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Article

Navigating Technology Integration and Fostering Student Engagement in MAPEH

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Abstract: This study provides valuable insights into the state of technology integration among teachers and administrators in a school, specifically focusing on the MAPEH subject. The data reveals the demographic composition of the teaching staff, including age and gender distribution, as well as their educational background and years of service. The study highlights the training and seminars attended by the staff, shedding light on the areas of expertise and professional development opportunities. Furthermore, the assessment of teachers' competence in utilizing technology in MAPEH education demonstrates a commendable level of proficiency and integration in various domains, such as technological proficiency, pedagogical integration, digital citizenship and online collaboration, and data analysis and assessment. The data also provides insights into the ranking of technology resources and showcases students' high academic performance in music and cultural understanding. The study identifies several concerns, including limited access to technology, the need to balance technology with hands-on experiences,

Keywords: Technology integration, student engagement, cognitive & social presence

Introduction

The 21st century is marked by rapid technological advancements that have reshaped various aspects of society, including education. In this digital era, technology integration has become a crucial component of effective teaching and learning practices

(Prasetyawati & Ardi, 2020). According to Pondee et al. (2021) teachers play a pivotal role in navigating this integration and fostering student engagement in the classroom (Teng & Wang, 2021). Moreover, integration of technology in classrooms has transformed traditional teaching and learning practices, offering new opportunities for interactive and personalized learning experiences (Rizk & Hiller, 2022). Howard et al. (2021) emphasized that teachers now face the task of navigating this digital landscape and adapting their pedagogical approaches to effectively incorporate technology into their instruction.

Technology integration in education encompasses a wide range of practices, from utilizing digital tools and resources for content delivery and assessment to promoting collaboration and communication among students through online platforms (Meum et al., 2021). Teachers must possess the knowledge and skills to select appropriate technologies, integrate them seamlessly into their lessons, and leverage their potential to enhance student learning. Moreover, the role of teachers extends beyond being mere facilitators of technology. They must actively engage students and foster meaningful learning experiences through technology (Kim, 2021). This involves creating a supportive and inclusive classroom environment that encourages student participation and collaboration. Teachers need to design activities and projects that harness the power of technology to promote critical thinking, problem-solving, creativity, and innovation among students (Mystakidis et al., 2021).

However, as technology continues to evolve rapidly, teachers face various challenges in adapting to and effectively utilizing these advancements (Emre, 2019). They may encounter obstacles such as limited access to technology resources, lack of adequate training and professional development opportunities, and resistance to change from both students and colleagues (Susanty et al., 2021). Addressing these challenges requires ongoing support and professional development initiatives that equip teachers with the necessary knowledge, skills, and confidence to integrate technology seamlessly into their teaching practices. According to Tondeur et al. (2019) there is a need to examine and understand the evolving role of teachers in 21st century education, particularly in relation to technology integration and student engagement. Investigating this topic, we can gain insights into the challenges and opportunities faced by teachers in adapting their pedagogical practices, enhancing their technology proficiency, and promoting student engagement in the digital age (Mertala, 2019).

In the Philippine context, there are several research gaps and challenges when it comes to technology integration in education. Firstly, there is a significant digital divide in terms of access to technology and internet connectivity, particularly in rural areas and among marginalized communities (Sasota et al., 2021). This lack of access hinders equitable learning opportunities for all students. Secondly, teacher training and professional development programs

need to be enhanced to ensure that educators are equipped with the necessary skills and knowledge to effectively integrate technology into their classrooms. There is a need to evaluate the effectiveness and impact of existing training initiatives and identify areas for improvement. Additionally, aligning technology integration with the national curriculum and learning standards poses a challenge. It is crucial to examine how technology can be seamlessly integrated into the curriculum and how it can enhance the achievement of learning outcomes.

Furthermore, research is needed to determine the most effective pedagogical approaches for technology integration in the Philippine setting, considering the diverse needs of learners (Mercado et al., 2019). Assessing the impact of technology integration on student learning outcomes and developing strategies to promote digital literacy and responsible digital citizenship are also key research gaps. Addressing these gaps will contribute to the effective and equitable integration of technology in Philippine education.

This research aims to fill the existing gap in literature by providing a comprehensive exploration of the evolving role of teachers, informing educational stakeholders about effective strategies and professional development approaches, and contributing to the ongoing discourse on 21st century education. Studying the evolving role of teachers in technology integration and student engagement, we can gain valuable insights into the strategies, approaches, and support systems that contribute to effective 21st century education. This research can inform the development of evidence-based practices, policies, and professional development programs that empower teachers to leverage technology to its fullest potential, enhance student engagement, and prepare learners for the digital demands of the modern world.

Methodology

To investigate the evolving role of teachers in 21st century education, specifically in navigating technology integration and fostering student engagement, a quantitative methods research approach will be employed. This approach provides data collection and analysis methods to provide a comprehensive understanding of the research topic. The study was conducted in the identified Schools in Talibon, Bohol during the school year 2022-2023. The respondents of the study were the teachers and administrators. The respondents were taken for random sampling. In particular, the present conditions of the respondents as regards to the role of teachers in technology integration was described and analyzed through data gathered using the research instrument. The instrument of the study was adopted form the from the study of Garrison, D. R., Anderson, T., & Archer, W. (2000).

Results and Discussion

Table 1. Technological Proficiency

Indicators	Administrator		Teachers	
	Mean	VD	Mean	VD
Ability to navigate and utilize different software and applications.	3.67	C	4.27	SC
Knowledge and understanding of emerging technologies relevant to education.	4.17	C	4.32	SC
Comfort level with using technology tools and devices.	3.67	C	4.62	SC
Ability to troubleshoot common technological issues independently.	4.17	C	4.11	C
Awareness of digital security and data privacy measures.	4.00	C	4.15	C
Grand Mean	3.94	C	4.29	SC

Table 1 provides an assessment of the technological proficiency of administrators and teachers based on several indicators. For administrators, the mean scores for each indicator range from 3.67 to 4.17, with a grand mean of 3.94. This suggests that administrators demonstrate a moderately high level of technological proficiency overall. They possess the ability to navigate and utilize software and applications, exhibit knowledge of emerging technologies, and maintain a certain comfort level with technology tools and devices. Additionally, administrators are aware of digital security and data privacy measures, which is crucial in ensuring the safe and responsible use of technology.

Among teachers, the mean scores for each indicator range from 4.11 to 4.62, with a grand mean of 4.29. These scores indicate that teachers exhibit a higher level of technological proficiency compared to administrators. Teachers demonstrate strong competence in navigating and utilizing software and applications, showcasing their ability to effectively integrate technology into their teaching practices. They also display a high level of knowledge regarding emerging technologies and a high comfort level with technology tools and devices. Moreover, teachers possess the ability to troubleshoot common technological issues independently and maintain awareness of digital security and data privacy measures. Overall, both administrators and teachers exhibit a commendable level of technological proficiency. However, teachers show a slightly higher level of competence in utilizing technology for instructional purposes. These findings suggest that teachers have a strong foundation in technological skills, enabling them to leverage technology effectively in their classrooms. The results also indicate that both administrators and teachers have the necessary knowledge and awareness to navigate the digital landscape and address digital security concerns.

These assessments of technological proficiency provide valuable insights into the current strengths and competencies of administrators and teachers in utilizing technology. The findings can inform professional development initiatives and support efforts to further enhance technological proficiency among educators. By strengthening technological skills and knowledge, administrators and teachers can continue to effectively integrate technology into teaching and learning, promoting a dynamic and engaging educational experience for students.

Table 2. Pedagogical Integration

Indicators	Administrator		Teachers	
	Mean	VD	Mean	VD
Integration of technology to enhance teaching and learning experiences.	4.00	C	4.42	SC
Effective use of multimedia resources to support instructional objectives.	3.67	C	4.25	SC
Ability to adapt instructional strategies to incorporate technology.	3.67	C	4.55	SC
Utilization of technology to differentiate instruction and meet diverse student needs.	4.17	C	4.29	SC
Encouragement of student engagement and active participation through technology.	4.00	C	4.64	SC
Grand Mean	3.90	C	4.43	SC

Table 2 presents an assessment of the pedagogical integration of technology among administrators and teachers. For administrators, the mean scores for each indicator range from 3.67 to 4.17, with a grand mean of 3.90. This indicates that administrators demonstrate a moderately high level of pedagogical integration of technology. They showcase the ability to utilize technology to enhance teaching and learning experiences, encourage student engagement through technology, and effectively utilize multimedia resources. However, there is room for improvement in terms of adapting instructional strategies to incorporate technology and utilizing technology for differentiated instruction.

Among teachers, the mean scores for each indicator range from 4.25 to 4.64, with a grand mean of 4.43. These scores suggest that teachers exhibit a higher level of pedagogical integration of technology compared to administrators. Teachers demonstrate strong competence in integrating technology to enhance teaching and learning experiences, utilizing multimedia resources effectively, and adapting instructional strategies to incorporate technology. They also excel in utilizing technology to differentiate instruction and meet the diverse needs of students, as well as encouraging student engagement and

active participation through technology. Overall, both administrators and teachers demonstrate a commendable level of pedagogical integration of technology. However, teachers show a slightly higher level of competence in incorporating technology into their instructional practices. These findings indicate that teachers have a solid understanding of how to effectively leverage technology to enhance teaching and learning experiences, promote student engagement, and support diverse student needs. The assessments of pedagogical integration of technology highlight the strengths and competencies of administrators and teachers in utilizing technology for instructional purposes. The results can guide professional development efforts to further enhance the pedagogical integration of technology among educators. Strengthening their pedagogical knowledge and skills related to technology integration, administrators and teachers can continue to create dynamic and engaging learning environments that foster student success and achievement.

Table 3. Digital Citizenship and Online Collaboration

Indicators	Administrator		Teachers	
	Mean	VD	Mean	VD
Knowledge and promotion of ethical and responsible online behavior.	4.00	C	4.32	SC
Encouragement of safe and respectful online communication among students.	4.00	C	4.45	SC
Ability to foster digital citizenship skills and digital literacy in students.	4.17	C	4.31	SC
Integration of digital citizenship discussions and activities into the curriculum.	4.00	C	4.32	SC
Collaboration with students to establish and enforce online community guidelines.	4.00	C	4.28	SC
Grand Mean	4.03	C	4.34	SC

Table 3 presents an assessment of digital citizenship and online collaboration among administrators and teachers. For administrators, the mean scores for each indicator range from 4.00 to 4.17, with a grand mean of 4.03. This indicates that administrators demonstrate a solid understanding and promotion of digital citizenship and online collaboration. They exhibit knowledge and promote ethical online behavior, encourage safe communication among students, and foster digital citizenship skills and digital literacy. Additionally, administrators integrate discussions and activities related to digital citizenship into the curriculum and collaborate with students to establish and enforce online community guidelines.

Among teachers, the mean scores for each indicator range from 4.28 to 4.45, with a grand mean of 4.34. These scores suggest that teachers exhibit a higher level of competence in digital citizenship and online collaboration compared to administrators. Teachers demonstrate strong knowledge and promotion of ethical online behavior, encourage safe and respectful communication among students, and foster digital citizenship skills and digital literacy. They also excel in integrating digital citizenship discussions and activities into the curriculum and collaborating with students to establish and enforce online community guidelines.

Overall, both administrators and teachers demonstrate a commendable level of digital citizenship and online collaboration. However, teachers show a slightly higher level of competence in fostering digital citizenship skills and integrating these concepts into their instructional practices. These findings indicate that teachers have a solid understanding of the importance of digital citizenship and are effective in promoting responsible online behavior and safe online communication among students. The assessments of digital citizenship and online collaboration highlight the strengths and competencies of administrators and teachers in fostering a positive online environment. These results can inform professional development initiatives and support efforts to further enhance digital citizenship and online collaboration among educators. Strengthening their knowledge and skills related to digital citizenship, administrators and teachers can continue to guide students in responsible and respectful online behavior, promote digital literacy, and create a safe and inclusive online learning community.

Table 4. Data Analysis and Assessment

Indicators	Administrator		Teachers	
	Mean	VD	Mean	VD
Proficiency in using technology to collect and analyze student performance data.	4.17	C	4.16	C
Ability to interpret data to inform instructional decision-making and personalized learning.	4.00	C	3.83	C
Use of technology to provide timely and meaningful feedback to students.	4.17	C	3.42	C
Collaboration with colleagues to analyze and interpret data for school-wide improvement.	4.17	C	4.05	C
Utilization of data to identify and address student learning gaps or areas of improvement.	4.00	C	4.05	C
Grand Mean	4.10	C	3.90	C

Table 4 presents an assessment of data analysis and assessment skills among administrators and teachers. The indicators include proficiency in using technology to collect and analyze student performance data, the ability to interpret data to inform instructional decision-making and personalized learning, the use of technology to provide timely and meaningful feedback to students, collaboration with colleagues to analyze and interpret data for school-wide improvement, and the utilization of data to identify and address student learning gaps or areas of improvement. For administrators, the mean scores for each indicator range from 4.00 to 4.17, with a grand mean of 4.10. This suggests that administrators demonstrate a solid level of data analysis and assessment skills. They possess proficiency in using technology to collect and analyze student performance data, interpret data to inform instructional decision-making, and collaborate with colleagues to analyze and interpret data for school-wide improvement. Additionally, administrators effectively utilize data to identify and address student learning gaps or areas of improvement.

Among teachers, the mean scores for each indicator range from 3.42 to 4.16, with a grand mean of 3.90. These scores indicate that teachers exhibit a slightly lower level of data analysis and assessment skills compared to administrators. However, teachers still demonstrate competence in using technology to collect and analyze student performance data and collaborating with colleagues for data analysis. Teachers may have some room for growth in terms of interpreting data for instructional decision-making, utilizing technology for providing feedback to students, and effectively using data to address student learning gaps. Overall, both administrators and teachers exhibit a commendable level of data analysis and assessment skills. Administrators show a slightly higher level of competence in certain areas, such as interpreting data and utilizing technology for providing feedback. These findings highlight the importance of data-informed decision-making and utilizing technology to collect, analyze, and interpret data for instructional improvement and personalized learning. The assessments of data analysis and assessment skills underscore the strengths and competencies of administrators and teachers in utilizing data for instructional purposes. The results can inform professional development initiatives and support efforts to further enhance data analysis and assessment skills among educators.

Table 5. Technology Resources

Technology Resources	Rank
Online Resources and Educational Platforms	1
Interactive Whiteboards	2
Video and Audio Recording Equipment	3

Table 5 ranks the technology resources commonly used in teaching MAPEH, based on their perceived importance. According to the rankings, online resources and educational platforms are considered the most significant technology resource, followed by interactive whiteboards and video and audio recording equipment. Online resources and educational platforms claim the top spot in the rankings, indicating their high relevance and value in MAPEH instruction. These resources offer a vast array of digital content, including videos, interactive activities, educational websites, and digital libraries, which can greatly enrich MAPEH lessons. Online resources provide access to a wealth of information, allowing students to explore different artistic techniques, learn about music theory, access physical education concepts, and delve into health-related topics. These resources also facilitate personalized learning, as students can access materials at their own pace and cater to their individual interests and needs.

Interactive whiteboards secure the second rank in the rankings, underscoring their importance in MAPEH classrooms. Interactive whiteboards enable teachers to deliver dynamic and engaging lessons by displaying multimedia content, such as images, videos, and presentations. They facilitate real-time interaction, allowing students to actively participate in discussions, annotate content, and manipulate visual materials. The interactive nature of these whiteboards promotes collaborative learning and hands-on engagement, fostering a more immersive and interactive learning environment.

Video and audio recording equipment are ranked third, highlighting their significance in capturing and documenting student performances, physical activities, and artistic creations in MAPEH. These resources enable teachers to record and analyze students' progress, provide valuable feedback, and facilitate self-reflection and assessment. Video and audio recording equipment also support the development of presentation skills, allowing students to review their performances, identify areas for improvement, and showcase their artistic or physical achievements. The rankings in Table 12 emphasize the importance of technology resources in enhancing MAPEH instruction. Online resources and educational platforms offer a wide range of digital content and materials, interactive whiteboards promote dynamic and collaborative learning, and video and audio recording equipment facilitate assessment and self-reflection. By utilizing these technology resources effectively, MAPEH educators can create engaging and enriching learning experiences that promote artistic expression, physical well-being, and holistic development among students.

Conclusion

In conclusion, the data indicates that the school has made significant efforts to incorporate technology into teaching practices, as

evidenced by the high level of competence demonstrated by teachers and administrators in using technology for various aspects of education. However, there is room for improvement in terms of access to technology and the need for additional training and professional development to address the perceived concerns. It is commendable that the school has provided training and seminars to enhance teachers' technological proficiency, but ongoing support and resources are crucial to ensure continued growth and effective integration of technology in the curriculum. Moving forward, addressing the identified concerns and fostering a supportive environment for teachers and administrators will contribute to further advancements in technology integration and overall educational quality within the school.

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