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ENHANCING THE TEACHING OF FUNDAMENTALS OF INFORMATION TECHNOLOGY (AIS160): A PEDAGOGICAL INVESTIGATION

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Abstract:

This study investigates the impact of interactive and experiential pedagogical strategies on the teaching and learning of the Fundamentals of Information Technology (AIS160) course at Universiti Teknologi MARA (UiTM) Perak Branch, Tapah Campus. Using a mixed-methods design, data were collected from 81 diploma-level students and four instructors through structured questionnaires and semi-structured interviews. The study is grounded in Constructivism, Kolb's Experiential Learning Theory, and the Technological Pedagogical Content Knowledge (TPACK) framework. Quantitative findings reveal that most students reported increased motivation, satisfaction, and understanding of IT concepts following the implementation of hands-on, real-world learning activities. Qualitative data highlight key themes including student preference for gamified assessments, multimedia resources, and collaborative tasks. Instructors noted improved engagement but identified challenges such as limited infrastructure and digital inequity. The results support the integration of experiential and interactive strategies in foundational IT education and underline the need for institutional support and curriculum alignment. Recommendations include enhancing technological infrastructure, promoting peer collaboration, and aligning assessment practices with experiential learning objectives. The study contributes to ongoing discourse on

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pedagogical innovation in higher education and offers practical insights for improving digital learning environments.

Keywords:

Experiential Learning, Interactive Pedagogy, Information Technology Education, Student Engagement, TPACK, Constructivism, Digital Learning, Higher Education

Introduction

In the digital era, Information Technology (IT) has become a cornerstone of modern society, profoundly shaping communication, commerce, education, healthcare, and governance. As the global economy becomes increasingly reliant on digital infrastructure and technological innovation, the demand for professionals equipped with strong IT competencies continues to escalate. To meet this demand, higher education institutions must offer relevant, high-quality, and future-oriented IT education. Foundational IT courses are particularly critical, as they introduce students to essential digital tools, systems, and ethical considerations that form the basis for more advanced learning and real-world application.

However, traditional pedagogical approaches to teaching IT, often rooted in passive knowledge transmission and theory-heavy instruction, may not sufficiently engage students or equip them with the practical and cognitive skills needed in today's dynamic work environments. Modern IT education must go beyond the dissemination of technical knowledge; it should foster critical thinking, collaborative problem-solving, and ethical awareness, while enabling learners to apply concepts in authentic, industry-relevant contexts.

Pedagogical literature increasingly supports the adoption of interactive and experiential learning methods to address these needs. Strategies such as project-based learning, simulations, gamified assessments, and collaborative lab work have been shown to improve student engagement, deepen understanding, and enhance motivation (Kolb, 1984; Prince, 2004; Freeman et al., 2014). These methods are especially relevant in foundational IT courses where students benefit from hands-on experience with software, real-world scenarios, and guided experimentation.

Against this backdrop, this study investigates the pedagogical effectiveness of interactive and experiential learning strategies in the teaching of the Fundamentals of Information Technology (AIS160) course, a diploma-level subject offered by the Faculty of Accountancy at Universiti Teknologi MARA (UiTM). First introduced in 2019 and significantly revised in 2025, AIS160 is a core course embedded in the Diploma in Accountancy program. The revised syllabus aims to provide students not only with foundational IT knowledge but also with practical digital competencies and ethical awareness aligned with the needs of the digital economy.

The course covers a broad spectrum of IT concepts, including computing hardware and software, cybersecurity, digital ethics, and emerging technologies, while emphasizing hands-on skills using spreadsheet, database, word processing, and presentation software. These applications are integrated with accounting-related tasks, offering students direct experience in applying IT tools in professional contexts. The course employs a blended learning model that includes lectures, tutorials, and computer-aided instruction, with increased contact hours (from

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32 to 48) to support more interactive and experiential learning opportunities. Assessments include a mix of group projects, lab tests, mid-semester quizzes, and a final examination, all aimed at evaluating both theoretical understanding and practical application.

Despite these curricular enhancements, a persistent challenge remains aligning teaching practices with the revised learning outcomes. Many instructors continue to rely heavily on traditional lecture-based methods, which may not effectively support active student engagement or the development of transferable, real-world skills. Furthermore, institutional factors such as access to resources, digital readiness, and pedagogical training may influence the adoption and success of more innovative approaches.

The core problem addressed in this study is the disconnect between conventional instructional practices and the pedagogical demands of a digital-first learning environment. While the AIS160 syllabus has evolved to include more practical, ethical, and industry-relevant content, teaching methods have not uniformly adapted to support active and experiential learning. As a result, students may struggle to internalize concepts or transfer their learning effectively to real-world IT and accounting tasks.

This study seeks to evaluate and enhance the teaching of IT fundamentals through pedagogical innovation. Its specific objectives are: To evaluate current teaching practices and student engagement in the AIS160 course; (1) to design and implement innovative pedagogical strategies that emphasize interactivity, real-world relevance, and experiential learning; (2) to assess the impact of these strategies on student satisfaction, engagement, and perceived learning outcomes; and (3) to identify the challenges instructors face in adopting these strategies and the institutional supports required to enable effective implementation.

This research contributes to the broader discourse on student-centered pedagogy, particularly in IT and professional education settings. By exploring how interactive and experiential teaching methods influence student engagement, motivation, and learning outcomes, the study provides evidence-based recommendations for curriculum designers, lecturers, and institutional leaders. It also offers practical guidance on integrating experiential learning theories such as Kolb's Learning Cycle and the TPACK framework into foundational IT instruction.

Ultimately, the findings aim to support the transformation of IT education from passive content delivery to active, skill-building experiences, better preparing students for the ethical, technical, and professional demands of a digitally integrated workforce.

Literature Review

The teaching of Fundamentals of Information Technology (IT) is vital in preparing students for careers in a rapidly evolving digital environment. As IT becomes increasingly embedded in all aspects of society—from commerce and communication to healthcare and education, equipping students with foundational knowledge and practical digital skills has become a priority for higher education institutions. This literature review synthesizes recent research that explores innovative pedagogical approaches aimed at enhancing the effectiveness of IT fundamentals instruction, with an emphasis on interactive learning, experiential methods, student engagement, and technology-enhanced tools.

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The rapid digitalization of education has significantly impacted how information technology is taught and learned at the tertiary level. According to the Organisation for Economic Co-operation and Development (OECD, 2021), digital learning in higher education has the potential to increase flexibility, access, and personalization, key components of student-centered learning. These elements are particularly relevant for courses such as Fundamentals of Information Technology (AIS160), where students must engage with complex, evolving technological tools. The OECD emphasizes the need for institutions to go beyond simply providing access to technology, highlighting the importance of designing pedagogical approaches that actively engage learners and support the development of digital competencies (OECD, 2021). This aligns closely with the use of experiential learning and interactive teaching strategies explored in this study. For instance, hands-on simulations, collaborative projects, and gamified assessments not only align with Kolb's (1984) experiential learning cycle but also reflect best practices recommended by OECD to strengthen engagement in digital learning environments.

Interactive learning has emerged as a powerful pedagogical approach to increase student engagement and comprehension in IT education. Johnson et al. (2018) emphasize that techniques such as simulations, group discussions, and collaborative problem-solving activities promote deeper conceptual understanding and foster active participation. Similarly, Rusmin et al. (2024) highlight that integrating case studies and hands-on projects into IT instruction allows students to gain practical experience and develop critical problem-solving skills.

Kolb's (1984) experiential learning theory provides a robust framework for understanding how students learn through doing. According to this model, learning is a cyclical process involving concrete experiences, reflective observation, abstract conceptualization, and active experimentation. Applying this model to IT education, Mebert (2020) and others have shown that simulations, internships, and real-world projects help bridge the gap between theoretical knowledge and practical application. These strategies also enhance students' ability to retain knowledge and apply it in professional contexts.

Student engagement is widely recognized as a critical determinant of learning success in IT-related courses. Odum et al. (2021) argue that active learning environments, personalized feedback, and collaborative learning opportunities significantly improve student motivation, academic performance, and knowledge retention. These findings support the use of pedagogical methods that place students at the center of the learning experience and encourage meaningful participation.

Recent studies have also addressed how student interaction with technology influences learning outcomes. Lavidas et al. (2022) examined how structural elements, such as clarity of task design and instructor motivation, affect student engagement in web-based environments. Their findings reinforce the value of thoughtfully structured, ethically sound, and interactive learning activities, principles that are directly applicable to IT education. Similarly, Lavidas et al. (2024) applied the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) to understand how perceived usefulness, enjoyment, and habitual behavior shape students' willingness to use AI tools for academic purposes. Their results point to the importance of aligning instructional methods with students' digital behavior patterns.

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Technology-enhanced learning tools, such as online platforms, multimedia presentations, and virtual labs, have revolutionized how IT fundamentals are taught. These tools promote student interaction, facilitate self-paced learning, and offer access to a diverse range of resources. Arora and Chander (2020) note that technology-enhanced learning tools, such as online platforms, multimedia presentations, and virtual labs, have revolutionized how IT fundamentals are taught. These tools promote student interaction, facilitate self-paced learning, and offer access to a diverse range of resources. Strielkowski et al. (2024) further assert that adaptive learning systems, which tailor instruction to individual needs, can optimize the effectiveness of IT education by addressing different learning styles and abilities.

Adding to this discourse, Lampropoulos and Papadakis (2025) explore the educational potential of artificial intelligence (AI) and social robotics. They argue that AI-integrated educational tools and robotic tutors offer adaptive, personalized instruction that can significantly enhance learning outcomes. These technologies not only improve cognitive performance and emotional engagement but also foster collaboration and ethical reflection—a crucial aspect of IT education in professional contexts. Their findings support the use of human-centered and ethically guided AI systems in tertiary education, aligning with experiential and constructivist pedagogical principles.

The OECD (2020) report on Digital Education Outlook further stresses the importance of instructor digital readiness and institutional infrastructure in facilitating effective technology integration. This aligns with the TPACK framework, which emphasizes the intersection of technological, pedagogical, and content knowledge in designing and delivering impactful digital learning experiences. The findings from this study, particularly instructors' feedback regarding resource constraints and the need for technical support, echo the OECD's recommendation for more systemic support in implementing digital learning strategies effectively.

The literature strongly supports the integration of interactive, experiential, and technology-enhanced strategies in the teaching of IT fundamentals. These approaches are associated with improved engagement, deeper understanding, and higher retention rates. As students navigate increasingly complex digital landscapes, it is essential for educators to adopt pedagogical frameworks that are dynamic, student-centered, and responsive to technological advancements. The insights gained from this body of research provide a strong foundation for evaluating and designing more effective, future-ready IT education programs.

Theoretical and Conceptual Framework

The theoretical and conceptual framework for improving the teaching of Fundamentals of Information Technology (IT) through a pedagogical investigation is founded on a combination of pertinent educational theories and models that direct the study's approach to enhancing student learning outcomes and engagement in IT courses. Constructivism is a fundamental theoretical foundation for this investigation, as it contends that learners actively construct their own comprehension of knowledge through reflection and experiences (Jonassen, 1999). A constructivist approach to teaching IT fundamentals emphasizes hands-on activities, problem-solving tasks, and real-world applications to engage students in active learning and promote the development of critical thinking skills. Educators can improve the comprehension and retention of fundamental IT principles by promoting students' knowledge construction through interactions with IT concepts and technologies.

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David Kolb (1984) developed Experiential Learning Theory, stated that learning is an iterative process that entails concrete experiences, reflective observation, abstract conceptualization, and active experimentation, as per Kolb. To apply this theory to the teaching of IT fundamentals, it is necessary to integrate experiential learning activities, including case studies, simulations, and practical projects, to assist students in connecting theoretical knowledge with practical applications in real-world IT contexts. Educators can improve their problem-solving abilities and gain a deeper comprehension of IT concepts by involving students in experiential learning experiences.

The Technological Pedagogical Content Knowledge (TPACK) framework offers a valuable conceptual framework for incorporating technology into the teaching of IT fundamentals, in addition to these theories (Mishra & Koehler, 2006). TPACK underscores the significance of utilizing technology to improve the quality of teaching and learning experiences by focusing on the intersection of pedagogical knowledge, content knowledge, and technological knowledge. Educators can effectively establish dynamic and engaging learning environments for the instruction of IT fundamentals by integrating digital tools, online resources, and interactive platforms through the application of the TPACK framework.

The theoretical and conceptual framework for this pedagogical investigation is based on Constructivism, Experiential Learning Theory, and the TPACK framework. It is intended to facilitate the development and execution of innovative pedagogical strategies that improve student engagement, comprehension, and retention of IT fundamentals. Educators can prepare students for success in the field of Information Technology by establishing a dynamic and technology-enhanced learning environment through the integration of these theories and models.

Methodology

This study employs a mixed-methods approach to gather both quantitative and qualitative data. Data collection occurred in two phases: a questionnaire for students, followed by semi-structured interviews with instructors. Data collections begin on 11th of May 2025 – 30th May 2025. Questionnaires were distributed to 483 students of UiTM Perak Branch Tapah Campuses who enrolled in AIS160 course. However, only 81 students answered the distributed questionnaire. Interviews were conducted in May 2025 with four (4) instructors teaching the AIS160 course with varying levels of experience, ranging from 2 to 6 years in teaching IT fundamentals.

In accordance with ethical research practices, this study followed strict guidelines for research involving human participants. Ethical approval was obtained from the Research Ethics Committee of Universiti Teknologi MARA (UiTM) prior to data collection. The study was conducted in line with the principles of the Declaration of Helsinki and the Malaysian Code of Responsible Conduct in Research (MCRCR). All participation was voluntary, and both students and instructors received clear information about the study's purpose, the nature of the data collected, and how the data would be used. Written informed consent was secured from all participants prior to their involvement.

To maintain confidentiality, no personally identifiable information was gathered. Data were anonymized during transcription and analysis, and pseudonyms were used when reporting qualitative findings. All research data were securely stored and accessible only to the principal

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researcher and authorized research assistants. Participants were informed of their right to withdraw at any stage without penalty, and no incentives or coercive measures were used to encourage participation. The study posed minimal risk, as it explored teaching and learning experiences without addressing sensitive or psychological topics. Throughout the process, participants were treated with respect and encouraged to provide honest and open feedback in a secure and supportive environment.

Data Collection

Questionnaires: The questionnaires consisted of 20 items, using a mix of Likert scale questions, multiple-choice questions, and open-ended questions. The questions addressed participants' views on teaching methods, challenges, resources, and perceived student engagement and learning outcomes.

Interviews: Semi-structured interviews were conducted with four instructors out of the ten who taught AIS160 at the time. The interviews explored their perspectives on interactive and experiential teaching strategies, implementation challenges, and perceived student responses.

Data Analysis

The quantitative data from the questionnaires were analyzed using descriptive statistics, including mean scores and frequency distributions. Qualitative data from interviews were coded thematically using NVivo software to identify patterns and trends related to teaching strategies, student engagement, and challenges faced in the classroom.

Table 1: Instructor Participant Profiles

Instructor ID	Years of Teaching AIS160	Years of Teaching	Current Teaching Approach	Use of Interactive Methods
I1	3 years	11 years	Discussion with examples	Yes – simulations, peer teaching, gamified activities
I2	6 years	22 years	Interactive and responsive	Yes – mini projects, real-life case studies
I3	2 years	21 years	Lecture and hands-on	Yes – case studies, PBL, interactive labs
I4	5 years	15 years	Mixed (Teacher-centered, Student-centered)	Yes – productivity software, quizzes, collaborative work

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Table 2: Student Respondent Demographics (n = 81)

Variable	Category	Count (n)	Percentage (%)
Program Enrolled	Diploma in Accountancy	81	100%
Gender	Not collected	–	–
Prior IT Knowledge	Low / Very Low	45	56%
Self-Reported Engagement	High / Very High	53	65%
Noted Pedagogical Change	Yes	61	77%

The study involved four instructors teaching the AIS160 course and 81 student respondents. Table 1 summarizes the profiles of the participating instructors. Their teaching experience ranged from two to six years. All instructors reported using at least some form of interactive or experiential teaching method, including simulation exercises, peer learning, case studies, productivity software training, and collaborative project work. While each instructor described a slightly different teaching style (ranging from discussion-based lectures to blended approaches that combined teacher- and student-centered learning, all demonstrated active engagement with the pedagogical principles central to this study) particularly the integration of hands-on tasks and real-world applications. However, additional demographic details such as academic qualifications, gender, or digital proficiency were not collected, limiting the ability to analyze how instructor characteristics may influence their pedagogical choices.

Table 2 presents available demographic and descriptive data on the 81 student participants. All were enrolled in the Diploma of Accountancy program at UiTM Perak Branch, Tapah Campus. While the questionnaire did not include items on gender or age, students were asked about their familiarity with IT prior to taking the course. More than half (56%) rated their initial IT knowledge as low or very low. Despite this, 65% reported high or very high engagement levels during the course, and 77% acknowledged noticeable changes in teaching methods that incorporated interactive and experiential elements. These data support the interpretation that pedagogical innovations were broadly recognized by students and may have contributed to higher motivation and perceived comprehension. Nevertheless, the absence of more detailed demographic variables restricts the ability to conduct subgroup analyses and evaluate differential effects across student populations.

Together, the instructor and student profiles highlight the contextual scope and limitations of the study. While rich in descriptive insights, the data must be interpreted within the bounds of a single-institution sample with partial demographic coverage.

Findings (Students' Perspective)

The findings of this study are derived from both quantitative and qualitative responses collected from 81 students enrolled in the AIS160 course. The data provide insight into students' perceptions of teaching strategies, engagement, and their understanding of IT fundamentals following the implementation of innovative pedagogical methods.

Quantitative Findings

Descriptive statistics were used to analyze students' responses to closed-ended survey questions showed in Figure 1. Prior to taking the AIS160 course, most students (56%, $n = 45$) reported having low or very low familiarity with Information Technology (IT) concepts. Despite this, post-course responses indicated a high level of satisfaction and engagement with the course.

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A total of 83% (n = 67) of students expressed satisfaction or high satisfaction with the current teaching methods, while 65% (n = 53) felt very or extremely engaged during class sessions. Notably, 77% (n = 62) perceived the teaching practices as very effective or extremely effective in helping them understand IT fundamentals.

Additionally, 77% (n = 61) of respondents observed changes in teaching methods that incorporated interactive and experiential learning activities. A substantial 86% (n = 70) reported high levels of enjoyment when participating in hands-on activities, simulations, or interactive tasks. The inclusion of real-world applications was also positively received, with 91% (n = 74) agreeing or strongly agreeing that these applications were beneficial to their understanding of IT concepts.

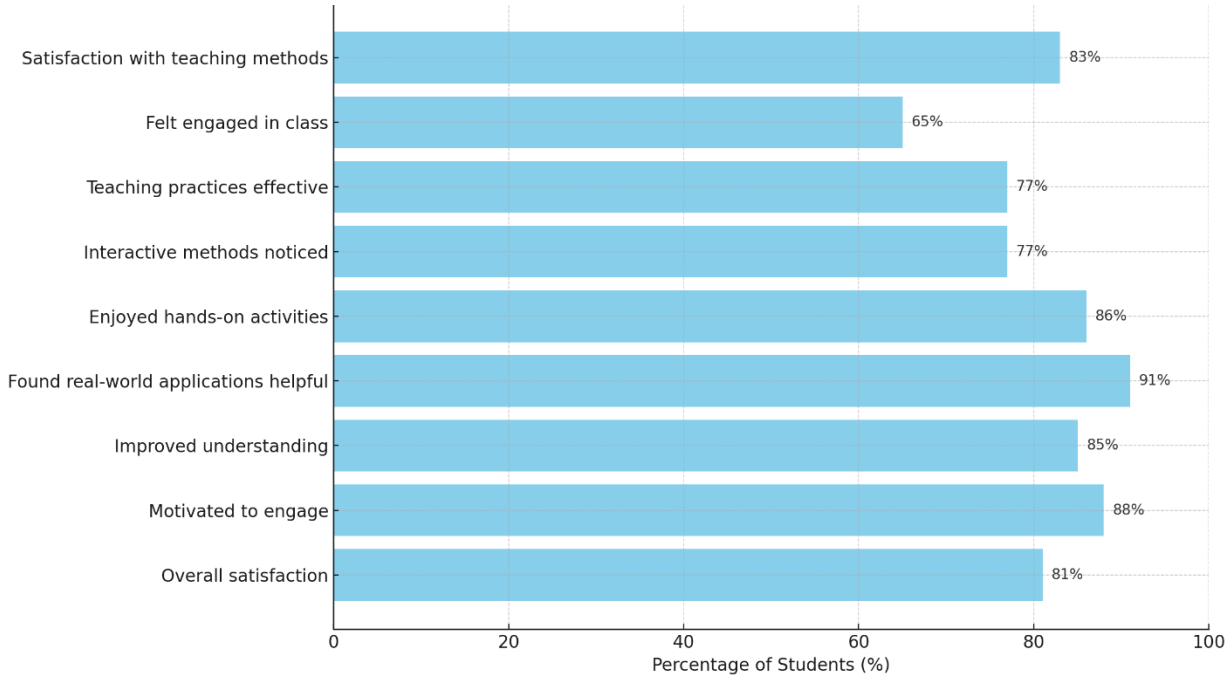

Figure 1: Students' Perception of AIS160 Teaching Methods

When asked about the impact of innovative teaching strategies, 85% (n = 69) indicated a significant or very significant improvement in their understanding of the subject matter. Furthermore, 88% (n = 71) reported feeling very or extremely motivated to engage more with course content. Overall satisfaction with the course following the implementation of innovative strategies stood at 81% (n = 66).

Qualitative Findings

Qualitative data were analyzed using thematic analysis. Several key themes emerged from the students' open-ended responses:

1. Hands-On Learning Preference.

A majority of students emphasized the importance of practical engagement, such as coding exercises, simulations, and lab-based learning. Statements such as "more hands-on projects" and "doing real-life problem-solving activities" were frequently mentioned.

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2. Gamification and Interactive Quizzing.
Students widely endorsed tools like Quizizz, Kahoot, and Blooket, suggesting that such gamified methods help reinforce theoretical knowledge and maintain engagement.

3. Real-World Applications and Demonstrations.
Many students highlighted a desire for real-world case studies and the physical demonstration of hardware components, noting that this approach helped contextualize abstract concepts.

4. Visual Aids and Multimedia Integration.
Students called for the increased use of tutorial videos, infographics, and interactive slides. These resources were seen as beneficial for students who prefer visual learning modalities.

5. Adaptive and Self-Paced Support.
Several students mentioned the usefulness of recorded materials and self-directed practice, with one student noting, "It helps me learn when I fix problems or build things."

6. Peer Learning and Group Activities.
Collaborative learning opportunities such as student presentations and group discussions were suggested to enhance memory retention and engagement.

7. Motivation and Reduced Monotony.
Some students expressed that traditional lecture-heavy formats led to disinterest or fatigue, but these feelings were mitigated when engaging in interactive sessions involving technology or games.

Discussion (Students' Perspective)
The results of this study indicate that the implementation of innovative, interactive, and experiential teaching strategies in the AIS160 course significantly enhanced students' motivation, understanding, and engagement in the study of IT fundamentals. These results are in accordance with previous research that has demonstrated the potential of active learning methods to improve conceptual comprehension, increase learner satisfaction, and cultivate positive attitudes toward technology-based subjects (Freeman et al., 2014; Prince, 2004).

Initially, most students reported a lack of familiarity with IT concepts. Nevertheless, students reported significant improvements in both engagement and comprehension because of exposure to dynamic teaching practices, such as simulations, hands-on tasks, real-world applications, and interactive assessments. This implies that experiential learning not only facilitates the acquisition of knowledge but also serves as a bridge between theory and practice, a conclusion that is corroborated by Kolb's (1984) experiential learning theory.

Furthermore, qualitative responses underscored the necessity of consistent emphasis on adaptive content delivery, real-world case studies, gamified learning tools (e.g., Kahoot, Quizizz), and hands-on activities. Many students observed that the appreciation of practical tasks was a significant factor in their sustained motivation, and they expressed a strong preference for learning through doing. These themes bolster the constructivist perspective on learning, which posits that students actively construct knowledge rather than passively receiving information (Bruner, 1961).

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Interestingly, although most students expressed satisfaction with the course, several students expressed apprehensions regarding the excessively theoretical nature of the lessons and recommended that the weight of practical assessments, such as lab tests, be increased in comparison to traditional quizzes. This discovery underscores the significance of coordinating assessment methodologies with the experiential nature of instructional strategies.

Furthermore, students observed the efficacy of integrating multimedia resources, including tutorial videos, infographics, and real-time demonstrations. This corresponds with Mayer's (2009) cognitive theory of multimedia learning, which asserts that individuals acquire more profound knowledge from words and images than from words alone.

Findings (Instructors' Perspectives) (Qualitative Analysis)

Years of Teaching Experience and Approach to AIS160

The participating instructors have varied teaching experiences ranging from 2 to 6 years. Their teaching approaches integrate a combination of lecture-based and interactive strategies, with a few adopting blended and experiential learning methodologies. One instructor noted, "My teaching approach is a combination of teacher-centered learning, student-centered learning, blended learning, and experiential learning," indicating a multidimensional strategy in course delivery.

Methods for Student Engagement

Lecturers employ a range of methods to keep students engaged, including lectures with real-life examples, hands-on lab sessions, group presentations, and interactive tools such as quizzes and puzzles. The inclusion of storytelling and life experiences, especially related to IT product usage, was a noted strategy to bridge theoretical and practical knowledge.

Challenges in Teaching IT Fundamentals

A recurring challenge across instructors was student comprehension of technical content and jargon. One participant commented, "To get students to focus on the topic especially those related to technical explanation (with jargon)," while others highlighted difficulties in visualizing unfamiliar components or engaging disinterested students.

Initial Perceptions and Ease of Implementation

Instructors generally viewed the integration of real-world applications and hands-on activities positively. One stated, "I think the students will have a better understanding of IT basic concepts," while another mentioned, "Easy because all discussion topics are actually part of their daily life." However, ease of implementation was contingent on institutional support, including hardware, software access, and connectivity.

Support and Resources

Key resources aiding implementation included peer support, textbooks, social media, and personal experience. Institutional infrastructure such as internet connectivity, free educational software, and availability of devices was also highlighted as critical enablers of interactive teaching.

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Barriers to Implementation

Barriers primarily included technological constraints such as lack of devices, limitations in software accessibility, and student resistance to IT content. One instructor emphasized, "To be interactive, some software might be required which sometimes are not free… support from the institution is still needed."

Student Reactions and Engagement

Overall, student responses were positive, with most instructors observing increased engagement and enthusiasm. One participant noted, "They are more engaged in class and show interests in learning basic IT." However, the level of engagement was not uniform across all students, with one noting only a "few students (5-10)" actively participating.

Perceived Effectiveness of Strategies

Lecturers believed that innovative strategies enhance student comprehension, particularly when learners can apply the concepts practically. "Students experienced themselves how to use the applications software and had to present their project," said one instructor, emphasizing the role of experiential learning in retention and understanding.

Recommendations for Future Practice

Some lecturers suggested modifications to enhance the impact of teaching strategies. One planned to "avoid lecturing" in favor of more hands-on tasks, while another expressed interest in sharing and learning techniques from peers. Suggestions such as industry visits and greater collaboration among teaching staff were proposed to enrich the learning environment.

Discussion (Instructors' Perspective)

This study examined the experiences of instructors teaching the AIS160 Fundamentals of Information Technology course, emphasizing their methods for incorporating creative, interactive, and experiential learning practices. The results identified numerous principal themes including instructional methods, obstacles, and perceived student results.

Initially, despite the variability in teaching experience across respondents, there was a uniform transition from conventional lecture-based tactics to more participatory and student-centered strategies. Most instructors used practical activities, collaborative conversations, and real-world applications into their instruction to improve comprehension and participation. This corresponds with current studies indicating that experience learning enhances conceptual comprehension and retention in technical disciplines (Kolb, 1984; Prince, 2004).

Nonetheless, certain obstacles were recognized in the efficient delivery of IT principles. A significant obstacle was students' struggle with technical terminology and abstract concepts, especially in the absence of prior familiarity with the topic. Several students encountered technological limitations, including insufficient access to necessary software or hardware, highlighting equity and resource challenges identified in previous studies (Means et al., 2014).

Institutional support, peer collaboration, availability to complimentary resources, and dependable internet were identified as crucial facilitators of effective teaching. Although the majority of instructors regarded the incorporation of interactive methods as beneficial, they observed that effective execution frequently relies on infrastructure and administrative support. An instructor highlighted the need of institutional support in acquiring essential software

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licenses and technical assistance, reflecting the conclusions of Allen and Seaman (2017) regarding the necessity of institutional preparedness for innovative pedagogy.

Student feedback about the implementation of interactive and immersive methodologies was predominantly favorable. Instructors noted enhanced classroom engagement, motivation, and a more dynamic learning environment, while participation levels varied among students. Several instructors observed that just a portion of students engaged actively, indicating that although interactive tactics might be effective, they may necessitate continuous modification and customization to meet varied learning requirements.

Regarding future practice, some instructors indicated a readiness to adapt or improve their strategies, but others intended to preserve existing ways. The appeal for collaborative sharing among educators and recommendations such as industrial trips highlight a commitment to ongoing enhancement and the exchange of pedagogical concepts.

The results of this study support OECD's (2021) broader observations that successful digital learning in higher education is contingent on the interplay of pedagogy, technology, and institutional readiness. Students in this study showed a clear preference for engaging, interactive, and practical activities—consistent with OECD's findings that learners benefit most when digital tools are used not just to deliver content, but to transform learning processes.

Moreover, instructors' emphasis on challenges such as unequal device access and software limitations also reflect OECD concerns about digital divides and infrastructure barriers (OECD, 2020). The study findings suggest that while pedagogical innovation is achievable, its effectiveness depends heavily on sustained investment in digital infrastructure and training, as recommended by the OECD.

Conclusion

This study investigated the integration of interactive and experiential pedagogical strategies in the delivery of AIS160, the Fundamentals of Information Technology course at Universiti Teknologi MARA (UiTM), Perak Branch, Tapah Campus. Using a mixed-methods approach, the study examined students' and instructors' perceptions of teaching strategies, engagement, and learning outcomes. The findings demonstrate that interactive and experiential learning significantly enhanced students' motivation, engagement, and understanding of IT fundamentals. Students consistently reported high levels of satisfaction with practical elements such as real-world applications, gamified learning, and hands-on activities. Instructors, likewise, observed greater classroom engagement and affirmed the effectiveness of experiential strategies, particularly when institutional support was adequate.

However, the study also revealed several limitations. Only 81 of the 483 invited students responded to the questionnaire, representing a response rate of approximately 16.8%. This limited participation raises concerns about response bias, as the perspectives gathered may not fully represent the broader student population. In addition, only four instructors were interviewed, and no demographic information beyond years of teaching experience was collected, limiting the ability to contextualize their perspectives or examine how personal or professional attributes might influence pedagogical choices. Despite these limitations, the triangulation of data sources and the use of established theoretical frameworks, namely

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Constructivism, Kolb's Experiential Learning Theory, and the TPACK framework, strengthen the trustworthiness and coherence of the study.

In summary, this research affirms that shifting from traditional, lecture-heavy methods to more student-centered, interactive, and technology-enhanced instruction can foster deeper learning, especially in foundational IT courses. Although variability in engagement and technological access remains a challenge, the evidence supports the broader adoption of innovative teaching approaches to better prepare students for the demands of the digital economy.

Recommendations

Based on the findings of this study, several recommendations are proposed for educators, administrators, and curriculum designers to enhance the teaching and learning of the AIS160 course. First, it is important to enhance the infrastructure and support systems of educational institutions. This encompasses the provision of students with access to suitable digital equipment, the establishment of reliable and high-speed internet connection, and the acquisition of needed software licences. The successful application of experiential and interactive teaching methodologies is contingent upon the establishment of such infrastructure. Secondly, curriculum designers should enhance the availability of practical and real-world learning experiences by including industry exposure, hands-on projects, and case-based learning. These techniques facilitate the connection between academic knowledge and practical IT applications.

Third, educators are strongly urged to promote peer cooperation and the exchange of best practises. The organisation of consistent seminars or teaching workshops may provide lecturers with a venue to discuss effective techniques and encourage ongoing pedagogical innovation. Fourth, it is essential to prioritise the use of visual learning tools and gamification approaches to increase student engagement and accommodate a variety of learning styles. Quizizz, Kahoot, and multimedia material may facilitate the comprehension and enjoyment of abstract IT ideas. Lastly, it is essential that instructional methodologies and assessment procedures be intentionally aligned. To more accurately evaluate students' application of knowledge and to represent the experience aspect of the course material, practical assessments—such as lab-based evaluations and mini projects should be highlighted.

Future Works

Several options for future research are recommended to expand upon the insights obtained from this research. One key area is the conduct of longitudinal research to assess the long-term impact of interactive teaching techniques on the academic performance and retention of IT-related abilities of students. This study would provide vital information about the long-term advantages of innovative education. Furthermore, comparative studies might be done to investigate the influence of contextual variables, like student demographics, institutional culture, and resources, on the effectiveness and adoption of experiential learning methodologies across various campuses or institutions.

An additional intriguing topic for investigation is the function of certain instructional technologies in the field of IT education. Future research might explore the impact of technologies such as mobile applications, simulations, and learning management systems on the engagement and results of a variety of learners. It is equally crucial to investigate inclusive techniques that might assist students who may encounter digital obstacles, such as restricted

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device access or poor levels of digital literacy. Broad educational achievement necessitates fair engagement in experiential learning. Lastly, more study might evaluate the efficacy of faculty development programmes that emphasise creative teaching methods. It will be essential to comprehend the way organised training improves the capacity of instructors to create and provide experience information to maintain the quality and consistency of IT education.

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Appendix A: Summary of Questionnaire Items

Student Questionnaire Structure (n = 81):

Section	Focus Area	Item Type
Section A	Demographic Information (e.g., program, gender, semester)	Multiple choice
Section B	Evaluation of Current Teaching Practices	Likert scale (1-5)
Section C	Assessment of Innovative Pedagogical Strategies	Yes/No + Likert
Section D	Perceived engagement and learning outcomes	Likert scale (1-5)
Section E	Enjoyment and motivation in hands-on and interactive activities	Open-ended
Section F	Perceptions of real-world applications in class	Open-ended
Section G	Additional feedback or suggestions	Open-ended
Section H	Comments regarding the teaching strategies	Open-ended

Note: The Likert scale ranged from 1 = Very Low/Strongly Disagree to 5 = Very High/Strongly Agree.

Appendix B: Instructor Interview Protocol (Semi-Structured)

Sample guiding questions:

1. How long have you been teaching the AIS160 course?
2. How would you describe your current teaching approach?
3. What strategies do you use to engage students?
4. Have you incorporated any interactive or experiential methods?
5. What challenges do you face in applying these methods?
6. What support do you find useful, and what barriers exist?
7. How do students respond to interactive techniques?
8. What changes in student motivation or performance have you observed?
9. Would you consider modifying any strategies in the future?