

Research Article

Instructional Materials Utilized by Tertiary-Level Educators in the Teaching-Learning Process

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Abstract

This study explores the instructional materials utilized by tertiary teachers through participant observation, focusing on technology-based resources, traditional materials, experiential tools, and assessment methods. Findings reveal that educators integrate a variety of instructional strategies to enhance student engagement and learning outcomes. Technology-based materials, including digital platforms, AI-generated quizzes, and research websites, provide accessibility and interactivity but pose challenges such as digital literacy gaps and misinformation. Traditional resources, such as textbooks, worksheets, and lectures, remain essential for structured learning and content mastery. Experiential and interactive tools, such as role-playing, simulations, and hands-on activities, foster active participation and real-world application of knowledge. Assessment and evaluation methods, ranging from digital quizzes to performance-based assessments, help educators measure student progress effectively. However, challenges such as technology accessibility, assessment fairness, and student motivation persist. The study underscores the importance of balancing different instructional materials to create an inclusive and effective teaching-learning environment.

Keywords: Instructional Materials, Teaching-Learning Process, Educators, Strategies, Tertiary-Level Educators.

Introduction

Higher learning constitutes a critical stage in professional and academic development, and the teaching methods must be effective in maximizing the learning process for the students (Tomlinson and Jackson, 2021). Instructional materials form one of the most significant determinants in ensuring that this takes place, as they are the essential teaching devices that are utilized to communicate lesson information, consolidate significant concepts, and motivate the students (Pranawengtias, 2022). Instructional materials in the tertiary environment come in various forms, ranging from printed books, presentations, and modules, to online platforms, and multimedia presentations (Sengai and Mokhele, 2021). As the learning environment continues to evolve, the selection and implementation of the materials are critical in ensuring quality teaching and learning experiences for the students (El-Sabagh, 2021).

The application of teaching materials in higher education draws on pedagogical theories that emphasize the need for student-centered learning. The constructivist theories emphasize the need for interactive and engaging teaching materials that allow the students to actively construct knowledge, while cognitivist theories emphasize the role of properly organized content in promoting recall of information and critical thinking skills (Saleem *et al.*, 2021; Mishra, 2023). Andragogical theories, which address adult learning, emphasize the need for teaching resources that promote self-directed learning and applicability in the real-world environment. These theoretical foundations emphasize the need for teaching materials in informing teaching strategies at the higher learning level (Livingstone and Cummings-Clay, 2023).

Despite the known utility of instructional materials, their selection, availability, and efficiency are hindered by various issues. Most higher learning institutions are limited by available resources, which prevent the

availability of quality and up-to-date materials to the teaching staff (Beyene *et al.*, 2023). The shift towards technology-based and online instruction has also created issues with literacy, online accessibility, and flexibility towards new instruction modes (Maphosa, 2021; Kanvaria and Yadav, 2024). The requirement that instruction materials must be aligned with the curriculum standards and the different learning capacities of the students contributes to the issues, necessitating the evaluation of their use and their impact on the students (Hailikari *et al.*, 2022).

While different research has focused on the role that teaching materials play in increasing the motivation and academic success of students, additional research on the selection, adaptation, and implementation of teaching materials by tertiary-level educators is needed. The success of teaching materials relies on the institution's policies, the preparation of the teaching staff, and the students' preferences, which might be different for different disciplines and learning environments (Isaeva *et al.*, 2025). Greater knowledge about these factors might provide valuable insights about the optimal teaching material development and implementation practices (Arikawe *et al.*, 2024; Isaeva *et al.*, 2025).

Taking these factors into consideration, the aim of this research is *to examine the types of instructional materials utilized by tertiary-level educators in the teaching-learning process*. This study seeks to identify the various instructional materials commonly used in higher education, including textbooks, digital resources, multimedia tools, and other supplementary materials. By analyzing how these materials are integrated and adapted in the teaching-learning process, it is essential to know how do students interact with and respond to the instructional materials used, and the challenges faced in utilizing these materials.

Methods

Research Design

This study employs a qualitative research design, using participant observation and document analysis, to examine the types of instructional materials utilized by tertiary-level educators and their impact in the teaching-learning process. The participant observation will provide information on the classroom interactions as they happen and the application of the teaching materials, while document analysis will assess the quality, alignment, and content of teaching resources against the learning objectives (O'Leary, 2020). The combination of the two methods aims to identify the trends, problems, and best practices in the application of teaching materials, with the goal to enhance teaching methodologies in institutions of higher learning.

Data Gathering Tools

The primary data gathering tool is through field notes. The interview method was selected as it aligns with the participant observation and document analysis. The field notes' guide questions are based on the study's objective, to examine the types of instructional materials utilized by tertiary-level educators and their impact on teaching-learning process.

The following questions were utilized for observation:

- 1) What types of instructional materials are being used by the educator?
- 2) How are these materials integrated and adapted in the teaching-learning process?
- 3) How do students interact with and respond to the instructional materials used?
- 4) What challenges are faced in utilizing instructional materials?

Data Gathering Procedure

The researchers conducted observations for every instructional material utilized in class sessions with the professors involved in the study, with each observation being recorded in the researchers' field notes. The researchers are responsible for taking detailed field notes that put emphasis on the efficiency of the instructional material utilized, if the instructional material utilized is effective in its delivery of the topic or discussion. The following were given attention to: (1) the availability of the instructional materials, if the instructional material is accessible by students and teachers in differing contexts; (2) the alignment of the instructional material with the pedagogy and (3) if the instructional materials are able to compliment the pedagogical approach of the professor.

After each observation, the researchers review field notes and reflected on emerging patterns such as the frequency of a certain instructional material being utilized across different classes, the effectiveness of certain instructional materials compared to others, the reliability and availability of certain instructional materials, and the validity of alignments of the instructional materials and the pedagogy.

Data Gathering Analysis

The data collected through field notes were analyzed using thematic analysis to examine the types of instructional materials utilized by tertiary-level educators and their impact on the teaching-learning process. Observations were coded into key themes, such as varieties of instructional materials used, methods of implementation in classroom instruction, student engagement and responsiveness, and challenges faced in material utilization. This approach provided insights into how educators select, modify, and integrate instructional materials to enhance learning experiences.

Similarly, document analysis was conducted using thematic coding to evaluate the instructional materials' content, relevance, and pedagogical alignment. Materials such as syllabi, textbooks, and lecture slides were examined based on themes including content accuracy and appropriateness, alignment with course objectives, ease of access for both educators and students, and adaptability to diverse learning needs. By synthesizing findings from both field notes and document analysis, this study aims to assess the effectiveness of instructional materials and their role in shaping the quality of tertiary-level education.

Results and Discussion

From the observers notes, four clusters emerged: Technology-Based Materials, Traditional Resources, Experiential and Evaluation Tools, and Assessment and Evaluation Tools.

Within this table is the summarized overview of the observers' field notes gathered from the participant observation conducted over the course of the midterm grading period. The observation led to our discovery of the following findings:

Table 1. Summary of observations.

Questions	Observer number 1	Observer number 2	Observer number 3	Observer number 4
What types of instructional materials are being used by the educators?	Educators use PowerPoint, worksheets, lectures, handouts, Google Classroom, modules, and visual aids. They enhance engagement with simulations, quizzes, videos, and gamified activities like the hexagon game. AI, computer labs, and analogical methods support interactive and conceptual learning.	Educators use PowerPoint presentations, lectures, worksheets, real-world situations, artificial intelligence, and computer laboratories as instructional materials.	Educators use PowerPoint presentations, lectures, worksheets, real-world situations, simulations, artificial intelligence, computer laboratories, gamified activities (hexagon), and analogical teaching methods.	Instructional materials utilized include a mix of PowerPoint presentations, worksheets, artificial intelligence, charts, diagrams, graphs, and simulative manipulables like triangular bandages and CPR mannequins.
How are these materials integrated and adapted in the teaching-learning process?	Educators incorporate materials into lectures, discussions, group activities, and hands-on exercises to enhance understanding and engagement. Materials are adapted based on students' needs and the subject matter.	PowerPoint is used to present key concepts, lectures provide theoretical background, and worksheets help students apply knowledge. Real-world situations are integrated for practical applications, AI is used to simulate teaching scenarios, and computer labs	PowerPoint and lectures present key concepts, worksheets assess student progress, and real-world situations provide practical applications. AI aids in exploration, simulations like roleplay enhance engagement, computer labs facilitate hands-on	Educators are able to integrate these materials into the learning process through discussions, lectures, and activities to enable students to visualize and even practice the lessons and subject matters.

		facilitate hands-on learning. Materials are adapted based on subject relevance and student needs.	activities, and gamified activities make learning interactive.	
How do students interact with and respond to the instructional materials used?	Students engage with materials through discussions, group work, and individual activities. They show interest, ask questions, and apply knowledge in practical scenarios.	Students take notes, ask questions, and engage in discussions. They complete worksheets, analyze real-world applications, design instructional tools, and interact with AI for simulations. In computer labs, they practice using technology for teaching.	Students respond well to structured lessons, engage in discussions, and collaborate on worksheets. Simulations and gamified activities promote active participation, while AI and computer labs enhance technological literacy. However, prolonged PowerPoint lectures may lead to reduced attention.	Students responded very well to these materials, especially with the simulative manipulables like the triangular bandages and CPR mannequin. The instructional materials were able to keep students engaged in the lessons.
What challenges are faced in utilizing instructional materials?	Limited availability of resources, technical issues with digital tools, varying student engagement levels, and difficulties in adapting materials to different learning styles.	Ensuring real-world relevance, adapting to different learning styles, limited resources for instructional material creation, technical issues with AI and computer labs, and balancing theory with practical application.	Lectures and PowerPoint can become monotonous, simulations require more time and are difficult to assess, AI-generated content can be predictable, and students may lose focus when using computers for unrelated activities. Gamified learning may also lead to competitiveness and classroom mismanagement.	Scale became a major challenge for the simulative manipulables as trying to get 50-60 students to use one single mannequin becomes challenging even as the course is given multiple days to accomplish them. The other forms of instructional materials faced challenges of availability, limited resources, effectiveness over time, and students' willingness to participate.

Technology-Based Materials

Technology-based instructional materials have transformed the teaching-learning process by making education more interactive and accessible (Asad *et al.*, 2021). Based on the field notes of observer number 1, 2, 3 and 4, educators frequently use digital platforms such as Google Classroom, PowerPoint presentations, YouTube videos, and AI-generated quizzes to support student learning. Research websites and online journal databases have become essential tools for both students and teachers, allowing access to credible academic sources. These resources not only provide up-to-date information but also help students develop critical research and analytical skills by exposing them to scholarly articles, case studies, and empirical data (Darwin *et al.*, 2024).

The integration and adaptation of technology-based instructional materials depend on course objectives and student needs (Winoto, 2022). In the field notes of observer number 1, 3 and 4, educators incorporate multimedia resources, gamified quizzes, and virtual simulations to cater to different learning preferences.

Many instructors encourage the use of research websites and online databases for assignments, requiring students to cite peer-reviewed sources in their work. AI-powered tools are also used to enhance writing skills and uphold academic integrity. However, some instructors noted that not all students are proficient in navigating research websites, highlighting the need for digital literacy training.

Student interaction and responses to technology-based materials are mixed (Taghizadeh and Hajhosseini, 2021). The field notes of observer number 1, 2, 3 and 4 reveal that students appreciate the ease of access to research websites, as these tools provide a vast array of academic materials at their fingertips. Many students prefer online quizzes and interactive educational games, as they make learning more engaging and less monotonous. However, some students struggle with information overload, as navigating multiple sources and verifying credibility can be overwhelming. Others reported that online research lacks the guided discussion found in traditional classroom settings, making it difficult to interpret complex academic texts without teacher support.

Despite the advantages of technology-based instructional materials, several challenges persist (Irawan and Khoiruman, 2025). A significant issue is unequal access to digital resources, as not all students have reliable internet connections or devices to utilize research websites effectively (Afzal *et al.*, 2023). Another concern is misinformation, as some students rely on non-credible sources or AI-generated content without proper verification. Plagiarism has become more prevalent, with students sometimes copying information directly from research websites instead of critically analyzing and synthesizing ideas. Educators emphasized the importance of teaching students proper citation methods and critical thinking skills to mitigate these issues.

Technology-based instructional materials, including digital research websites, AI tools, and multimedia platforms, play a vital role in modern education. While these resources enhance learning, improve research skills, and provide diverse academic materials, challenges such as digital literacy gaps, misinformation, and plagiarism must be addressed (Haleem *et al.*, 2022; Syahrizal *et al.*, 2024). To maximize the benefits of technology in education, institutions should train students and teachers on effective research practices, promote academic integrity, and ensure equal access to digital learning tools (Mutongoza and Olawale, 2022).

Traditional Resources

Traditional instructional materials are long used in the teaching and learning process of both students and facilitators. Traditional materials such as lectures, textbooks, worksheets, and charts are commonly used to teach effectively (Yadav, 2023). Based on the field notes of observer number 1, 3, and 4, a variety of traditional instructional materials are used by educators to help them deliver the topics to the learners effectively. These materials include worksheets, charts, graphs, diagrams, curriculum guides, blank boards and markers, handouts or modules, and lectures. These materials are usually used in delivering information through discussion, like the charts, graphs, diagrams, curriculum guides, handouts or modules, and lectures. Worksheets, simulations (role playing), and blank boards and markers are used as an assessment tool both during class, to engage students, and after, for assessing their learning development. These instructional materials help in creating various ways for teachers to be able to deliver messages to the students (Amadioha, 2009).

Based on the field notes of observer number 1 and 3, the integration of traditional instructional materials in the classroom varies depending on the subject content and the educator. As stated by Rothwell *et al.*, (2015), teaching materials are to be designed according to the purpose, objectives, user, and the delivery method of the facilitator. The instructional materials were integrated both for student-centered teaching strategy and as assessment-driven instructions. Student-centered strategy sees students as active agents of their learning, with teachers facilitating the process rather than being content deliverers (Treve, 2024). Educators engage the students in active learning through the use of group worksheets, providing real-world examples, and assessing them through role-play simulations and gamified activity (blank board and marker) in which students learn with guided instructions. The materials were also used as an assessment tool in which the materials focus on gathering information on the learning process and development of the learners. Based on the data collected, worksheets, and role plays were the most utilized as an assessment tool.

The study shows that the utilization of traditional instructional materials provides an effective delivery of discussion for the students as it is both used in a student-centered manner and for assessment purposes. According to Millard and Burnham (2002), interactive educational materials can positively impact student's understanding of key concepts. The students respond in an active manner as the traditional instructional

materials provided by the educators are constructed in an engaging way. Integration of real-life examples in lectures also provides students with a deeper understanding and analysis of every key content. As stated by Willbergh (2017), using real-world examples in teaching can create an “as-if” experience that makes knowledge relevant for students.

Based on the observations of observer number 1, 2, 3, and 4, challenges also occur in the utilization of traditional instructional materials in discussions and as an assessment tool. Challenges in attention and participation such as boredom and distractions emerge as the main issue in traditional materials integration. Leading factors are repetition of instructional materials used and lectures becoming monotonous thus resulting in student attention and participation to decrease. Boredom negatively impacts student’s attention, engagement, and understanding of concepts (Adesola *et al.*, 2019). Decreasing student participation due to said factors affects the student’s learning process negatively in the latter course of time.

Traditional instructional materials are an important part of the teaching-learning process as they serve as one of the foundations of education. In spite of the emerging and evolving utilization of technological-based instruction materials, traditional materials continue to serve its purpose of providing an effective and long-lasting learning experience for students (Yadav, 2023). In today’s time, the process of teaching and learning revolves around the combination of traditional and technological instructional materials.

Experiential and Interactive Tools

Experiential learning is an effective way to involve students in learning by doing. By using marketing simulations, a dynamic learning experience is created where students develop rich knowledge and skills (Laverie *et al.*, 2020). The instructional materials utilized in this theme are able to simulate the intended real-world application of the activity, increasing the likelihood that students will retain knowledge of the information.

From the field notes of observer number 1, 2, and 3, these kinds of instructional materials are utilized because they are able to impart knowledge in an individual, per-student way. Ullah and Anwar (2020) state that “collaborative and interactive activities in groups may positively influence learner engagement.” Materials and activities like triangular bandages and CPR mannequins, role-play activities, reporting, and alike serve to immerse students in the lesson and allow them to embody the necessary knowledge required in their subjects.

Student engagement in the learning process is the key to successful delivery of teaching and learning. Teachers face several challenges to engage learners in different disciplines (Ullah and Anwar, 2020), as such, the experiential and interactive tools utilized in a subject like the National Service Training Program (NSTP) eases the learning process for all students involved. The triangular bandages that were made a course requirement ensured that all of the students would be able to learn and understand how to properly administer bandaging techniques in response to the victim’s situation, furthermore, the CPR mannequin was passed around the students in groups, allowing them a chance to practice CPR skills without endangering other students. Students actively participate as these activities and practices become what is essentially the discussion of the subjects utilizing these instructional materials. This engagement is most highly reflected in activities like reporting which require the students to have a competent understanding and grasp of a topic that they will present to a room of students and their instructors, role-play activities, which by definition, have students embodying the very nature and essence of the subject, theme, or person they are portraying.

Many university lecturers are encouraged to implement innovative teaching tools and methodologies in order to create an interactive learning environment and improve student learning, but its performance must be evaluated (Camacho-Miñano and Del Campo, 2014). With experiential and interactive learning tools like the one mentioned earlier, a challenge faced by these is the effectiveness of these tools on a larger scale. Students in a classroom of 50 or more could find it difficult to immerse themselves with experiential and interactive tools, given the fact that they may not all be able to participate in the discussions. In a world where mastery of the 21st century skills matter most, experiential and interactive learning tools appear to be the most effective in instilling these skills and values among students, however, they are not without their challenges and must be balanced with other instructional materials, pedagogies and proper assessment to further solidify the integration of knowledge and 21st century skills in any and all learners.

Assessment and Evaluation Tools

Assessment and evaluation tools are fundamental in measuring student progress and ensuring the

effectiveness of instructional strategies (Munna and Kalam, 2021; Mohan, 2023). Based on the field notes of observer number 1, 2, 3 and 4, educators utilize a variety of assessment methods, including quizzes, rubrics, authentic assessments, and performance-based evaluations. Many instructors incorporate digital tools such as Google Forms, Kahoot, and AI-assisted grading systems to automate assessments and provide immediate feedback. Some also implement pre-tests and post-tests to track student learning gains, while performance-based tasks like role-playing, case studies, and debates allow for a more comprehensive evaluation of student understanding. These tools help educators assess both knowledge retention and the practical application of concepts (Ngo, 2023).

The integration of assessment tools in the classroom varies depending on the subject and teaching style (Kumar *et al.*, 2021). Many educators balance traditional paper-based assessments with technology-driven evaluations, using AI tools to generate quick quizzes and automated scoring systems. Some instructors integrate gamified assessments, such as leaderboard-based quizzes and competitive group tasks, to enhance student motivation. In performance-based evaluations, teachers rely on rubrics and structured grading criteria to ensure fairness and consistency. One instructor noted the importance of aligning assessments with learning objectives, stating that well-structured evaluation methods improve the accuracy of student performance measurement.

Students respond differently to various assessment tools (Ajlouni *et al.*, 2023). Digital and interactive assessments tend to be more engaging, as they offer immediate feedback and an element of gamification (Dildora and Feruz, 2025). Some students expressed appreciation for AI-generated quizzes, as they provide quick corrections and learning insights. However, others mentioned that AI feedback sometimes lacks depth and personalization, making human evaluation still essential. Traditional exams, such as multiple-choice tests and written assessments, received mixed reactions, some students preferred their structure, while others found them repetitive and stressful. Performance-based assessments, on the other hand, were generally well-received, as they allowed students to apply their knowledge in real-world scenarios.

Despite their advantages, challenges in implementing assessment and evaluation tools persist. One major issue noted in the field observations of observer number 1 is student disengagement when assessments become repetitive or overly difficult, leading to decreased motivation. Grading subjective assessments like essays, role-plays, and debates can be challenging, as they require clear rubrics and consistent evaluation criteria. Some instructors also reported issues with technology accessibility, as not all students have reliable internet connections or devices to participate in online assessments. While AI-assisted grading is efficient, it sometimes produces inaccurate or contextually irrelevant feedback, requiring manual corrections by educators (Jonall, 2024).

Assessment and evaluation tools play a crucial role in tracking student learning and improving instructional effectiveness (Ahmad and Hamid, 2021). The integration of technology, gamification, and performance-based evaluations has enhanced student engagement, but challenges such as grading inconsistencies, technological limitations, and assessment-induced anxiety must be addressed (Nugroho and Dewi, 2025). Educators should strive for a balanced assessment approach that combines the efficiency of digital tools with the depth of human evaluation to ensure fairness, accuracy, and meaningful learning outcomes (Bablu, 2024).

Technology-based materials, traditional resources, experiential tools, and assessment methods all play crucial roles in modern education. The data gathered highlight that technology-based instructional materials, such as digital platforms and AI-powered tools, enhance accessibility, research skills, and engagement, but present challenges like digital literacy gaps and plagiarism. Traditional resources remain essential for structured learning, fostering foundational knowledge and real-world application. Meanwhile, experiential and interactive tools, such as simulations and role-playing, deepen student engagement by encouraging hands-on learning. Assessment tools, both digital and performance-based, provide diverse ways to measure student progress, but concerns regarding grading fairness and accessibility persist.

The results suggest that no single instructional material or assessment method is sufficient on its own; rather, a balanced integration of these tools ensures effective teaching and learning. While technology enhances efficiency and engagement, traditional methods provide depth and structure, and experiential learning fosters real-world application. Educators must navigate these materials thoughtfully, addressing challenges such as student accessibility, engagement, and assessment accuracy. Institutions should support teachers and students by providing digital literacy training, promoting academic integrity, and ensuring

equal access to learning tools, ultimately fostering a more inclusive and effective educational environment.

Conclusion

The findings of this study highlight the diverse instructional materials utilized by tertiary teachers, demonstrating a balance between technology-based resources, traditional materials, experiential tools, and assessment methods. Technology-based instructional materials, such as digital platforms and AI tools, have enhanced accessibility and engagement but also pose challenges such as digital literacy gaps and the risk of misinformation. Traditional instructional materials, though often seen as conventional, continue to provide structured learning experiences and foster in-depth understanding. Experiential and interactive tools, including simulations and role-playing, contribute to student engagement by promoting hands-on learning, while various assessment and evaluation tools help measure student progress effectively.

Recommendation

Overall, the research underscores the importance of integrating multiple instructional strategies to create an inclusive and effective teaching-learning process. While technology offers innovative approaches to teaching, traditional methods remain valuable in reinforcing fundamental concepts. The study also emphasizes the need for institutions to address challenges such as digital accessibility, student engagement, and fair assessment practices. By ensuring proper training for both educators and students in utilizing instructional materials effectively, higher education institutions can enhance the overall learning experience and equip students with the necessary skills for academic and professional success.

Declarations

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