Examining the Psychological Role of Self-Efficacy in Teachers' Adaption to Remote Learning during the Covid-19 Pandemic

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Abstract

Introduction: This research aimed to investigate the correlation between extended Technology Acceptance Model (TAM) variables and teachers' self-efficacy in distance learning through the Corona Virus Disease 2019 (COVID-19) epidemic. Additionally, researchers listened to teachers as they discussed their impartial opinions in the classroom perceptions on the benefits, drawbacks, and difficulties of coaching remotely during the COVID-19 epidemic.

Method: The expanded TAM model's components and instructors' self-confidence in remote instruction through the COVID-19 epidemic were compared using a survey and a 49-item questionnaire. The parameters in the expanded TAM model and the teacher's self-efficacy were compared using a stepwise technique for multiple regressions. The difficulties, benefits, and drawbacks of remote instruction during the epidemic were thoroughly investigated in three open-ended questions.

Result: Challenges with Internet connectivity, an absence of contact and communication, and issues with student motivation participation were among the qualitative results. The degree of self-efficacy of instructors in utilizing technology to educate, an absence of support and properties for online instruction, and difficulties in energizing and engaging pupils were all disadvantages. Rich materials, differentiation for the instructor, flexibility, and a means to help students when face-to-face education is not available were among the advantages perceived.

Conclusion: Teachers encounter a variety of difficulties and doubts when they deploy remote learning. In this situation of distance learning, self-efficacy is confidence in one's own ability to perform tasks, overcome challenges, and arrive at desired results.

Keywords: Covid-19, self-efficacy, teachers, remote learning, pandemic, teaching.

1. INTRODUCTION

The COVID-19 epidemic had a huge influence on schools in 2020, causing districts to switch to entirely virtual education in the spring and grapple with the fall semester bringing safety concerns around the return to normal courses. For the 2020–2021 school year, school districts all over the nation used various strategies to get back to work. Some districts returned with face—to—face instruction for socially disadvantaged students, while others used hybrid teaching, and 100% online instruction. Regardless of the educational strategy, instructors returned to the classroom to find settings, routines, and teaching strategies that were radically altered (Pressley and Ha, 2021). A quick transition from conventional face-to-face teaching to remote learning has resulted from the COVID-19 pandemic's profound effects on educational systems throughout the globe. This move presented several difficulties for teachers, requiring them to rapidly adapt their teaching practices to an online environment (Panisoara et al., 2020). This change made it difficult for many professors to prepare and deliver high-quality coursework remotely during the epidemic. Teachers modified their pedagogical techniques to facilitate remote learning as they modified how they delivered knowledge. During this transition, teachers had to take a number of factors into account, including the platform's requirement, features that met that need, evaluation, responsive application, learning, and learning management system customization was used (Ladendorf et al., 2021).

The school community did not support this novel teaching strategy. In reality, when working and studying from home, instructors and students found them suddenly forced to learn techniques for using digital technology they

were barely acquainted with, often running into a variety of issues as well as having difficulties ensuring access to the essential resources (Rabaglietti et al., 2021). In order to connect with the pupils, teachers are suddenly required to present their teachings utilizing technology resources, including via particular online platforms. Because it is required to supervise schooling at home, instructors and parents have become more engaged, and students have lost out on social face-to-face engagement with classmates (Cahapay and Anoba, 2021).

The impression of a teacher's ability to inspire children to learn is another definition of teacher self-efficacy. The instructors' conviction that they may affect their pupils' learning is characterized by another term. Self-efficacy, described as a person's confidence in their ability to do things effectively and achieve desired outcomes, plays a vital role in teachers' ability to navigate the complexities of remote learning (Vidergor, 2023). According to the research, teachers who have high levels of self-efficacy report feeling more satisfied at work and less stressed out at work. Class-average performance and interaction quality were strongly correlated with teachers' sense of competence (Cataudella, 2021). Academics were compelled to immediately switch to a remote learning mode due to the urgent demand to adjust to the new situation. To modify the face-to-face courses to an online remote learning environment, a redesign was required (Andreou et al., 2022). Academics were challenged to correctly reform and change their educational and teaching methods and resources in order to meet the demands and expectations of the unforeseeable condition (Meletiou-Mayrotheris et al., 2022). Students had to adjust to the new learning environment, which included distance learning, being isolated from classmates, professors, and friends, as well as a number of academic, social, emotional, physical, and technological issues (Baxter and Hainey, 2023). It has been a challenging time for kids all throughout the world, a lot had to adjust to learning In light of the pandemic's restrictions on the community, remotely online, despite adjustments toward providing education exclusively online during the period of the outbreak.

The remainder section, as shown below: section 2 presents related works, section 3 describes the proposed technique, section 4 displays the result and discussion, and section 5 presents the conclusion of the paper.

2. LITERATURE REVIEW

Garbe et al., 2020 used an online poll to gather information on parents' problems and experiences during school closure. This physical closure accelerated the shift to distance learning, which increased parental and guardian responsibilities for their children's education. Since parents are the essential players in the educational process, it is crucial to look at how they connect with their kids while they are studying remotely. This will support future policy choices. This planned roundtable discussion will outline research to examine how various professional development (PD) alternatives impact faculty self-efficacy and attitudes regarding using distant learning technologies (DLTs) for online education. Professional development institutes are changing how they prepare teachers for creating, implementing, and administering online courses as a result of strategic initiatives to increase the number of online students and distance learners (DL) enrolled (Yavuzalp and Bahcivan, 2020).

Mohamed Riyath and Muhammed Rijah, 2022 validated and the stated hypotheses are tested in this research utilizing the extended technology acceptance model (TAM) and approach for modeling structural equations based on partial least squares. The respondents' information was gathered using an online survey. Baroudi and Shaya, 2022 learned more about teachers' online self-efficacy TSE learning settings while taking into account COVID-19. 150 K-12 teachers in all, representing six Arab nations, were asked to take part in the research. The online self-efficacy as viewed instruction was strong, according to quantitative and qualitative data. The level of self-efficacy in promoting student involvement in learning, particularly in online learning contexts, has been investigated in the research. Therefore, the purpose of this research was to investigate the role of self-efficacy as a moderator in the link between online teaching skills and student involvement (Baba Rahim, 2022). One strategy being used to combat the COVID-19 pandemic's strains on the education sector is the online-based learning orientation that is now in use. Despite the circumstance, education must protect children's rights to receive high-quality instruction. With teacher self-efficacy serving as a mediating variable, the research sought to ascertain the impact of spiritual leadership and transformational management on the quality of online learning (Arifin et al., 2022).

Okuonghae et al., 2022 focused on computer self-efficacy and technical preparedness as indicators of Library and Information Science (LIS) students' acceptance of online learning in Nigeria. The COVID-19 Pandemic has increased the demand for e-learning adoption, however despite research suggesting that e-learning adoption is

context-based, it is necessary to look at the determinants of the adoption of e-learning in the Nigerian context. Gomez et al., 2022 used a web-based survey and the "Technology Integration Confidence Scale (TICS) version 3 tool, and this was created by the first author and is in line with the Indian Society for Technical Education (ISTE) 2017 Standards for Educators." It discovered that, on a median, participating teachers had a fair level of trust in both utilizing and integrating technology. The globe has been afflicted by COVID-19, which has had a significant negative impact on people's mental and physical health during the final few months of 2019. Fear and worry are psychological effects of the COVID-19 epidemic brought on by unavoidable rises in positive case numbers and fatalities. In this research, it was sought to determine if perceived social support had a mediation role in the association between teachers' assessments of their overall self-efficacy and their dread of COVID-19 (Yenen and Carkit, 2023). MOOCs, which stand for massive open online courses, have a considerable impact on the academic settings in which students engage in learning. Through the development of a structural equation model and the use of confirmatory factor analysis, the objective of this research is to get a deeper comprehension of the ways in which students could make use of instructional technology (Pellerone, 2021).

3. METHODOLOGY

In this section, we discuss the role that self-efficacy played in helping instructors during the covid-19 epidemic adjust to remote learning. The term "self-efficacy" refers to a person's confidence in their ability to carry out activities and produce the intended results. High self-efficacy teachers have a strong conviction in their capacity to adjust to the difficulties and demands of teaching in a virtual setting in the context of distance learning. When conventional face-to-face training was interrupted by the COVID-19 pandemic, teachers were suddenly forced to switch to remote learning, which offered a number of technical, pedagogical, and logistical issues. In this situation, self-efficacy was very important in assisting teachers' adaptation to distance learning.

Using a methods approach, we aimed to comprehend teachers' perspectives and attitudes on using an LMS as well as their inspirational, instructive, engaging and result-oriented throughout the COVID-19 epidemic. With the help of the extended TAM, a number of characteristics were investigated, including the system quality of a Learning management system(LMS), the supporting environment for instructors utilizing an LMS, perceived utility, usability, perspectives on usage, intentions to use, and actual use. Inspiration, guidance, participation self-efficacy, and result anticipation were the four subscales of the study's teachers' teaching self-efficacy.

3.1 Data collection

From A remote survey included 255 people altogether. Only 141 responses with at least 80% completion were found to be useful after a careful examination of each one. Using a snowball sample technique, a message is put on a social network, allowing friends to share, the conclusion indicated that 56.28% of respondents really used the survey.

3.2 Scale of teaching self-efficacy

A modified version of the teaching self-efficacy measure was used. Compiled self-efficacy education in modified six tests into one test to evaluate Teaching Engineering Self-efficacy (TESS), according to the findings of a study that evaluated previously published data on self-efficacy training. The original version of a 128-item, six-point Likert scale was used in this study. Questions were divided into five categories: knowledge, teaching, involvement, disciplinary expectations, and anticipation of results. The last TESS incorporated knowledge, motivational, instructional, engaging, disciplinary, and result-in-expectation components once the survey's validity was determined. There were 41 questions in total after the addition of a sixth component and the consolidation or reduction of questions. In the first investigation, a reliable internal consistency Cronbach's alpha values for every element were 1.97, 1.85, 1.93, 1.87, 1.95, and 1.87, respectively.

Following an evaluation of all the subscales, four subscales with a total of 18 items were purposefully selected: the motivational, instructional, engagement, and result-in expectation subscales. With no particular topic in mind, the questions were altered to meet the online educational environments. The questions were also converted into a seven-point Likert-type scale, with 1 denoting Strongly Disagree and 7 denoting Strongly Agree, to make the survey less complicated for the respondents to complete.

3.3 TAM model with extended measurements

The expanded TAM model's seven constructs, enabling conditions, system quality, perceived self-efficacy, professed accessibility, perceived usefulness, use attitudes, and behavioral intentions to use were each measured by a total of 25 questions on a Likert scale with seven points. The responses on the seven-point Likert scale varied from Strongly Disagree (rating of 1) to Strongly Agree (rating of 7). The perceived self-confidence, behavioral intention to use, and system quality metrics were adapted. The Cronbach's alphas were 1.86, 1.92, and 1.91, accordingly, while the total internal consistency was 0.97. For these three constructs in the present investigation, the Alphas from Cronbach's were 0.88, 0.89, and 0.83. Given the supporting situations and behavior regarding use, with reliability ratings of 0.87 and 0.97. In the present investigation, the values of Cronbach's alpha were .87 and 1.94, respectively. The validity of the perceived usefulness and perceived usability measures was adaptable from research with reliability at 0.97 and 0.94, respectively, whereas they were 0.90 and 0.88 in the present investigation.

3.4 Teacher self-efficacy and Remote teaching

The delivery of education and the facilitation of learning in a digital or digitally-simulated setting is the technique referred to as remote teaching, which is also known as online or virtual teaching. It entails making use of a wide variety of technical tools, platforms, and digital resources in order to engage students, provide curriculum, offer feedback, and encourage engagement and cooperation among students. Figure 1 depicts the benefit of self-efficacy.

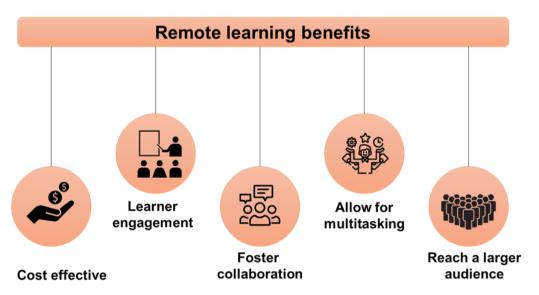


Figure 1: Benefit of remote learning

A teacher's self-efficacy is their conviction in their own ability to effectively carry out their instructional responsibilities and favorably influence their students' learning results. It is the assurance that teachers have the capacity to successfully prepare and deliver instruction, maintain control over the dynamics of the classroom, meet the specific needs of individual students, and prevail over challenges that arise during the process of teaching and learning. Self-efficacy in remote teaching refers to a teacher's conviction in and confidence in their ability to effectively integrate pedagogical techniques and technology tools that enhance the learning experience of students and results in the context of an online learning environment. It involves the teacher's capacity to harness technology to create dynamic and interesting learning experiences, build a sense of community and cooperation between students, and customize education to fit the unique requirements of individual students. Figure 2 shows the fundamental causes of self-efficacy.

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Figure 2: Principle sources of self-efficacy

4. RESULT AND DISCUSSION

In this section, we discuss the findings of the multiple regressions, difficulties connected to quality, benefits, and their frequency, as well as the frequency of any associated drawbacks.

4.1 Multiple Regressions

SPSS 25 was used in order to do the analysis of the quantitative data. For the purpose of describing the characteristics of the participants, descriptive statistics were used. Multiple regression analyses were carried out in order to investigate the relevant determinants that the expanded TAM model had with regard to instructional, motivational, engagement, and result expectation variables.

For the purpose of providing an explanation of the connection that exists among two or more continuous dependent variables predictors, a predictive analysis known as multiple regressions was used. The goal of this study is to look at if any of the characteristics included when using the expanded TAM model can accurately determine the K-12 teachers' performance levels of inspiring, engagement, and instructional, and result in anticipation self-efficacy using multiple regression of the stepwise approach was employed to accomplish this. Additionally, instructors' attitudes about usage and the supporting environment have a strong correlation with their degrees of participation and self-efficacy, F (3,137) = 53.98, p < 0.001, R2 = 0.45. Their choice and perception of the LMS's and the enabling systems value their assurance in their capacity to involve children in the distant learning environment through the COVID-19 epidemic may be predicted by the circumstances their school/district offered. Results from multiple regression analysis using the stepwise method showed that instructors' opinions on the value of the LMS and the atmosphere of remote instruction might both positively influence their confidence in their capacity to inspire students when teaching remotely, F (2,137) =25.24, p < 0.002, R1= 0.26. Additionally, their faith in their capacity to encourage students to learn through remote learning situations can be predicted by their attitudes toward the LMS's utility and its remote teaching environment, and the encouragement they acquired from the districts or schools, F(3,134) = 45.09, p<0.001, R2= 0.49. In the final least, their degrees of observed utility, behavioral intention to use, and supportive situations may strongly influence their levels of expectation for the result, F (3,134) =21.75, p < 0.001, R2= 0.32 as shown in Table 1, K-12 instructors' opinions of the LMS's value, their desire to continue using it for remote instruction, and the supportive environments that their school or district offered may all predict how successful they believe their remote instruction to be.

Table 1: Using multiple regressions to teach the self-efficacy subscale

	Coefficients			Model fit			
	β	SE	ρ	F	R^2	ρ	df
Engagement				55.98	0.45	< 0.001	2.139
Intercept	3.32	.32	< 0.003				
Attitude to use	.38	.05	< 0.002				
Facilitating condition	.10	.05	.02				
System quality				45.07	0.51	< 0.01	2.134
instruction							
Intercept	3.55	.23	<.002				
Perceived usefulness	.22	.05	<.003				
System quality	.15	.06	.002				
Facilitating condition	.13	.05	.004				
Outcome expectancy				22.75	.33	< 0.002	4.39
Intercept	2.15	.27	< 0.002				
Perceived usefulness	.15	.06	.007				
Intend to use	.18	.07	.009				
Facilitating condition	.11	.05	.011				
Motivation				25.20	0.28	< 0.02	2.135
Intercept	2.32	.25	< 0.002				
Perceived usefulness	.21	.04	< 0.003				

4.2 Quality-related problems

A number of themes and subthemes within the issues appeared once all the data were analyzed. Table 2 and figure 3 list a few of the obstacles that participants, both instructors and students, identified as being greater than those they typically confront in classroom settings. Many participants categorize this equality issue under a number of headings, including the fact that not every one of my students has access to the Internet or devices which they may utilize, competing demands for device/Internet use in households, expressing technology among various school-age relatives, or unstable WIFI networks that affect the video and audio required for remote learning. Remote learning by remote teaching cannot be guaranteed to learners without consistent access to gadgets and/or the internet, resulting in equity issues.

Emotional uncertainty is the second topic being challenged. Teachers were exerting every effort to connect students through learning tools like WebEx or Zoom. The fact that instructors were still missing out on timely and concrete chances to interact with pupils inhibits additional teaching to assure achievement. Interactions developed as the third subject under difficulties.

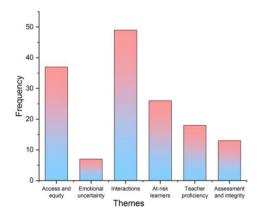


Figure 3: Difficulties and frequency

Table 2: Quality-related problems

Themes	Frequency
Emotional uncertainty	7
Interactions	49
Access and equity	37
Teacher proficiency	18
Assessment and integrity	13
At-risk learners	26

The flexibility allowed instructors and students to perform at their own speed, giving them more practice time and less time to prepare, according to the theme's overall study. Differentiation or customization of teaching was cited by a number of participants as an additional benefit since it creates different options for practice and learning and lessons may be modified for students' needs to be more precise. Figure 4 and table 3 denote the benefits and frequency. The claim that remote learning offered adaptability to develop personalized learning, separated teaching, and the opportunity for students to work at their own speed with extra time for practice was repeated by the majority of participants. Overall, educators welcomed remote teaching, positioning, and learning the job to ensure the security of both students and educators. Teachers are naturally adaptable; they can handle any new demands, responsibilities, or assignments that are placed on them. Throughout the pandemic and remote teaching, they remained adaptable. They used strategies that were optimal for the learner, such as differentiated education, flexible learning, and more customized learning.

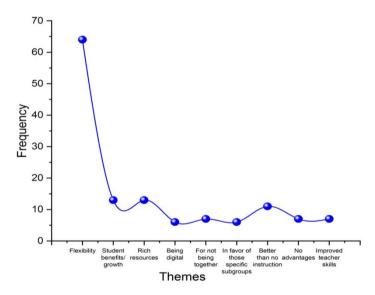


Figure 4: Benefit and frequency

Table 3: Benefit and frequency

Themes	Frequency
Flexibility	64
Student benefits/growth	13
Being digital	6
For not being together	7
Rich resources	13
Better than no instruction	11
In favor of those specific subgroups	6
Improved teacher skills	7
No advantages	7

Inequity, interactions, and at-risk students are some of the issues shown in table 4 and figure 5 list of weaknesses, which also raise the general problem of educational disparities associated with remote instruction during COVID-19. Because not all students have equal access to technology, the internet, and knowledge and abilities, remote coaching by its very nature widens the educational gap for at-risk adolescents. As 35 participants said that students often lack desire and interest, participants frequently believed that pupils are not prepared for remote learning. The biggest problem with the technology used for remote learning during the epidemic: the lack of constant at-home assistance, access, bandwidth, and students' lack of familiarity with how to utilize these technologies for learning.

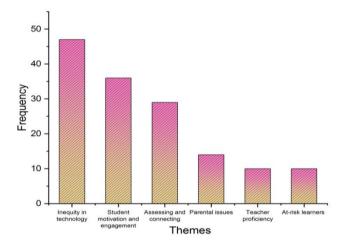


Figure 5: Drawbacks and frequency

Themes	Frequency
Technology inequality	47
motivation and involvement of	36
students	
At-risk learners	11
Parental issues	14
Teacher proficiency	10
Assessing and connecting	29

Table 4: Drawbacks and frequency

DISCUSSION

Multiple regression analysis using stepwise process findings showed that instructors' satisfaction with the LMS affected their self-efficacy in motivating and instructing. Their teaching, participation Self-efficacy, and result presumption were all affected by the help they got to utilize the LMS. Their perceptions of the LMS's value for online education had an impact on their expectations for the effectiveness of their lessons. Their intention to utilize The LMS had an effect on their learning result anticipation, and their attitude toward utilizing The LMS affected their involvement and sense of effectiveness.

As a consequence of their impressions of the LMS's utility and the atmosphere for remote instruction, instructors' beliefs about their capacity to inspire students may be predicted favorably, according to research. However, as teachers, we also need to be understanding the influencing factors that often impede their remote teaching setting. Support teachers from the schools or governments may forecast how confident they are in their capacity to support students' development in online environments. This has to be looked at from the perspective of the help teachers require to deal with some of these difficulties and limitations. Many instructors struggle to adapt to the new standard of the remote teaching environment without feeling prepared, stressed, or psychologically worn out.

5. CONCLUSION

In conclusion, there were various obstacles that affected remote emergency teaching, and instructors raised their worries about the technology and the internet, which did not always operate when teaching or learning remotely. They acknowledged the difficulties associated with equality as well as the concerns they had with social contact and connection with peers. However, the majority of the time, they presented this undertaking as an obstacle that they were prepared to assist the learning of students. They were concerned that the pupils would find it more difficult to remain motivated and engaged in the distant learning setting. Such study in the future could be able to assist teachers and decision-makers in enhancing the learning environment, which is something that will most likely be employed on a more regular basis in the future.

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