

EXPLORING DIGITAL PLATFORMS IN COLLABORATIVE LEARNING AND COMMUNICATION DEVELOPMENT AMONG ACADEMICS IN MALAYSIAN PUBLIC UNIVERSITIES

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Abstract

Purpose: This study investigates how academics in Malaysian public universities employ digital platforms to enhance collaborative teaching practices and communication competencies. Theoretically, the research aims to move the discourse beyond basic digital literacy to "strategic communicative competence," shifting the focus from technical proficiency to strategic medium selection.

Design/Methodology/Approach: Adopting a qualitative interpretivist approach, the study utilized semi-structured interviews with 12 academics selected through purposive sampling from leading Malaysian Institutions. The research design was grounded in two theoretical frameworks: Technological Pedagogical Content Knowledge (TPACK) and Media Synchronicity Theory (MST). Thematic analysis was employed using a hybrid coding approach to identify patterns regarding technology adoption and communication dynamics.

Findings: The findings reveal a "stratified digital ecosystem" where educators blend mandated institutional Learning Management Systems (e.g., Moodle) with productivity suites (e.g., Google Workspace) and interactive tools (e.g., Padlet). The study identifies that successful integration depends on "strategic synchronicity alignment," where academics match media capabilities to pedagogical goals. Furthermore, digital platforms serve as a "safe harbor" that democratizes participation for introverted students and facilitates borderless communication by integrating global experts into the virtual classroom.

Originality: This research contributes to the field by applying Media Synchronicity Theory (MST) to the educational context, providing a vocabulary for academics to understand why certain collaborations succeed or fail based on the match between tool speed and task depth. It distinguishes itself by defining the specific "stratified digital ecosystem" utilized in Malaysian public universities and linking platform usage directly to the development of professional soft skills like text-based precision and "netiquette".

Practical and Social Implications: Institutions should adopt "blended ecosystems" that prioritize pedagogical purpose over technical instruction, ensuring technology serves as a strategic tool rather than a superficial addition. This approach democratizes learning by reducing social anxiety

for introverted students while fostering the intercultural networking skills essential for the 21st-century workforce.

Keywords: Communication Development, Digital Platforms, Collaborative Learning, Malaysia.

1. INTRODUCTION

Integrating digital platforms into higher education has significantly transformed how academics communicate and collaborate effectively. In Malaysian public universities context, platforms such as messaging applications, learning management systems, video-conferencing tools, and collaborative document editors are extensively used to facilitate interaction and knowledge sharing, and overall better learning and teaching purpose. Furthermore, this digital revolution is also influencing the labour market. This necessitates a thorough revision and upgrade of the educational system that is being used at the moment to meet the demands of the Fourth Industrial Revolution (IR 4.0). It should be noted that digital platforms can enable much more interactive and better flexible learning environments for learners. They can also support resource sharing and peer-to-peer engagement effectively. On an international level, such platforms can tremendously influence both synchronous and asynchronous learning by allowing educators to access materials and engage in discussions flexibly (Panigrahi *et al.*, 2018). Likewise, in Malaysia, the government's initiative to promote digital transformation, as stated in the Malaysia Education Blueprint 2013-2025, makes the adoption of these tools particularly critical. A key factor is the importance of collaborative learning, which is an effective strategy used by instructors for improving student engagement, cooperation, and critical thinking; skills are indispensable and necessary for the 21st-century workforce. According to Ndaba and Naidoo (2024), for digital transformation to be successful, HEIs must move beyond just adopting technology and focus on advancing employee capabilities. They recommend that institutions improve planning, secure better funding for infrastructure, and ensure clear communication strategies to foster acceptance and competence among support staff.

Despite the widespread adoption of digital tools particularly in Malaysian context, a significant gap exists in understanding the strategies that can optimize these platforms for fostering collaboration among academics (Matee *et al.*, 2023). While institutions may implement tools that enhance administrative efficiency, they often fail to facilitate meaningful knowledge co-creation or strategic professional interaction. A critical problem remains on the "synchronicity alignment," where academics struggle to match the speed of a tool with the depth of a task (Dennis *et al.*, 2008). Furthermore, Malaysian educators often face challenges such as a lack of awareness regarding practical advantages and inadequate technological infrastructure (e.g., Ismail, 2025). Theoretically, this research moves the discourse beyond basic digital literacy to "strategic communicative competence". By applying MST, it offers a vocabulary for academics to understand why certain collaborations succeed or fail, shifting the focus from technical proficiency to strategic medium selection. Practically, the findings provide evidence-based suggestions for policymakers and educators to integrate digital tools effectively, aligning with Malaysia's

Education 4.0 goals and the ASEAN ICT Masterplan. Therefore, the following research questions were proposed.

RQ1: What digital platforms do academics in Malaysian public universities employ in collaborative learning?

RQ2: How do digital platforms support the development of communication competencies among academics in collaborative teaching practices in Malaysian public universities?

2. LITERATURE REVIEW

In Malaysia, the government has prioritized digital transformation through initiatives such as the Malaysia Education Blueprint 2013-2025 and the Industry 4WRD policy (Ministry of Education Malaysia, 2013; MIDA, 2020). While platforms like Moodle, Google Classroom, and Microsoft Teams are prevalent, their effective adoption requires more than just availability; it demands supportive institutional structures and adequate training (Aduba and Mayowa-Adebara, 2022). Despite high internet penetration, reaching 97.4% of the population by 2024, challenges remain, including limited faculty participation, inadequate infrastructure, and a tendency to prioritize "style over substance" in digital presentations (Kemp, 2024).

In this study two primary theoretical models are utilized: Technological Pedagogical Content Knowledge (TPACK), which describes the complex interaction between an educator's knowledge of technology, pedagogy, and content (Mishra and Koehler, 2006). In the Malaysian context, TPACK provides a structured approach to understanding how academics integrate digital platforms not just as add-ons, but as core components of teaching design. Media Synchronicity Theory (MST) posits that communication performance depends on matching media capabilities, such as transmission velocity, symbol variety, rehearsability, and reprocessability, to the "conveyance" (information transmission) or "convergence" (consensus building) needs of a task (Dennis *et al.*, 2008).

Furthermore, two complementary lenses guide this study. First, Technological Pedagogical Content Knowledge (TPACK) which conceptualizes how educators integrate technology, pedagogy, and content knowledge to enhance teaching (Mishra and Koehler, 2006). The second lens is Media Synchronicity Theory (MST), which explains how the capabilities of communication media influence shared understanding. According to MST, performance depends on matching platform capabilities, such as symbol variety and parallelism, to the needs of the task (Dennis *et al.*, 2008).

The Evolution of Digital Education and Global Trends

Digital platforms are now essential tools that facilitate both synchronous and asynchronous learning allowing educators to access materials and engage in discussions with unprecedented flexibility (Panigrahi *et al.*, 2018). This shift is part of a broader digital revolution that is necessitating new competencies for teachers and prompting a complete overhaul of educational

systems to meet the demands of the modern labor market (Anackovski *et al.*, 2021). Digital platforms, including Learning Management Systems (LMS) like Moodle and Blackboard, serve as central hubs for course materials and communication, while emerging technologies such as Artificial Intelligence (AI) and Virtual Reality (VR) are beginning to offer personalized and immersive learning paths (Alavi and Leidner, 2001; Jacobsen, 2023; Llanos-Ruiz *et al.*, 2025).

Collaborative Learning in the Digital Age

Collaborative learning involves groups of individuals working together to solve problems or create products, fostering a positive environment that enhances critical thinking and motivation (e.g., Klippen and Keles, 2025). Digital platforms amplify these benefits by facilitating knowledge sharing and co-creation across institutional and geographical boundaries (Brindley *et al.*, 2009). Research indicates a significant relationship between learning performance and student satisfaction when collaborative learning is conducted via social networking platforms (Scager *et al.*, 2016). Furthermore, the use of social media in collaborative contexts has been shown to improve academic performance by fostering significant contact between participants and supervisors (Alavi *et al.*, 2025). Irfan *et al.* (2018) highlight that social media platforms, particularly Facebook, are essential marketing tools for Malaysian universities to attract international students and enhance their global reputation. The study finds a positive correlation between active social media engagement, measured by likes, posts, and total interaction, and improved university rankings, demonstrating that digital presence is a critical determinant of institutional success.

While TPACK focuses on the educator's capacity to weave technology into pedagogy, MST provides the specific criteria for selecting the most effective tool for a given communicative task. A lecturer with high Technological Pedagogical Knowledge (TPK) demonstrates expertise by intuitively applying MST principles: selecting high-synchronicity tools like Zoom for debates (convergence) and high-rehearsability tools like discussion forums for reflection (conveyance) (Dennis *et al.*, 2008). This integration moves the discourse from basic digital literacy to "strategic communicative competence," where successful adoption is defined by the strategic alignment of media capabilities with pedagogical goals.

3. METHODS

This study employs a qualitative interpretivist approach to explore the adoption and integration of digital platforms in collaborative learning among public university academics in Malaysia. Qualitative methods, particularly thematic analysis, are utilized for their ability to unravel complex social phenomena and provide rich, in-depth insights into the lived experiences and perceptions of participants (Creswell and Poth, 2018). The research design is grounded in two primary theoretical lenses: the Technological Pedagogical Content Knowledge (TPACK) framework and Media Synchronicity Theory (MST). While TPACK focuses on the integration of technology into teaching design, MST provides the lens to analyze how different platforms support communication

processes such as feedback, shared understanding, and coordination (Dennis *et al.*, 2008; Mishra and Koehler, 2006).

A total of 12 academic informants from Malaysian public universities were selected using purposive sampling. The participants were drawn from leading institutions identified by the QS World University Rankings: Southeast Asia 2025. Participants were chosen based on specific selection criteria such as employment as academics at Malaysian public universities to ensure a standardized educational context, active involvement in teaching courses that incorporate collaborative learning; Demonstrated use of digital platforms in their teaching or professional collaboration practices

The primary data collection method consisted of semi-structured interviews, which offered the flexibility and depth required to examine complex communication processes. The interview protocol was specifically designed to align with the study's theoretical frameworks: TPACK-aligned questions explored how academics adopt and integrate digital tools into their pedagogy. MST-aligned questions focused on communication dynamics, including real-time versus delayed interaction, message preparation, and information review. Interviews lasted between 45 to 60 minutes and were conducted either face-to-face or via video conferencing, depending on the informant's preference. All sessions were audio-recorded with participant consent and transcribed verbatim for analysis.

The study utilized thematic analysis to identify and report patterns within the interview data (Braun and Clarke, 2006). A hybrid coding approach was implemented, combining deductive codes derived from TPACK and MST constructs (such as "Conveyance" and "Convergence" capabilities) with inductive codes that emerged directly from the participants' narratives. The analysis followed six rigorous stages:

The analysis process began with familiarization with the data, achieved through repeated readings of the transcripts. This initial step was followed by coding to identify relevant segments that pertained to technology adoption and communication. Subsequently, potential themes were generated to reflect the key aspects of the theoretical framework. The themes were then carefully reviewed and refined to ensure coherence and distinction. After establishing clear conceptual boundaries, the themes were defined and named. Finally, a comprehensive report was produced, which included direct quotations to effectively illustrate the findings in practice.

To ensure the study's validity and reliability, several strategies such as triangulation of data sources, as well as member checking with participants, and peer debriefing were implemented carefully. Carefully ethical considerations such as anonymity of the interviewees were prioritized throughout the process. The interviewees all signed informed consent, and briefed about the protection of participant confidentiality, as well as the right to withdraw from the study at any time.

4. RESULTS

Data were obtained from 12 informants representing 12 Malaysian public universities. To preserve confidentiality, informants were assigned letter identifiers (Interviewees A–L) and their institutions were coded as U1–U12. The analysis generated five themes related to the usage of digital platforms (RQ1) and five themes related to the communication competencies developed through digital platform use (RQ2).

A hybrid coding approach was employed, combining deductive categories derived from the research questions and relevant literature with inductive codes that emerged from the interview data. Initial tool-specific and practice-based codes were generated and subsequently collapsed into higher-order affordance concepts during theme review and definition, following Braun and Clarke's (2006) procedures. The resulting hierarchical structure of themes, subthemes and concepts is presented in Appendix Table A1.

4.1. The Usage of Digital Platforms in Malaysian Public Universities (RQ1)

The analysis identified five themes that characterise how academics select and use digital platforms within a stratified digital ecosystem.

Theme 1: Institutional Platform Usage for Compliance and Administration

Institutionally mandated learning management systems (LMS) form the governance layer of digital practice. Across institutions, LMS platforms were described as compulsory submission portals that ensure assessment traceability and audit compliance. Informants emphasised that “the final submission link must always be on the official LMS for audit purposes” (Interviewee B, U2), indicating that platform selection at this level is policy-driven rather than pedagogically motivated.

In addition to their compliance function, LMS environments operate as administrative content hubs hosting course materials, announcements and grading workflows. However, they were consistently characterised as repositories for formal artefacts rather than sites of active collaboration. Lecturers therefore maintained LMS usage for record keeping while shifting interactive activities to external platforms. This demonstrates a structural separation between formal governance systems and pedagogical interaction spaces, positioning the LMS as an institutional backbone that constrains but does not determine collaborative practice.

Theme 2: Usage of Productivity Platforms for Real-Time Collaborative Knowledge Construction

Shared cloud-based productivity tools were selected when tasks required synchronous knowledge production. Platforms such as Google Docs enabled lecturers to observe students “edit the target text simultaneously and correct their terminology on the spot” (Interviewee B, U2), making cognitive processes visible through revision histories and comment threads.

These environments supported collaborative artefact creation, including shared glossaries, co-authored texts and distributed research writing among colleagues. Informants described real-time

co-authoring across campuses as a “game changer” for joint teaching and publication work (Interviewee A, U1). However, the parallel use of Google and Microsoft ecosystems introduced workflow fragmentation and increased cognitive load, indicating that collaborative affordances are accompanied by coordination costs. Overall, productivity platforms function as the knowledge construction layer of the digital ecosystem.

Theme 3: Usage of Engagement and Visualisation Platforms for Participation Activation

Visual boards and gamified response systems were adopted to transform participation dynamics rather than to deliver content. Tools such as Padlet enabled lecturers to monitor visible peer interaction and formative dialogue, while quiz-based platforms generated rapid feedback loops that sustained attention (Interviewee F, U6).

Low-threshold communication channels, particularly chat functions, reduced psychological barriers for reticent students, who were described as becoming progressively more willing to contribute (Interviewee G, U7). These platforms also supported multimodal co-creation through shared visual artefacts. Nevertheless, group-based outputs complicated the assessment of individual communication performance, highlighting a tension between participation visibility and evaluative precision. This layer therefore functions primarily as a participation activation mechanism.

Theme 4: Usage of Informal Communication Platforms for Temporal Coordination

Messaging applications operated as rapid coordination infrastructures that sustained interaction beyond scheduled sessions. WhatsApp groups were established at the beginning of courses to ensure immediate dissemination of information and workflow continuity (Interviewee F, U6), while postgraduate supervision frequently relied on informal discussion channels that enabled fluid idea exchange (Interviewee E, U5).

Despite their central role in maintaining relational presence, these interactions were not institutionally archived, limiting their use for assessment and reducing lecturer visibility compared to open platforms. Informal tools therefore function as the temporal coordination layer, prioritising responsiveness over pedagogical design and auditability.

Theme 5: Usage of Specialised and Immersive Platforms for Authentic Professional Communication

Specialised digital environments were adopted when disciplinary tasks required alignment with professional communicative practices. Examples included VR simulations replacing traditional laboratory activities (Interviewee C, U3) and cloud-based CAT tools that replicated industry translation workflows (Interviewee B, U2).

Role-based simulations in global classrooms required students to moderate discussions and manage breakout sessions, mirroring professional meeting structures (Interviewee J, U10). Industry-facing presentations to external panels and cross-border collaborations further embedded

communication within authentic evaluative contexts (Interviewee L, U12). Studio-based teaching environments such as lightboard and livestream platforms integrated communication into complex artefact production (Interviewee K, U11).

Adoption of these tools was lecturer-initiated and outcome-driven, indicating that specialised platforms constitute the professional practice layer of the ecosystem and generate advanced communicative competencies.

4.1.1. Summary of Findings for RQ1

The findings for RQ1 indicate that academics operate within a stratified digital ecosystem comprising five interrelated categories of platform use which comprises of institutional systems, productivity tools, engagement platforms, informal messaging channels and specialised professional environments. At the core is the Institutional Backbone, consisting of mandated, often rebranded Moodle-based LMS platforms (e.g., Spectrum, Kalam) paired with university-subscribed conferencing tools like Webex or Microsoft Teams. This is supported by a Productivity Layer where Google Workspace and Microsoft 365 are preferred for real-time co-authoring and file sharing. To enhance student engagement, academics supplement these official tools with a Specialized Engagement layer, utilizing interactive platforms like Padlet and Canva alongside niche technologies like VR and the Metaverse. Finally, an Informal Communication layer, dominated by WhatsApp, serves as the universal "rapid alert system" for group management. Ultimately, while institutions mandate specific infrastructures, Malaysian academics exercise significant pedagogical autonomy by blending official, personal, and specialized tools to create a functional collaborative environment.

4.2. Communication Competencies Developed Through Digital Platform Use (RQ2)

The findings show five themes describing the communicative outcomes associated with participation in this stratified digital environment.

Theme 1: Democratisation of Participation and Confidence Development

Digital environments reduce participation anxiety by enabling low-risk modes of expression. Informants observed that previously silent students began contributing after engaging in repeated collaborative tasks (Interviewee E, U5), while chat-based interaction provided an accessible entry point for shy learners (Interviewee G, U7).

Asynchronous forums further supported reflective engagement by allowing students time to formulate responses (Interviewee F, U6). Group tasks distributed communicative roles, enabling multiple forms of participation beyond verbal performance. These practices collectively facilitated progressive confidence building and participation democratisation.

Theme 2: Professionalisation of Collaborative Dialogue

Shared documents enabled dialogic peer feedback, requiring students to justify revisions and respond to critique in visible comment threads (Interviewees A and B). Lecturers explicitly taught

digital communication etiquette, focusing on tone, clarity and respectful feedback to mitigate misunderstandings in text-based interaction (Interviewees B and D).

Structured online activities developed facilitation skills, including moderating discussions and managing question-and-answer sessions (Interviewee J). At the postgraduate level, remote co-authoring transformed supervisory dialogue into an ongoing collaborative writing process. These practices reflect the emergence of professionally oriented digital communication norms.

Theme 3: Conflict Resolution, Consensus Building and Teamwork

Collaborative digital artefacts required students to negotiate differing perspectives and reach agreement on shared outputs. Communication was framed as the ability to “discuss and work together” to achieve consensus (Interviewee I, U9). Peer review activities reinforced mutual accountability, while breakout discussions created structured environments for monitored teamwork (Interviewees F and K). These processes cultivated negotiation, conflict resolution and collective decision-making competencies.

Theme 4: Development of Intercultural and Global Communication Competence

Digital platforms enabled interaction with international academics and industry experts, exposing students to diverse communicative styles (Interviewee B). Cross-border collaborations required adaptation to cultural differences and presentation to external audiences (Interviewee L).

In technical and clinical contexts, role-based coordination emphasised communicative accuracy and professional responsibility (Interviewee H). These experiences extended communication beyond local classroom norms and supported intercultural and profession-linked communicative competence.

Theme 5: Academic Collaboration and Co-Teaching Communication

Digital workspaces facilitated real-time co-creation of teaching materials and research outputs among academics, described as transforming collaborative workflows (Interviewee A). Online seminars and international partnerships supported sustained scholarly dialogue and network formation.

Shared scheduling and planning tools streamlined coordination in co-teaching arrangements (Interviewee H). These practices demonstrate that the communicative impact of digital platforms extends beyond student learning to academic collaboration and professional networking.

4.2.1. Summary of Findings for RQ2

The findings indicate that digital platforms enhance communication competencies through three primary mechanisms: the democratization of participation, the professionalization of interaction, and the expansion of global exposure. By providing a "safe harbor" that reduces psychological barriers, digital tools effectively activate introverted or passive students, allowing for a democratization of voice where task-based roles—such as technical backend contributions—allow diverse personalities to flourish. Simultaneously, these platforms foster professional skill-building

by necessitating precision in text-based collaboration and requiring students to navigate real-time negotiation, conflict resolution, and digital netiquette within shared workspaces. Finally, digital integration acts as a bridge to industry, facilitating borderless communication that connects students with international experts and professional standards, thereby elevating their competencies from localized classroom interactions to a globalized professional context. Together, the findings indicate that academics operate within a stratified digital ecosystem in which different categories of platform usage (RQ1) generate distinct but interrelated communication competencies (RQ2).

5. DISCUSSION

The findings of this study reveal that academics in Malaysian public universities operate within a "stratified digital ecosystem". This ecosystem is characterized by three distinct layers: an institutional backbone (mandated LMS like Moodle, Spectrum, or U8 (university name)-Folio), a productivity layer (Google Workspace and Microsoft 365), and specialized engagement tools (Padlet, Canva, or VR).

Aligned with Media Synchronicity Theory (MST), a significant finding is the strategic "synchronicity alignment" practiced by academics. In line with Dennis *et al.* (2008), participants consciously select tools based on whether the task requires "conveyance" (information sharing) or "convergence" (reaching consensus). For instance, while official platforms like Webex or Teams are used for synchronous lectures (convergence), Google Docs and Padlet are preferred for asynchronous co-creation and brainstorming (conveyance). This confirms the assertion by Panigrahi *et al.* (2018) that the flexibility of digital tools is essential for modern pedagogical engagement.

The study highlights that digital platforms act as a "safe harbor" for introverted students, allowing them to contribute via text-based functions more comfortably than in face-to-face settings. This supports the findings of Scager *et al.* (2016) regarding the positive relationship between social networking platforms and student engagement. However, the results also reveal a "nuance gap" in which, while platforms facilitate participation, they also necessitate explicit training in "netiquette" and text-based precision to avoid miscommunication. This contrasts with traditional views that digital literacy is purely technical, reinforcing the study's call for "strategic communicative competence".

Unlike traditional classroom settings, digital platforms enable "borderless communication". Academics are increasingly using tools like Zoom and YouTube Live to bring international experts and industry practitioners directly into the virtual classroom. This finding aligns with the goals of the Malaysia Education Blueprint 2013-2025 to produce a globally competitive workforce and validates the role of digital platforms in fostering 21st-century skills such as intercultural communication and professional negotiation.

6. CONCLUSION

This study concludes that the successful integration of digital platforms in Malaysian higher education is not merely a matter of institutional subscription but of strategic pedagogical alignment. By synthesizing the TPACK and MST frameworks, the research demonstrates that effective collaborative learning occurs when educators match the technical capabilities of a platform (e.g., rehearsability and parallelism) with the specific communicative goals of their curriculum. It can be concluded that academics exercise high autonomy by blending mandated institutional tools with personal productivity suites to overcome technical limitations. Furthermore, digital platforms facilitate a transition from passive learning to active "professionalized interaction," helping students build confidence and soft skills in a low-pressure environment. Likewise, while infrastructure is widespread, there is a continued need for training that focuses on the "pedagogical why" rather than just the "technical how" to prevent a "style over substance" approach. Implications For policymakers, these findings suggest that institutional policies should move beyond mandating single platforms and instead support a "blended ecosystem" approach. Future research should explore the long-term impact of emerging technologies, such as the Metaverse and Generative AI, on the deepening of academic collaboration and the standardization of soft-skill assessments in digital environments.

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