

Teachers Self Efficacy on New and Emerging Educational Technologies in Adapting to the New Normal

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Abstract

When teachers possess high self-efficacy, they are more likely to embrace new technologies, experiment with innovative teaching approaches, and persist in their efforts to overcome challenges (Tschannen-Moran & Woolfolk Hoy, 2001). Conversely, teachers with low self-efficacy may exhibit reluctance, resistance, or limited use of new technologies, hindering their potential to leverage the benefits of these tools. This study would like to explore the high school teacher's self-efficacy on new and emerging educational technologies nowadays. The purpose of this was to find out in what ways and means can school administrators support teachers in this new normal. Teachers will have to answer a pretest in which they have to rate their levels of self-efficacy based on the four (4) sources of self-efficacy, namely; Inactive self-mastery, Role modeling, Verbal/social persuasion, and Physiological cues. Prior to the introduction of the intervention module, teachers will have to answer a pretest on different educational tools under the 4C's (communication, collaboration, critical thinking, and creativity). Then, teachers will go through the intervention (4C's modules) and in each they will watch 2–3-minute videos about each tool. There were 3 check-in questions in every module that talked about the ease of access of each module. After which, teachers will have to answer self-efficacy and 21st century skills posttest to see the effectiveness of the intervention. Lastly, the teachers will have to answer an overall experience on the module questionnaire to help the respondent improve the tools in the future. Results show that many have very low self-efficacy on the new and emerging educational technologies but are competent on using the 21st century skills introduced. This can be the reason why some teachers are not able to implement some educational tools due to lack of self-efficacy that they can achieve their teaching goal.

Keywords: Teacher self-efficacy, educational technology, digital learning, professional development, technology integration, post-pandemic education

1. Introduction

In the dynamic landscape of contemporary education, the integration of modern educational technologies has become imperative for fostering effective teaching and learning experiences. Central to this integration is the pivotal role of teachers, whose confidence and competence in utilizing these technologies greatly influence their instructional practices and ultimately impact student outcomes. This publication delves into the crucial intersection of teacher self-efficacy and the utilization of modern educational technologies, elucidating its significance, challenges, and implications for educational advancement.

Teacher self-efficacy, a construct proposed by Albert Bandura in social cognitive theory, refers to an individual's belief in their capability to accomplish specific tasks or achieve desired outcomes in educational settings. Within the realm of technology integration, teacher self-efficacy plays a pivotal role as it influences the extent to which educators engage with, adopt, and effectively implement modern educational technologies (Bandura, 1997). As teachers navigate the complexities of incorporating digital tools and resources into their pedagogical practices, their self-perceived efficacy in using these technologies becomes a critical determinant of success.

Empirical research has underscored the profound impact of teacher self-efficacy on technology integration and instructional practices. Studies by Ertmer and Ottenbreit-Leftwich (2010) and Tschannen-Moran and Hoy (2001) have demonstrated significant correlations between teacher self-efficacy and the integration of educational technologies, highlighting its role as a key predictor of technology adoption and utilization. Moreover, teacher self-efficacy has been linked to various outcomes such as increased motivation, persistence, and instructional innovation (Henson, Kogan, & Vacha-Haase, 2001).

However, despite the recognized importance of teacher self-efficacy in technology integration, educators often encounter challenges that hinder the development and enhancement of their technological confidence. These challenges may stem from inadequate training and professional development opportunities, limited access to technological resources, resistance to change, or perceptions of technological complexity (Davis & Roblyer, 2005; Teo, 2011). Addressing these challenges requires a multifaceted approach that encompasses targeted professional development initiatives, supportive school cultures, and strategic resource allocation.

Against this backdrop, this publication aims to explore the intricacies of teacher self-efficacy in using modern educational technologies, examining factors that influence its development, strategies for its enhancement, and its implications for educational practice and student learning outcomes. By synthesizing existing research findings and offering insights into effective practices, this publication endeavors to contribute to the ongoing dialogue surrounding technology integration in education and to empower educators in leveraging digital tools to enrich teaching and learning experiences.

2. METHODOLOGY

2.1 Research Design and Instruments

This study endeavored to describe and analyze the teacher's self-efficacy on new and emerging educational technologies. It employed a descriptive design method. It made use of an adapted online questionnaire on teacher's self-efficacy in using new and emerging educational technologies after the pandemic. To exercise technology integration, all questionnaires were embedded in the Google Classroom that the researcher created to which all respondents will have to join so they will see all sets of questionnaires assigned to them.

2.2 Setting, Respondents, and Data Gathering Procedure

This study was conducted at the Division of Iligan City wherein the schools who offer online, blended, and modular are the respondents. To interpret the results of the study, a quantitative research design and descriptive statistics were employed. It used the procedure of nonrandom sampling, specifically purposive sampling. The units of analyses were all schools who agreed to be the respondents of the study.

For the data gathering, teachers were asked to scan the QR code found in their letter of consent. After joining the researcher-created Google Classroom for Teachers in the New Normal, they will have to answer the pretest questionnaire on teacher's self-efficacy on new and emerging educational technologies. The questionnaire was divided into 4 parts, namely; Inactive self-mastery, Role modeling, Verbal/social persuasion, and Physiological cues. Each criteria has 5 questions. Then, teachers will go through the researcher-made intervention in which teachers will be introduced to the different educational technologies nowadays that fall under the 4C's of the 21st century skills - communication, collaboration, creativity, and critical thinking. Lastly, teachers will complete the self-efficacy posttest to determine the changes or if the intervention was helpful in boosting their self confidence in using the new and emerging educational technologies. The results of the respondents' pretest and posttest served as the basis of this study.

2.3 Ethical Considerations

A letter of consent addressed to the superintendent of the Iligan City Division, school principals, and the respondents were sought prior to the conduct of the study. For ease of access, the letter to the respondents contains the qr code of the Google Classroom invitation. It is also designed to be self-paced, which means they can access and finish the tasks assigned to them anytime, anywhere provided that they are connected to the internet. After joining, they can start answering the questionnaires assigned to them. The purpose of the course was to leverage the teacher's competence in using the emerging educational technologies nowadays. These were the processes used in this study to determine the teacher's self-efficacy on new and emerging educational technologies.

1. RESULTS AND DISCUSSIONS

This study was determined to describe and analyze the teachers' self-efficacy on new and emerging educational technologies. The following were the findings and results.

Table 1. Level of the Teacher's Self-Efficacy Pretest

Indicators	Mean	SD	Level of Experience
Enactive Self-Mastery	1.77	0.90	Highly evident
Role Modeling	2.74	1.15	Evident
Verbal/Social Persuasion	2.29	1.02	Fair
Physiological Cues	2.93	1.25	Low
Overall	2.43	1.00	Very Low

Table 1 presents the pretest of the teacher's self-efficacy level based on the four (4) sources of self-efficacy, namely: enactive mastery, role modeling, verbal/social persuasion, and physiological cues. It could be deemed from the results that a high number of teachers doesn't have much confidence in role modeling, verbal/social persuasion, and physiological cues when integrating educational technologies. This could be because teachers are not yet equipped with the emerging educational tools in education nowadays. If teachers are not equipped with educational technologies in today's digital age, several consequences may

arise: [1] Limited Student Engagement: Educational technologies offer interactive and multimedia-rich learning experiences that can enhance student engagement. Without access to these tools, teachers may struggle to captivate students' interest and maintain their attention during lessons as mentioned by Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2010)., [2] Ineffective Differentiation: Educational technologies facilitate personalized learning experiences by enabling teachers to differentiate instruction based on students' individual needs, learning styles, and abilities. Without access to such tools, teachers may find it challenging to cater to diverse student populations effectively as stated by Tomlinson, C. A., & Allan, S. D. (2000)., [3] Reduced Collaboration and Communication: Educational technologies provide platforms for collaborative learning and communication among students and educators, fostering teamwork, peer feedback, and teacher-student interaction. Without these tools, opportunities for collaborative learning and effective communication may be limited, said Dede, C. (2008)., [4] Lack of Digital Literacy Skills Development: Educational technologies play a crucial role in developing students' digital literacy skills, including information literacy, media literacy, and digital citizenship. Teachers who are not equipped with these technologies may struggle to cultivate these essential skills in their students according to Hobbs, R. (2010)., and [5] Limited Access to Resources and Learning Opportunities: Educational technologies provide access to vast digital resources, online libraries, virtual simulations, and educational websites, expanding learning opportunities beyond the traditional classroom. Teachers without access to these resources may face challenges in providing enriched learning experiences for their students, added Warschauer, M. (2007).

Lastly, the overall data shows that there is a high number of teachers who have very low self efficacy on enactive mastery which means that many are not yet confident in performing a task successfully using technology. It could also be because of the teacher's field of specialization - that they are not used to integrating technology because of the different needs of their own subject areas. This is supported by the study of Simsek, O., & Yazar, T. (2019), teachers may think differently about integrating their own subject areas with technology. For example, science and mathematics teachers found their topics to be more related to technology, while history teachers stated that they use technology in a limited way because the topics studied are based on a humanist perspective. Again, while all Science and English language teachers believed that their subject was suitable for integration with ICT, Literature and Mathematics teachers did not. Therefore, technology integration in education can be evaluated differently in various disciplines.

These results implied that while teachers have different field of specialization and may not require frequent usage of technology integration, still there is a need for them to leverage as the 21st century skills involved communication, collaboration, creativity, and critical thinking and since the future of education is technology, they must keep abreast to the latest trends in technology education.

Table 2. Level of the Teacher's Self-Efficacy Posttest

Indicators	Mean	SD	Level of Experience
Enactive Self-Mastery	1.38	0.51	Highly evident
Role Modeling	2.50	0.66	Evident
Verbal/Social Persuasion	1.71	0.67	Fair
Physiological Cues	3.54	0.80	Low
Overall	2.28	0.63	Very Low

Table 2 shows the level of the teacher's self-efficacy posttest. As shown above, there has been progress on the teacher's self-efficacy from the pretest and the posttest. The table further explains that a lesser number of teachers have low self-efficacy in terms of enactive self-mastery, role modeling, verbal/social

persuasion, and physiological cues. This can be because of the modules introduced during the intervention process. Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2010) in their study entitled Teacher technology change: How knowledge, confidence, beliefs, and culture intersect emphasizes that successful experiences with technology integration in teaching can significantly enhance teachers' self-efficacy. As teachers witness the positive impact of technology on student engagement and learning outcomes, their confidence in using technology increases.

Another study by Smit, K., Doolaard, S., & van Buuren, H. (2016) suggests that comprehensive training programs and ongoing support initiatives that provide teachers with the necessary knowledge, skills, and resources for technology integration can bolster their self-efficacy.

Moreover, Teo, T., Lee, C. B., & Chai, C. S. (2008) also said that adequate access to technology resources, such as devices, software, and internet connectivity, as well as supportive infrastructure within the school environment, are essential for enhancing teachers' self-efficacy in using technology.

Furthermore, Tondeur, J., Pareja Roblin, N., van Braak, J., Voogt, J., & Prestridge, S. (2017) stressed that collaborating with peers who are proficient in using technology or participating in professional learning communities focused on technology integration can provide teachers with valuable support, ideas, and encouragement, thereby increasing their self-efficacy.

Scherer, R., Siddiq, F., & Tondeur, J. (2019) states that when teachers perceive technology as a tool that aligns with their pedagogical goals and enhances their ability to achieve desired learning outcomes, their self-efficacy in using technology tends to increase.

In general, educational institutions have the ultimate power to support teachers in enhancing their self-efficacy in using technology through addressing their needs so it will lead to more effective technology integration and improved student learning outcomes.

Conclusion & Recommendations

It has been revealed that teachers can increase their self-efficacy in using educational technologies through various strategies and approaches, which include:

- Professional Development Workshops and Training to enhance teachers' knowledge and skills.
- Peer Collaboration and Mentoring as peer support networks allow teachers to share experiences, exchange ideas, and learn from each other's successes and challenges.
- Exploration and Experimentation as it can increase their self-efficacy by actively exploring and experimenting with educational technologies in their classrooms. By trying out different tools, apps, and platforms, teachers can gain practical experience, identify what works best for their teaching context, and gradually build confidence in using technology to enhance student learning.
- Reflective Practice as it allows teachers to critically evaluate their experiences with educational technology, identify areas for improvement, and set goals for professional growth. This includes journaling, classroom observations, and self-assessment. All these can help teachers develop a deeper understanding of their strengths and areas needing development in using technology.
- Continuous Learning and Adaptation as educational technology is constantly evolving, it's essential for teachers to stay updated on the latest trends, tools, and best practices. Engaging in continuous learning through online courses, webinars, conferences, and professional reading enables teachers to expand their knowledge base and adapt their instructional strategies to meet evolving educational needs.
- Lastly, Positive Feedback and Encouragement - Administrators, colleagues, and students can provide valuable feedback and encouragement to teachers as they navigate their journey to improve their

self-efficacy in using educational technologies. Recognizing and celebrating small successes can boost teachers' confidence and motivation to continue exploring and integrating technology into their teaching practice.

By employing these strategies and approaches, teachers can gradually enhance their self-efficacy in using educational technologies, ultimately leading to more effective and engaging learning experiences for their students.

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