few investigations have focused on Philippine business education specifically.

Existing Philippine research primarily targets K–12 or pre-service teachers for example, Besa and Limpot (2023) revealed that while Filipino teachers exhibit high overall instructional competence, they still lag in TPACK readiness for online teaching. Valle and colleagues (2024) similarly found that basic-education teachers' technological knowledge and digital nativity vary significantly by school climate.

In higher education, the literature remains sparse. Though blended learning and LMS adoption are emerging in the country, challenges of unequal infrastructure, faculty preparedness, and urban–rural disparities persist (Shim, 2021). There is a noted absence of empirical studies examining how business faculty in Philippine universities enact TPACK principles when integrating emerging technologies (e.g., AI, blockchain), global business competencies, and sustainability (ESG) content especially under the influence of institutional inertia and digital inequities.

This study therefore addresses a critical gap by exploring, through hermeneutic phenomenology, the lived experiences of Filipino business educators in aligning curriculum with TPACK-informed pedagogy amid global, digital, and sustainability challenges. Focusing on this under-researched context enables a deeper understanding of both theoretical application and practical tensions inherent in curriculum innovation within Philippine higher education.

The TPACK framework is especially pertinent to this study as it elucidates how educators integrate technological knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK) when delivering business curriculum that includes AI, blockchain, global competencies, and ESG. The interplay among these domains (TCK, TPK, PCK) and their intersection (TPACK) provides a structure for analyzing how faculty balance content expertise, pedagogical strategies, and digital tools (Mena Guacas et al., 2025).

Literature confirms that educators with stronger TPACK proficiency more effectively integrate EdTech such as AI-enhanced instruction improving student engagement and learning outcomes, especially in contexts influenced by the digital divide (Wang & Choi, 2024).

TPACK-informed professional development fosters sustainable teaching practices by bridging technology and content through collaborative, context-sensitive strategies (Krisnaresanti et al., 2024). Applying TPACK in this phenomenological study will help reveal how Philippine business educators interpret and enact curriculum innovations, addressing barriers in global exposure, ESG integration, and equitable digital education.

The study aligns directly with UN SDG 4 Quality Education, particularly Target 4.7, which emphasizes incorporating sustainable development and global citizenship into curricula (Our World in Data, 2023). By applying the TPACK framework, the research enhances educators' capacity to integrate digital competencies (SDG 4.4) within business education, addressing the ICT skills gap (Latip et al., 2023).

Embedding sustainability and ESG principles in curricula supports broader SDG goals by fostering responsible leadership and social/environmental awareness among future business professionals (Cripps & Smith, 2024). This study contributes to preparing globally competent, digital-fluent graduates capable of advancing sustainable and inclusive economic growth.

This study offers valuable insights for policymakers, higher education leaders, and business faculty by identifying key challenges and targeted interventions in curriculum alignment. Tuffnell (2023) showed that TPACK-informed training can effectively support educators' adoption of digital and blended pedagogies in post-pandemic higher education contexts.

The findings of Dziubaniuk and colleagues (2023) highlighting infrastructure inequities and digital literacy gaps help policymakers allocate resources for closing the digital

divide and enhancing ICT infrastructure. Insights into integrating sustainability through digital tools align with best practices in sustainable business education, supporting transformative and collaborative pedagogies.

For faculty, identifying barriers to teaching AI, ESG, and global content enables professional development that enhances TPACK domains content, pedagogy, and technology improving teaching effectiveness and curricular relevance. The study informs evidence-based policy, institutional strategy, and faculty education strategies to modernize business curricula for digital, globalized, and sustainable futures.

## 2. Objectives

The primary objective of this study is to explore and interpret the lived experiences of business education faculty members in aligning their curriculum with the demands of digital transformation, globalization, and sustainability using the Technological Pedagogical Content Knowledge (TPACK) framework. The specific objectives are as follows:

a. To examine the extent to which business education curricula align with emerging technologies such as artificial intelligence, blockchain, and data analytics, and to identify gaps in faculty preparedness for digital instruction.
b. To assess the effectiveness of current strategies in teaching global business competencies, including cultural intelligence, international law, and economic diversity, in the absence of global immersion opportunities.
c. To evaluate the integration of sustainability and environmental, social, and governance (ESG) principles within business programs and determine the institutional barriers that hinder their inclusion as core curricular components.
d. To investigate institutional and systemic factors contributing to resistance to curriculum reform, particularly in updating content related to digital transformation and sustainability.
e. To analyze the impact of the digital divide on business education delivery and student outcomes, focusing on how access disparities affect the development of digital fluency and hands-on technological skills.

## 3. Methodology

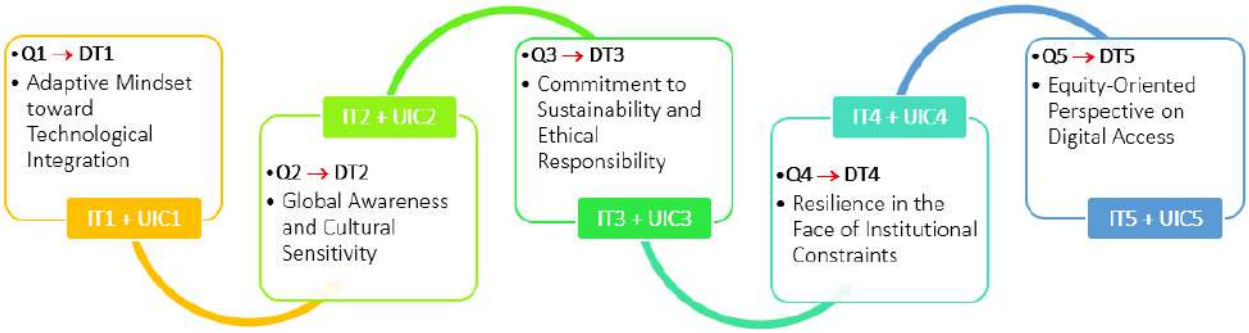


**Figure 1.** The Thematic Flow indicating that each Dispositional Theme covers Inferential Themes with the Unique Initial Codes, each segment serving as baseline for the incoming discussion and analysis.

This study adopts a hermeneutic phenomenological design to explore how purposively sampled business education faculty at Palompon Institute of Technology interpret and enact

curriculum alignment with technology, globalization, and sustainability through the lens of the TPACK framework (Ramsook, 2018). Hermeneutic phenomenology is ideal for examining educators' lived experiences, emphasizing interpretive meaning-making embedded in personal and historical contexts (Knight, 2022).

Eleven (11) business faculty members were selected through purposive sampling based on their roles in curriculum design and familiarity with digital, global, or sustainability topics. Participants completed written, semi-structured interviews with open-ended questions aligned to TPACK domains (TK, PK, CK, and intersections) to explore rich narrative accounts of their experiences teaching emerging technologies, global competencies, and ESG integration. Written responses promote reflective depth, allowing participants to elaborate on faculty development needs, institutional constraints, and digital equity issues (Olmstead & Turpen, 2016).

The Thematic Flow in Figure 1 indicates the Dispositional Themes (DT) with each generated Inferential Themes (IT) and Unique Initial Codes based on the Questions (Q) of the study (Purvis et al., 2024). It implied that the business educators were able to articulate experiences in their own terms while allowing time for deeper introspection particularly effective in sensitive or bureaucratically nuanced contexts (Braun & Clarke, 2006). Analysis followed a hermeneutic cycle involving iterative reading, interpretation, and reflective writing (Keshavarz, 2020).

Translated insights were coded according to TPACK domains and phenomena emerging from the text. The researchers' reflexivity was documented via a reflective journal, acknowledging how fore-structures shape interpretations (Laverty, 2003). Themes were refined by dialogically moving between parts (individual transcripts) and the whole (the cohort), ensuring trustworthiness via cyclical analysis (McLeod, 2025).

Triangulation was applied by utilizing various documents, including policy directives and faculty records, to strengthen the validity and trustworthiness of the results (Bowen, 2009). Adhering to established qualitative research protocols, ethical measures such as obtaining informed consent, ensuring participant anonymity, and maintaining data confidentiality were rigorously upheld (Orb et al., 2001).

## 4. Results and Discussion

Results revealed partial curriculum alignment with emerging technologies, limited global exposure strategies, and minimal integration of ESG principles. Faculty face challenges in digital instruction, curriculum reform, and access disparities. Institutional rigidity, inadequate training, and the digital divide hinder efforts to deliver inclusive, future-ready business education aligned with global standards.

### 4.1. The Profile of Business Educators

The study involved 11 business education faculty members from Palompon Institute of Technology, comprising nine full-time and two part-time instructors. Most held the rank of Instructor I, with one participant at the Instructor III level. Their assigned courses span a wide range of undergraduate programs, including Bachelor of Science in Business Administration, Bachelor of Science in Hospitality Management, Bachelor of Science in Hotel and Restaurant Technology, and Bachelor of Science in Industrial Engineering.

The courses taught include core business subjects such as Marketing Management, Cost Management, Supply Chain, Strategic Management, Product and Operations Management, Applied Economics, and Advertising, as well as specialized subjects in hospitality and tourism, such as Quality Service Management and Hospitality Operations.

These course assignments reveal a broad representation of business and allied fields, which provides rich, diverse perspectives for the study.

This academic profile is significant to the study as it ensures that the TPACK framework is applied across multiple content domains, not limited to a single business specialization. The diversity in subject expertise allows the research to capture how educators from different areas of business education engage with emerging technologies, global content, and sustainability themes.

The varying academic ranks highlight differences in institutional experience and authority in curriculum implementation, revealing disparities in decision-making power and professional development access—factors that directly impact faculty readiness and the institution's ability to align business curricula with the demands of the digital and global economy.

### 4.2. Discussion of the Results

The researchers extracted Dispositional Themes (main themes) and corresponding Inferential Themes (subthemes) from transcribed responses by generating Unique Initial Codes. This coding process enabled a nuanced interpretation of the participants' lived experiences, uncovering deeper insights and recurring patterns. These themes illuminated how faculty members navigate teaching business-related courses in a digital context, using the TPACK framework to align the curriculum with the evolving demands of technology, globalization, and sustainability.

Table 1 presents the dispositional themes derived from faculty responses, highlighting key areas affecting curriculum alignment with emerging technologies. These include partial integration, digital preparedness challenges, institutional training gaps, infrastructure limitations, self-driven adaptation efforts, and innovative models adopted by leading institutions to support technological integration in business education.

**Table 1**. Adaptive Mindset toward Technological Integration

| | | |
|---|---|---|
| Q1 | To what extent does your business education curriculum align with emerging technologies such as artificial intelligence, blockchain, and data analytics, and what challenges do you encounter in preparing yourself for digital instruction? | |
| DT1 | Adaptive Mindset toward Technological Integration | |
| IT(*n*) | UIC(*n*) | P(*n*) |
| IT1-1<br>Partial or Moderate Curriculum Alignment with Emerging Technologies | "Touches on emerging tech" | P1 |
| | "Moderately aligned" | P2 |
| | "Limited integration" | P5 |
| | "Covers some topics" | P7 |
| | "Growing integration in analytics, AI, and blockchain" | P8 |
| | "Endeavors to integrate emerging technologies" | P11 |
| IT1-2<br>Challenges in Faculty Digital Preparedness | "Learning to actually use the tools" | P1 |
| | "Some faculty lack viable digital ideas" | P2 |
| | "Feel unprepared for technical complexity" | P4 |
| | "Need more knowledge in new ways of teaching" | P10 |
| | "Evolving pedagogical competencies" | P11 |
| IT1-3<br>Institutional Gaps in Training and Upskilling | "Co-faculty and trainings helped" | P3 |
| | "Insufficient hands-on, ethics-oriented training" | P4 |
| | "Need structured, experiential professional development" | P4 |
| | "Without access to regular trainings and seminars" | P6 |
| | "Lack of resources or training" | P7 |
| | "Continuous upskilling is necessary" | P11 |
| IT1-4 | "Print media and reference books" | P9 |

| | | |
|---|---|---|
| Resource Constraints | "Limited access to advanced digital infrastructure" | P11 |
| IT1-5 | "Self-learning helps" | P6 |
| Self-driven Efforts and | "Committed to bridging this gap" | P11 |
| Commitment to | "Proactive adaptation and professional development" | P11 |
| Adaptation | | |
| IT1-6 | "Mapúa, AIM, and Asia Pacific College examples" | P4 |
| Emerging Institutional | "CMU Australia upskilling initiative" | P4 |
| Models for Integration | "Proactive curriculum design and real-world application" | P8 |

**IT1-1 This** theme reflects the varying degrees of integration of artificial intelligence, blockchain, and data analytics in business education curricula. Participants commonly noted that while emerging technologies are introduced, they are often not deeply embedded into core instruction. Educators acknowledge these technologies' importance but also highlight the gap between theoretical mention and practical application. This partial alignment suggests a curricular lag behind rapidly evolving industry demands. Such alignment is further influenced by external pressures, including accreditation standards and outdated syllabi, limiting institutions' ability to incorporate cutting-edge content. The theme indicates a need for intentional curriculum reform that prioritizes digital relevance.

**IT1-2 Many** participants revealed a lack of readiness in using emerging digital tools for instruction. This includes both technological and pedagogical dimensions. Some educators expressed a steep learning curve in understanding and applying AI or data tools in teaching, highlighting a gap in Technological Knowledge (TK) and Technological Pedagogical Knowledge (TPK) as conceptualized in the TPACK framework. The uncertainty and anxiety surrounding technological integration are compounded by the fast-paced nature of digital innovation, making it difficult for faculty to stay updated. This theme underscores the urgency of structured professional learning initiatives that are contextualized and discipline-specific.

**IT1-3** Faculty narratives indicate that existing institutional support for digital upskilling is often reactive and fragmented. While some educators resort to self-study, most emphasized the need for sustained and experiential training programs, such as workshops, bootcamps, or industry certifications. The absence of such programs limits opportunities for hands-on practice and confidence-building in teaching with technology. Additionally, some institutions lack clear roadmaps or policies to support continuous professional development. This theme highlights the systemic nature of digital readiness and points to the importance of institutional accountability in fostering innovation.

**IT1-4** Another critical concern is the disparity in access to adequate digital infrastructure. Participants cited outdated computers, limited internet bandwidth, and reliance on print-based materials. These constraints are especially pronounced in resource-limited institutions and rural settings. The lack of investment in hardware, software, and stable connectivity impedes both teaching and learning. This theme calls for equity-based infrastructure planning and funding allocation that supports technology integration in under-resourced institutions.

**IT1-5** Despite systemic challenges, several educators displayed resilience and initiative in adapting to technological changes. Self-learning, peer collaboration, and participation in free webinars or MOOCs were mentioned as strategies to bridge competency gaps. This theme illustrates the intrinsic motivation among educators to remain relevant and effective. It also reflects the ethical commitment to prepare students for a digital workforce, even in the absence of institutional support.

**IT1-6** Some participants cited best practices from institutions like Mapúa University and AIM, which have embedded AI modules and fostered faculty upskilling through global partnerships. These cases represent forward-thinking models for integrating technology in

business curricula. The theme suggests that collaborative models between academia and industry can accelerate technological adaptation and inform scalable policy interventions for other institutions.

Table 2 presents the inferential themes on strategies used by faculty to develop students' global business competencies. These themes highlight the reliance on theoretical instruction, moderate effectiveness, use of localized simulations, innovation with limited resources, faculty development needs, and student engagement as a measure of instructional success in non-immersive contexts.

**Table 2**. Global Awareness and Cultural Sensitivity.

| | | |
|---|---|---|
| Q2 | How effective are your current strategies in developing students' global business competencies, including cultural intelligence, international law, and economic awareness, especially in the absence of global exposure or immersion programs? | |
| DT2 | Global Awareness and Cultural Sensitivity | |
| IT(*n*) | UIC(*n*) | P(*n*) |
| IT2-1 Theoretical Strength but Experiential Deficit | "Tough to develop global business skills without real-world exposure" | P1 |
| | "Mostly theoretical… missing the 'how' that comes from real-life business situations" | P6 |
| | "Harder for students to fully develop cultural intelligence without immersion" | P7 |
| | "Notable gap in soft-skill development… cultural nuance, adaptability" | P8 |
| | "Significant limitation… absence of direct global exposure" | P11 |
| IT2-2 Moderately Effective and Incremental Strategies | "Slightly effective… can be improved if faculty have updated knowledge" | P2 |
| | "Moderately effective in helping shape students' competencies" | P5 |
| | "Current strategies… moderately effective in theory and collaboration" | P8 |
| | "Reasonably effective… but limited by lack of immersion" | P11 |
| IT2-3 Use of Localized Global Simulations and Case Studies | "Cross-cultural case studies and locally adapted global business modules" | P4 |
| | "PEST/SWOT exercises grounded in Philippine and ASEAN contexts" | P4 |
| | "Classroom discussions and simulations" | P7 |
| | "Integrated coursework in international law and economics" | P11 |
| IT2-4 Instructional Innovation and Resource Maximization | "Go beyond Philippine setting with global examples" | P10 |
| | "AI may be helpful if incorporated into day-to-day lessons" | P9 |
| | "Tech-enabled and human-connected learning methods needed" | P8 |
| | "Virtual collaborations… simulate international contexts" | P11 |
| IT2-5 Faculty Development and Capacity Building Needs | "Strategies may improve if faculty have updated knowledge and skills" | P2 |
| | "Instructors undergoing targeted workshops" | P4 |
| | "Cannot fully assess… still new to role" | P5 |
| IT2-6 Student Engagement | "Students were receptive… able to comply with requirements" | P3 |

**IT2-1** Faculty participants consistently emphasized that while their teaching strategies incorporate essential theoretical components such as cultural intelligence, international law, and global economic principles they fall short in delivering experiential learning. Without access to international immersion, cross-border collaborations, or real-world global exposure, students often grasp the "what" and "why" of global business, but miss the "how." This theme reflects a critical gap in the formation of authentic global competencies. Students may be familiar with frameworks, but lack the lived understanding of applying them in

intercultural or transnational business contexts. The challenge lies in transforming passive learning into experiential understanding that mirrors real-world complexities.

**IT2-2** Many faculty members assessed their approaches as moderately or partially effective. While strategies such as class discussions, content integration, and simulations provide some foundational knowledge, they often do not suffice to build deep, transferable global competencies. Incremental efforts such as infusing new global themes into existing coursework or adopting case studies are steps in the right direction. However, the effectiveness of these methods is often constrained by the lack of immersion programs, institutional support, and dynamic pedagogical models. These limitations point to a need for more intentional, whole-program redesigns rather than piecemeal additions.

**IT2-3** To compensate for the lack of direct global exposure, educators have adapted strategies that simulate global contexts within the local environment. Through case studies, PEST/SWOT analyses, and regionally contextualized modules, they attempt to build intercultural awareness and global economic understanding. These tools serve as proxies for immersion, allowing students to examine global business dynamics through Philippine and ASEAN lenses. While not a substitute for lived experience, these methods offer scalable and culturally sensitive alternatives that can bridge learning gaps, especially in resource-constrained institutions.

**IT2-4** Despite systemic limitations, some educators demonstrate creative use of digital technologies and global content. Examples include the integration of artificial intelligence tools, virtual collaborations, and the use of global examples beyond Philippine contexts. These approaches highlight a spirit of innovation, where faculty maximize what is available to deliver engaging and globally relevant lessons. This theme underscores the role of individual agency and initiative in enhancing curriculum relevance, even in environments lacking robust infrastructure or international linkages.

**IT2-5** Several participants pointed out that the success of global competency instruction is closely tied to faculty expertise and confidence. Instructors who lack international exposure, professional development, or pedagogical training in intercultural and global frameworks may find it difficult to deliver effective instruction. The need for targeted workshops, mentorship, and continuous upskilling emerged as a shared concern. Building faculty capacity is essential not only to improve teaching effectiveness but also to sustain long-term curricular alignment with globalization.

**IT2-6** Some faculty members view students' compliance with assignments and active participation as indicators of strategy effectiveness. While such metrics offer insight into engagement, they may not fully capture competency development. This theme raises important questions about assessment practices and whether current evaluation tools adequately measure students' readiness for global business environments.

Table 3 presents the emergent themes regarding the integration of sustainability and ESG principles into business curricula. It highlights partial implementation, faculty dedication despite constraints, institutional barriers such as limited training and resources, resistance to reform, and emerging structured efforts and good practices aimed at deepening ESG integration.

**Table 3**. Commitment to Sustainability and Ethical Responsibility.

| | | |
|---|---|---|
| Q3 | How well is sustainability, including environmental, social, and governance (ESG) principles, integrated into your business curriculum, and what institutional barriers do you face in making these topics a core component? | |
| DT3 | Commitment to Sustainability and Ethical Responsibility | |
| IT(*n*) | UIC(*n*) | P(*n*) |
| IT3-1 | "Only scratching the surface" | P1 |

| | | |
|---|---|---|
| Partial or Peripheral Integration of ESG into Curriculum | "Still superficial rather than systemic" | P4 |
| | "Partially integrated" | P5 |
| | "More like add-ons than core themes" | P6 |
| | "Touched on in some subjects" | P7 |
| | "Remain peripheral rather than central" | P8 |
| | "Modestly integrated through select courses" | P11 |
| IT3-2 Faculty Commitment Amid Constraints | "We try to weave sustainability… into the curriculum" | P1 |
| | "I have to keep in mind the mentioned principles will be instilled" | P3 |
| | "We're committed to improvement" | P4 |
| | "Advocate for its gradual institutionalization" | P11 |
| IT3-3 Resource and Training Limitations as Institutional Barriers | "Limited resources and outdated materials" | P1, P5, P7, P11 |
| | "Lack of faculty training or specialized expertise" | P1, P4, P5, P6, P8, P11 |
| | "Lack of financial support" | P3 |
| | "Competing priorities" | P5, P11 |
| IT3-4 Resistance to Institutional Change and Curriculum Reform | "Resistance to paradigm shifts" | P8 |
| | "Sustainability treated as a trend" | P6 |
| | "Without institutional commitment… hard to embed meaningfully" | P6 |
| | "Curricula outdated" | P8 |
| IT3-5 Emerging Efforts for Structured ESG Integration | "Plans underway to introduce structured faculty development" | P4 |
| | "Align sustainability goals with institutional strategy" | P4 |
| | "Policy support and continuous curriculum review" | P11 |
| | "Hands-on projects, industry partnerships, electives" | P6, P8 |
| IT3-6 Good Practices and Course-Specific Integration | "I integrate sustainability in crafting products" | P10 |
| | "Project-based learning" | P11 |
| | "Recycling, upcycling, and zero waste in production process" | P10 |

**IT3-1** Faculty participants consistently noted that sustainability and ESG (Environmental, Social, and Governance) principles are only partially integrated into the business curriculum. Most respondents described their inclusion as "superficial," "modest," or "peripheral" embedded in certain modules or treated as supplementary to main topics such as ethics or corporate social responsibility. This theme reveals a structural gap where ESG principles are not yet conceptualized as foundational to business education. Their current placement in the curriculum does not reflect their growing relevance in global markets, policy frameworks, or corporate strategy. The implication is that students may leave programs with limited exposure to critical ESG thinking, reducing their preparedness for values-driven, socially responsible business practice.

**IT3-2** Despite institutional and systemic challenges, educators expressed a strong sense of responsibility to introduce sustainability themes in their teaching. Even when constrained by lack of materials or formal training, faculty make intentional efforts to incorporate ESG-related content where possible. This theme underscores the disposition of faculty members as change agents within the limits of their capacity. Their willingness to engage with ESG principles despite limited institutional support reflects a bottom-up approach to curricular transformation, driven by individual commitment and professional ethics.

**IT3-3** A dominant challenge reported was the lack of updated instructional materials, professional development opportunities, and financial resources to support ESG integration. Faculty frequently cited outdated content, limited access to industry-aligned case studies, and insufficient faculty expertise as major hurdles. These barriers inhibit deep integration of ESG into diverse business domains such as finance, operations, marketing, and strategy. Without targeted investments in resources and upskilling, attempts to embed sustainability will remain inconsistent and fragmented.

**IT3-4** Several faculty members observed that deeper integration of ESG principles is hindered by systemic resistance to change. Sustainability is sometimes perceived as a trend or secondary concern rather than a paradigm shift essential to modern business education. This resistance may stem from rigid curriculum structures, competing academic priorities, or a lack of urgency among decision-makers. This theme reflects the inertia typical of higher education systems, where innovation is slow and often met with institutional skepticism.

**IT3-5** Despite current limitations, some institutions and educators are actively working to institutionalize ESG in a more structured manner. Participants mentioned plans to revise curricula, align sustainability goals with institutional strategies, and introduce workshops, electives, and experiential learning focused on ESG. These initiatives indicate a growing awareness of the need to formalize ESG education as a core component of business programs, reflecting a shift toward long-term strategic alignment with global sustainability goals.

**IT3-6** A few participants shared specific examples of successful ESG integration at the course level, such as sustainability-themed projects in production management or the use of recycling and upcycling as teaching frameworks. These micro-level practices demonstrate the feasibility of embedding ESG even in traditional business subjects, offering models that can be scaled across departments and programs. They also provide a practical foundation for wider curricular transformation through contextualized and discipline-aligned strategies.

Table 4 presents the emergent institutional and systemic challenges to curriculum reform, highlighting barriers such as bureaucratic processes, financial limitations, infrastructure gaps, resistance to change, lack of faculty training, weak institutional support, time constraints, and misalignment with industry demands all of which hinder effective integration of digital transformation and sustainability.

**Table 4**. Resilience in the Face of Institutional Constraints.

| | | |
|---|---|---|
| Q4 | What institutional or systemic challenges do you encounter when attempting to reform or update the curriculum, particularly in integrating content on digital transformation and sustainability? | |
| DT4 | Resilience in the Face of Institutional Constraints | |
| IT(*n*) | UIC(*n*) | P(*n*) |
| IT4-1<br>Bureaucratic and Rigid Approval Processes | "Pushing a boulder uphill" due to bureaucracy<br>"Rigid approval processes that slow down updates"<br>"Slow approval processes"<br>"Bureaucratic curriculum processes"<br>"Bureaucratic approval processes" | P1<br>P5<br>P7<br>P8<br>P11 |
| IT4-2<br>Limited Budget and Financial Constraints | "Limited funding"<br>"Budgetary constraints restrict technological upgrades"<br>"Financial challenge… digital rooms and gadgets" | P1, P4, P5, P10, P11<br>P4<br>P10 |
| IT4-3<br>Resistance to Change from Faculty or Stakeholders | "Occasional hesitation from colleagues"<br>"Resistance to change among stakeholders"<br>"Faculty resistance"<br>"Philosophical biases toward traditional models" | P1<br>P5, P11<br>P8<br>P8 |
| IT4-4<br>Lack of Infrastructure and Digital Readiness | "Outdated systems and unreliable internet"<br>"Upgrade infrastructure and equipment"<br>"Lack of ICT infrastructure" | P4<br>P10<br>P4 |
| IT4-5<br>Insufficient Faculty Training and Development | "Lack of updated teaching materials"<br>"Lack of faculty training"<br>"Varying levels of familiarity with subjects" | P1<br>P4, P5, P7<br>P5 |
| IT4-6 | "Lack of real support from administration" | P6 |

| | | |
|---|---|---|
| Limited Institutional Support for Reform Initiatives | "Proposals denied or not given priority"<br>"Faculty and students willing… but unsupported" | P6<br>P6 |
| IT4-7<br>Time Constraints in Curriculum Development | "Time spared for the reformation"<br>"Balancing traditional and emerging topics is difficult due to time constraints" | P3<br>P5 |
| IT4-8<br>Weak Industry-Academia Linkages | "Aligning to industry needs for AI/tech"<br>"Lack of industry benchmarking"<br>"Industry-academia misalignment" | P2<br>P6<br>P8 |

**IT4-1** Participants frequently cited administrative bureaucracy as a barrier to timely curriculum innovation. Proposals to incorporate emerging topics such as artificial intelligence, data analytics, or sustainability often face layers of institutional approval, which delay implementation. These rigid structures discourage proactive faculty and contribute to a slow academic response to global trends. The "red tape" involved reduces agility in curriculum design and stifles innovation, despite the pressing need for modernization.

**IT4-2** Financial limitations are another dominant theme. Many institutions lack the budget to procure updated teaching materials, upgrade digital infrastructure, or support faculty training. Without adequate funding, initiatives aimed at aligning the curriculum with technological and sustainability imperatives are either postponed or reduced in scale. Faculty are often left to find their own resources or operate with outdated tools, which hampers both instructional effectiveness and curriculum relevance.

**IT4-3** Cultural resistance within the institution—especially from faculty accustomed to traditional teaching methods—also impedes progress. Some educators are hesitant or unmotivated to integrate digital or sustainability content, either due to lack of familiarity or skepticism about its importance. This resistance may stem from generational divides, philosophical differences, or fear of added workload and it creates friction in the collaborative process of reform.

**IT4-4** Even when content updates are approved, poor digital infrastructure—such as unreliable internet, insufficient computer labs, or outdated platforms—limits the ability to deliver new content effectively. This disconnects between curriculum goals and technological capacity contributes to a gap between institutional intent and actual classroom practice.

**IT4-5** Faculty members expressed concern about their preparedness to teach digital transformation and sustainability-related topics. Without regular professional development, educators lack the skills to handle tools such as AI platforms or ESG frameworks. This results in underdeveloped instructional approaches and a superficial treatment of complex topics. Institutions often fail to provide structured, ongoing training that would build the necessary pedagogical and technical competencies.

**IT4-6** Some participants felt unsupported by administration in their reform efforts. Even when faculty are motivated, they report a lack of endorsement, encouragement, or logistical support from leadership. This disconnects results in faculty fatigue, with reforms being driven by personal initiative rather than institutional vision.

**IT4-7** Faculty also pointed to time limitations due to teaching loads and other responsibilities, which hinder their participation in curriculum development. The pace of change in business and technology demands quicker updates than the institutional calendar permits, resulting in a misalignment between academic preparation and industry needs.

**IT4-8** Insufficient collaboration with industry partners results in outdated curricula. Without benchmarking visits, internships, or advisory input, academic programs may fail to reflect current professional standards, leaving graduates underprepared for the real-world demands of business in a digital and sustainable economy.

Table 5 presents the emerging inferential themes on the digital divide's impact in business education, highlighting issues such as unreliable internet, outdated devices, reduced student engagement, and inequitable digital literacy development. It also reflects emotional barriers, institutional responsibilities, and students' resilience despite limited access to digital resources.

**Table 5**. Equity-Oriented Perspective on Digital Access.

| | | |
|---|---|---|
| Q5 | How does the digital divide affect your ability to deliver business education effectively, and in what ways do access disparities impact students' digital literacy and technological skill development? | |
| DT5 | Equity-Oriented Perspective on Digital Access | |
| IT(*n*) | UIC(*n*) | P(*n*) |
| IT5-1 Unreliable Internet Connectivity | "Unreliable internet" | P1 |
| | "Poor internet connectivity" | P3 |
| | "Lack access to essential digital resources such as reliable internet connections" | P4 |
| | "Limiting access to reliable internet" | P5 |
| | "Not everyone in class has access to a stable internet connection" | P6 |
| | "Poor internet" | P7 |
| | "Limited both instructors' and students' access to reliable technology and internet connectivity" | P11 |
| IT5-2 Outdated or Inaccessible Devices | "Outdated devices" | P1 |
| | "Lack access to...modern devices" | P4 |
| | "Limiting access to...devices" | P5 |
| | "Or even a decent device" | P6 |
| | "No devices" | P7 |
| | "Inadequate technologies at hand" | P10 |
| | "Limited...access to reliable technology" | P11 |
| IT5-3 Reduced Student Participation and Engagement | "Creating gaps in engagement, participation" | P5 |
| | "It's hard to make it work when half the class is just trying to stay connected" | P6 |
| | "Students avoid using digital tools simply because they're not familiar with them" | P6 |
| | "Widening the competence gap" | P11 |
| IT5-4 Inequity in Digital Literacy Development | "Hinders their ability to develop the necessary skills for success in the modern workforce" | P4 |
| | "Hard to focus on building real tech skills" | P6 |
| | "Affects their digital literacy and slows down their tech skill development" | P7 |
| | "Reinforcing inequities in digital literacy and skill acquisition" | P8 |
| | "Students who do not have equal previous needed digital skills" | P10 |
| | "Hinder the development of essential technological skills" | P11 |
| IT5-5 Emotional and Confidence Barriers | "This gap doesn't just affect grades—it affects confidence" | P6 |
| | "Students have the potential but they just don't have the same access" | P6 |
| IT5-6 Institutional Responsibility and Call to Action | "Requires targeted interventions... to bridge the digital divide effectively" | P4 |
| | "Unless schools really invest in closing this gap, we'll keep seeing unequal outcomes" | P6 |
| | "Institutions must proactively implement support structures" | P8 |
| | "Should these necessary tools become available... treat each student equal" | P10 |
| IT5-7 Potential of Students Despite Digital Challenges | "These students have the potential but they just don't have the same access" | P6 |
| | "It would be practical to treat each student equal as they start their journey" | P10 |

**IT5-1** Across multiple responses, faculty emphasized that poor or unstable internet connectivity is a persistent barrier. Students in geographically isolated or underserved communities struggle to maintain consistent access, which disrupts synchronous learning, delays submissions, and diminishes real-time interaction. For educators, it means adapting or diluting digital strategies to accommodate those left behind—resulting in unequal learning experiences.

**IT5-2** Closely linked to connectivity issues is the lack of modern, functional devices among students. Many learners rely on shared or outdated phones and laptops, making it difficult to run applications, access digital platforms, or complete multimedia tasks. Faculty cannot maximize available e-learning resources, thereby limiting innovation in teaching and learning.

**IT5-3** The technical limitations directly correlate with lower engagement levels. Faculty observed that students frequently miss online classes or underperform in digital tasks due to access issues. Instructors are often forced to rely on less interactive and more traditional methods, further alienating students and reducing motivation in a curriculum that is supposed to be increasingly digital.

**IT5-4**. Students with limited access to digital tools are at a disadvantage when developing essential skills such as navigating online systems, using productivity software, or analyzing data through digital platforms. This inequity creates a two-tier system in which only students with better access achieve full digital competence undermining inclusive education goals.

**IT5-5**. Faculty noted that some students, due to repeated failures in accessing or using digital tools, begin to lose confidence. Fear of embarrassment, frustration, and helplessness become psychological barriers that inhibit participation. This emotional burden further widens the learning gap, even when academic support is present.

**IT5-6**. Participants voiced a strong consensus that institutions must do more. Solutions include provisioning of loaned devices, investing in community-based internet hubs, embedding digital literacy in foundational courses, and providing targeted faculty training. Without strategic interventions, technological inequality will persist and undercut broader educational reforms aligned with digital transformation.

**IT5-7**. Despite the limitations, faculty were unanimous in their belief in students' potential. Given equitable access and support, students have shown adaptability, eagerness to learn, and capacity to thrive in digital environments. Faculty members emphasized that learners are not inherently lacking, but structurally constrained—underscoring the importance of systemic change.

## 5. Analysis

This study explored faculty experiences in aligning business education with digital transformation, globalization, and sustainability. Using hermeneutic phenomenology and the TPACK framework, thematic analysis revealed dispositional themes reflecting institutional challenges, pedagogical innovations, and faculty commitment capturing how educators adapt, struggle, and innovate while shaping future-ready, inclusive business curricula.

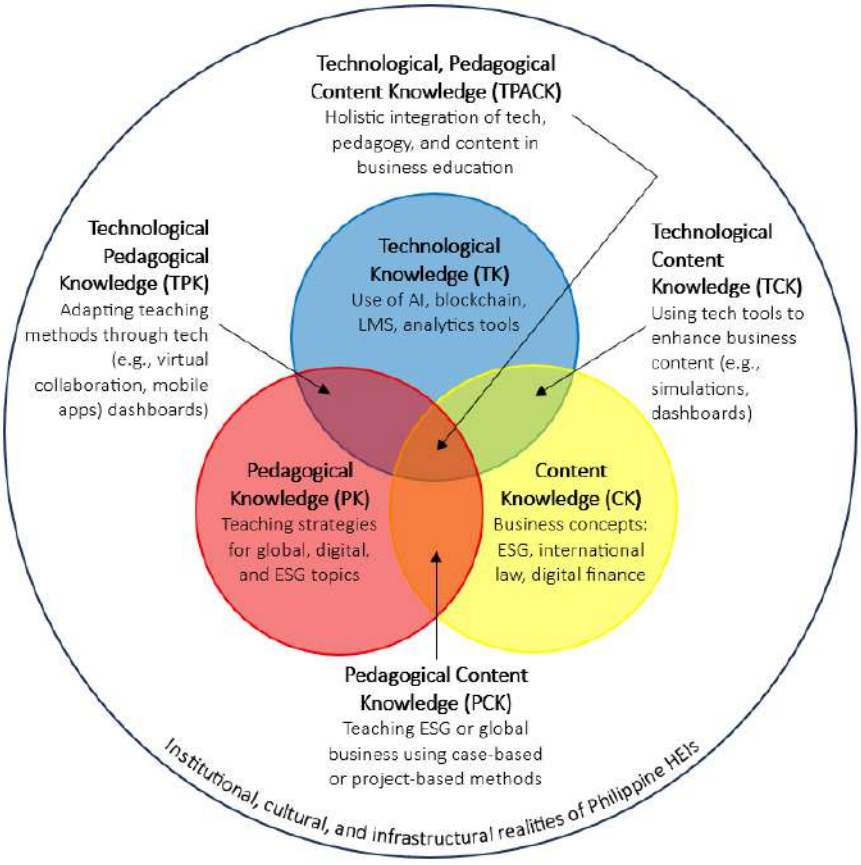


**Figure 2.** The TPACK Framework, highlighting the intersection of technology, pedagogy, and content knowledge as essential for business educators to deliver future-ready instruction aligned with digitalization, globalization, and sustainability goals, adopted from Mishra & Koehler (2006).

**Table 6**. Analysis map of dispositional themes versus strategies for business educators to effectively and efficiently deliver instruction in today's digitally driven, globally connected, and sustainability-conscious landscape.

| ***Strategies*** | ***Description of the TPACK Framework with Interrelated Knowledge Domains*** | ***Dispositional Theme Code*** | | | | |
|---|---|---|---|---|---|---|
| | | **A** | **B** | **C** | **D** | **E** |
| ▪ Strengthen Technological Knowledge (TK) | Provide regular training on AI, blockchain, and analytics; use simulations and tools for practical learning; promote self-paced digital certifications for faculty and students. | ■ | | | | ■ |
| ▪ Enhance Pedagogical Strategies (PK) | Incorporate flipped classrooms, gamification, and real-world projects to enhance engagement, promote sustainability, and develop global competence through virtual exchanges and cross-cultural collaboration. | | ■ | | ■ | |
| ▪ Deepen Content Knowledge (CK) | Embed ESG sustainability principles in all business subjects and enrich the curriculum with global content like international law, economic systems, and cultural perspectives. | | ■ | ■ | | |
| ▪ Apply Technological Content Knowledge (TCK) | Utilize technology like data visualization and simulation tools to simplify complex business concepts and enhance comprehension of financial analytics and supply chain | ■ | | ■ | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | dynamics. | | | | | |
| ▪ Implement Technological Pedagogical Knowledge (TPK) | Redesign lessons with tech tools like virtual boardrooms and Padlet, and ensure access via mobile apps, downloadable modules, and low-bandwidth content for inclusivity. | ■ | | | ■ | ■ |
| ▪ Cultivate Full TPACK Integration | Encourage interdisciplinary course creation that integrates content, pedagogy, and technology, while utilizing action or design-based research to improve TPACK-driven business teaching practices. | | ■ | ■ | | |
| ▪ Address Institutional Context | Promote ICT investment, faculty training, and student access; build industry-academe ties for curriculum relevance; and adopt peer mentoring for collaborative TPACK-based teaching. | | | | ■ | ■ |

*Adaptive Mindset toward Technological Integration* **A**
*Global Awareness and Cultural Sensitivity* **B**
*Commitment to Sustainability and Ethical Responsibility* **C**
*Resilience in the Face of Institutional Constraints* **D**
*Equity-Oriented Perspective on Digital Access* **E**

In Figure 2, the Technological Pedagogical Content Knowledge (TPACK) framework offers a comprehensive lens for analyzing the competencies required by business educators in the 21st-century learning environment. In this study, each of the TPACK component is intricately connected to the key challenges of curriculum alignment with technology, globalization, and sustainability.

Technological Knowledge (TK) is crucial as faculty navigate tools like AI, blockchain, and LMS platforms to deliver modern business content. Many participants acknowledged the difficulty in staying current with emerging tech, highlighting TK as both a strength and gap area. Pedagogical Knowledge (PK) plays a central role in ensuring that content delivery is inclusive and responsive—especially in developing global competencies and accommodating digital divides through adaptive strategies like case studies and simulations.

Content Knowledge (CK) is evident in educators' understanding of business fields, including ESG, corporate ethics, and global trade, though some admitted limitations in integrating these into core syllabi. The strength of Pedagogical Content Knowledge (PCK) appears in the faculty's efforts to contextualize abstract topics, like sustainability, through active learning methods even without immersion experiences.

Technological Content Knowledge (TCK) was reflected in examples where tech tools enhance business understanding, such as data visualization for analytics or blockchain simulations. Technological Pedagogical Knowledge (TPK) is vital in transforming traditional instruction into tech-enhanced learning, as seen in the use of flipped classrooms or asynchronous modes to address access gaps.

The core of the framework, TPACK, captures the educators' ability to integrate these domains holistically. Set within the Philippine educational context, institutional challenges

like outdated infrastructure and limited faculty training serve as critical barriers but also opportunities for strategic intervention and innovation.

Table 6 presents a detailed explanation of how the TPACK-aligned strategies relate to the dispositional themes generated from the study. Each strategy directly supports the development of faculty dispositions needed to teach business courses effectively in a digital, global, and sustainable world.

This relationship between strategy and disposition creates a coherent framework for reforming curriculum, pedagogy, and institutional systems toward more transformative business education.

**DT1 – Adaptive Mindset toward Technological Integration**

Educators with an adaptive mindset embrace ongoing change. These strategies reinforce adaptability by enhancing their ability to integrate evolving tools into instruction. By mastering TK, TCK, and TPK, teachers move beyond static teaching methods, making innovation part of their professional identity. This supports curriculum responsiveness to technological advances.

**DT2 – Global Awareness and Cultural Sensitivity**

Global competencies require educators to understand and teach within a broader cultural context. Strategies under PK, CK, and full TPACK implementation align course content with globally oriented pedagogy, even without physical immersion. These approaches foster empathy, inclusivity, and readiness for global business dynamics.

**DT3 – Commitment to Sustainability and Ethical Responsibility**

Educators committed to sustainability view business through an ethical and environmental lens. By aligning ESG content with innovative delivery methods, they transform sustainability from a peripheral topic to a guiding principle. These strategies allow ethical responsibility to be taught as a practical, data-driven, and essential component of business education.

**DT4 – Resilience in the Face of Institutional Constraints**

Resilience arises when educators persist despite bureaucratic or infrastructural barriers. These strategies empower faculty to deliver quality education through resourceful, flexible, and context-sensitive methods. Faculty who adapts pedagogical approaches or advocate for systemic change can bridge gaps between aspiration and institutional limitations.

**DT5 – Equity-Oriented Perspective on Digital Access**

Equity-minded educators acknowledge disparities in digital access and design interventions accordingly. These strategies mitigate the digital divide by focusing on inclusive content delivery, equitable resource distribution, and pedagogical flexibility. The result is a more just and accessible business education for all learners, regardless of socioeconomic background.

## 6. Conclusion

The study *"Teaching Business in a Digital World: A TPACK-Informed Phenomenological Study on Curriculum Alignment with Technology, Globalization, and Sustainability"* revealed that while business educators demonstrate strong professional commitment and adaptability, they face significant institutional, technological, and pedagogical challenges in aligning the curriculum with 21st-century demands. Emerging technologies such as AI, blockchain, and data analytics are moderately integrated, but faculty digital preparedness remains uneven due to gaps in training and limited access to infrastructure.

Strategies to develop students' global business competencies such as localized case studies and intercultural discussions are in place, yet they fall short without immersive global exposure. Similarly, sustainability and ESG principles are introduced but often treated as supplemental rather than core themes, constrained by outdated materials, time limitations, and systemic inertia.

Through the lens of the Technological Pedagogical Content Knowledge (TPACK) framework, the study emphasizes the need for holistic faculty development that combines technological fluency, content mastery, and adaptive pedagogy. The dispositional themes such as resilience, global awareness, ethical responsibility, and equity highlight the human dimension of digital transformation in education.

Meaningful and future-ready curriculum reform must address structural barriers, bridge the digital divide, and empower educators through strategic institutional support and capacity-building. Only by doing so can business education truly equip students with the competencies needed to thrive in a digitally connected, globally integrated, and sustainability-conscious economy.

## 7. Recommendations

Based on the findings, the study recommends that institutions prioritize structured faculty development programs that integrate TPACK principles, equipping educators with technological, pedagogical, and content expertise. Business curricula should be reformed to embed emerging technologies, global competencies, and ESG principles as core components, not supplementary topics. Investments in digital infrastructure and equitable access are critical to bridge the digital divide.

Institutions must streamline bureaucratic processes to accelerate curriculum innovation and provide support for experiential, interdisciplinary, and industry-linked learning. Fostering a culture of adaptability, global-mindedness, and sustainability among educators will ensure business education remains relevant in an evolving digital world.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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