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Online teaching practices that motivate and demotivate the students to learn

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ABSTRACT

The rapid shift to online education during the COVID-19 pandemic has raised concerns about its impact on student motivation, particularly in mathematics education. This study investigates the online teaching practices that influence student motivation and demotivation. The primary objectives are to identify teaching practices that either motivate or demotivate students and to understand the challenges and benefits they encounter in an online learning environment. A qualitative approach was employed, utilizing document reviews and focus group discussions with third- and fourth-year students in the Philippines. Key findings reveal that engaging content, active participation, supportive teachers, and effective use of technology are significant motivators, while technical issues, lack of interaction, monotonous content, and insufficient feedback were the primary demotivators. To address these issues, the study proposes that educators should enhance interactive and supportive teaching practices while mitigating technical problems and fostering meaningful interactions. These recommendations aim to improve online teaching strategies and boost student motivation in digital learning environments.

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1. INTRODUCTION

Over the past few years, technology has significantly transformed numerous facets of human existence, notably education. Across all levels of learning, from elementary schools to tertiary institutions, technology has ingrained itself as a fundamental component of the educational journey [1]. This piece delves into the changing dynamics of technology within education, shedding light on its progressions, hurdles, and potential avenues for growth [2], [3].

Technology has become a driving force in modern education, offering new possibilities for teaching and learning [4]. While these advancements hold great promise for improving educational outcomes, it is crucial to address challenges related to access, implementation, and privacy to fully realize their potential. By embracing innovation and fostering digital literacy, educators can leverage technology to create inclusive, personalized, and effective learning experiences for all students [5]. Online instruction, which includes both synchronous and asynchronous methods, enables interactions at any time and from any location, [6], [7], further enhancing the flexibility and reach of educational technologies.

When the COVID-19 pandemic struck the world, educators shifted to online instruction as a substitute approach to support educational activities because of limitations and restrictions for face-to-face instruction [8], [9]. This shift to online instruction due to the COVID-19 pandemic has led to the increased

use of current information and communication technology (ICT) tools, ways, and methodologies in online and distance education [10]. The COVID-19 pandemic has caused a massive shift in education worldwide, with schools and universities closing to prevent the virus's spread [11]. This abrupt change forced educators to immediately transition to remote teaching, a challenge for many who were unprepared and had to learn online tools on the fly [12]. Students have also faced challenges, struggling to adapt to remote learning, feeling isolated from peers, and experiencing increased stress and anxiety [13], [14]. Without the structure of in-person classes, some students have seen their academic performance decline [15].

Employing modern ICT tools, techniques, and methodologies (TTM) in online and distance education can be advantageous for teaching and learning mathematics in both synchronous and asynchronous formats [6]. In recent times, education has seen a significant shift due to technological advancements, notably with the rise of online learning platforms. These platforms have become widely adopted and offer numerous benefits compared to traditional in-person teaching methods [16]. A key advantage of online learning is its flexibility, allowing students to access course materials and participate in learning activities at their own pace and convenience, which is especially beneficial for those with busy schedules or unique learning needs [17]. Online platforms provide access to a diverse range of resources such as multimedia materials and interactive tools, catering to various learning styles. Moreover, innovative teaching methods like virtual group projects and interactive discussions foster student engagement and create collaborative learning environments [18], [19].

According to the study of Aikina and Bolsunovskaya [20], the main drivers of students' motivation to use Moodle for learning: higher attestation points, chances for laptop and mobile access, teacher feedback via Moodle, and online learning resources that are well-organized. Furthermore, based on the data collected, it appeared that technical issues, deadlines, typos in test answers, and inaccurate automatic evaluation are the most demotivating elements affecting students' involvement in online learning through Moodle. One of the main factors leading students to drop out of online courses is experiencing feelings of isolation, frustration, and disconnection, coupled with a lack of interaction with faculty and instructors. This underscores the importance of understanding what motivates students to learn online [21].

The lack of personal identification in the online learning environment can result in reduced motivation and disconnection, leading to minimal involvement or potential withdrawal. While in traditional classrooms, students' motivation levels can be somewhat discerned through physical cues, online courses pose difficulties and considerations regarding students' motivation and active engagement due to the absence of such cues [22]. According to previous studies [23], [24], the top three demotivating factors in learning are teachers lecturing too much, students having difficulty in accomplishing classwork, and learning activities not stimulating to hold their attention generally moderately demotivated them in their learning.

One effective method is to acknowledge and incentivize both high-performing students and those with moderate performance [14], [25]. This approach not only boosts their morale but also leads to noticeable improvements. In addition to recognizing students' progress, it is crucial to offer them constructive feedback [26]. Another strategy is to promote collaboration with peers. Additionally, employing a diverse range of learning tools and allowing for self-monitoring can further enhance the learning experience [18].

Clark and Mayer [27] provides comprehensive guidance in their study in educational technology research and development on designing highly effective e-learning materials. These recommendations guide users and designers of multimedia learning resources. They provide practical insights into how different instructional methods affect student motivation and engagement in online education. By considering these guidelines, we can improve our understanding of how online teaching practices influence student motivation and demotivation in distance learning settings. The reviewed literature exposed the knowledge gap on the lack of exploration and observation on the motivation and demotivation of the students to learn mathematics in an online learning environment using a qualitative approach. Thus, this study sought to address this need by exploring teachers' practices that influence the motivation and demotivation of students to learn in a distance learning setting. It also dealt with uncovering students' experiences, engagement, and challenges encountered while learning through online methodology that may influence their motivation.

In essence, this study aimed to examine and evaluate the wide variety of online teaching practices used in distance mode of learning, with an emphasis on how they affect students' motivation and demotivation. Through an examination of the diverse techniques, tactics, and procedures employed by online teachers, the goal of this study was to pinpoint the essential elements that foster student involvement, enthusiasm, and enduring interest in the educational journey. Furthermore, the study looked for components of online teaching practices that might serve as obstacles and cause students to become disengaged and demotivated. This study seeks to answer the following research question:

i) What are the online teaching practices that influence the motivation and demotivation of students in learning mathematics in a distance learning environment?
ii) What are the specific challenges and benefits that students experience in an online mathematics learning environment?

The findings of this study can provide practical insights for preceptors and educational developers, providing perceptivity into the most effective methodologies and practices for using ICT tools to support the teaching and literacy of mathematics in online and distance education.

The specific objectives of the study are to determine the online teaching practices that motivate and demotivate students to learn mathematics. It also aims to identify the students' gains and pains encountered in an online learning environment. The findings will provide practical insights for educators to enhance online teaching practices and provide support for student engagement in learning mathematics.

2. METHOD

2.1. Data gathering instrument

This study used a qualitative approach, specifically employing document review to address the research questions. A total of 11 third- and fourth-year students from a local university in the Ilocos Region of the Philippines, who experienced full online learning during the pandemic, took part in the study. The sample size of 11 was chosen based on qualitative research standards, prioritizing depth of insights over quantity to achieve data saturation [28]. The study ensured sample adequacy, as the thematic analysis revealed consistent patterns, supporting literature suggesting that a sample size of 10 to 15 participants is sufficient to reach saturation [29]. Research questions were reviewed by experts and distributed to participants via an online form. To substantiate and elaborate on the responses derived from the forms, a focus group discussion was conducted with selected participants. Thematic analysis procedures were followed to identify, categorize, analyze, and interpret patterns from participants' answers.

For ethical considerations, only those who indicated their willingness to participate in this study were included. They were given orientation as to the purpose of the study. The participants are free to decide if they are willing or not to answer a particular question of they feel uncomfortable or feel any harm or risk in answering such. Their identities were anonymized and all information gathered from them were solely for the purpose of this study. Moreover, the findings of the study were discussed with the participants.

2.2. Data analysis

In this study, thematic analysis, as outlined by Braun *et al.* [30], was utilized. The process involved thorough document review and coding stages. Initially, transcripts were closely examined to identify potential themes. Subsequently, the researcher reviewed these initial codes, ensuring diversity preservation while identifying overarching themes. The research question, examining online teaching practices' impact on student motivation and demotivation, guided this process. In the third stage, the researcher analyzed quotes aligning with the overarching themes. Subsequently, themes were meticulously reviewed before definition and naming. Once finalized, the researcher commenced writing the report.

3. RESULTS AND DISCUSSION

3.1. Engaging content delivery

Students are motivated by content that is interesting, captivating, and includes interactive elements such as games and small recaps. They appreciate when teachers make efforts to keep the material engaging and relevant. Students thrive when content is customized to their interests, incorporating multimedia, real-life examples, and compelling narratives. Interactive features like quizzes and discussions promote active participation, while games and simulations add excitement. Recaps help reinforce learning, and dynamic content keeps students motivated, fostering an environment where everyone can succeed. Participants stated:

"*If it captures my attention*."
"*To see my peers and classmates even though they are far from me*."
"*Interesting with small recaps.*"

3.2. Active participation encouragement

A second theme is active participation encouragement where students feel motivated when online teaching practices encourage active participation. Opportunities for interaction, collaborative learning, and responding to questions or prompts contribute to their engagement. They appreciate when teachers use apps or incorporate interactive elements that facilitate engagement and participation. Collaborative learning activities further enhance engagement by promoting teamwork and shared problem-solving. Additionally, students feel valued when their opinions are solicited and respected by the teacher, creating a sense of ownership in the learning process. Participants stated:

"*If the teacher motivates engagement in class.*"
"*If the teacher accepts opinion from students.*"
"*Ensure communication.*"

3.3. Teachers' approachability and support

A supportive learning environment, where students feel connected to their peers and receive attention from teachers, enhances motivation. When teachers' pay attention to students' contributions, even if they don't have their cameras on, it fosters a sense of belonging and encourages engagements. It boosts student motivation by recognizing contributions, even if incorrect, and fostering a sense of belonging. Clear goal-setting and flexible deadlines reduce stress, while digital submission options save costs. Peer interactions and relaxed online exams further enhance engagement. Participants stated:

"*When teachers giving you the feeling of appreciation in your answer even though you are wrong.*"
"*To see if I learn something in our discussion.*"
"*Mas mahaba deadline, can submit it through soft copy, hindi na gagastos pang print.*" *(Longer deadline, can submit it through soft copy, no more printing costs).*
"*When the assignment deadline is a week or more.*"
"*May nagpapaalala sayo pag malapit na yung due date.*" *(Someone reminds you when the due date is near).*
"*Allow self-monitoring when teachers giving you the feeling of appreciation in your answer even though you are wrong.*"
"*I cannot feel pressure answering exam if it is online*."

3.4. Effective use of technology

Utilizing technology to create interactive and engaging online learning experiences is crucial. Apps, quizzes, discussions, and digital submission options enhance motivation and convenience. Participants stated:

"*Convenient, easy to access.*"
"*Interactive games and small recaps.*"
"*I have so many time to do the assignments and I have time to do some research about it.*"

3.5. Clear expectations and structures

Clear goals, structured deadlines, and reminders help students stay organized and reduce stress. Flexible deadlines and digital submissions also add convenience and reduce barriers to completing assignments. Participants stated:

"*Setting clear goals.*"
"*When the assignment deadline is a week or more.*"
"*Someone reminds you when the due date is near.*"

3.6. Technical issues and challenges

Technical issues and challenges, such as poor internet connectivity and difficulties accessing materials, significantly demotivate students. Unstable internet connections and device issues disrupt the learning experience and cause frustration. The lack of reliable data or bandwidth complicates access to online resources, making it hard for students to keep up with coursework. Poor communication between teachers and students, exacerbated by connectivity problems, hinders effective learning. Additionally, when teachers face internet issues, it disrupts the class flow and impacts students' engagement. Participant stated:

"*Poor internet connection.*"
"*Disconnection between teacher and students due to poor communication.*"
"*Device overheating.*"
"*Lack of load/data.*"
"*The idea it can be downloaded but it is not easy for you to download because sometimes the signal is not that high or available.*"
"*When the teacher internet connection is not clear.*"
"*I don't have stable connection and it affects me from learning.*"

3.7. Lack of engagement and interaction

Students may feel demotivated when there is a lack of engagement and interaction in online classes. Passive teaching methods or limited opportunities for discussion can lead to disengagement. They may feel isolated and disconnected from the learning process, particularly if they perceive a lack of attention from teachers and peers. Participants stated that:

"*No interaction with the classmates.*"
"*Teacher not interested in student participation.*"
"*Feeling ignored or unnoticed during discussions or recitations.*"
"*Lack of clear instructions or feedback on assignments.*"

3.8. Overly monotonous content

Monotonous content delivery leads to disengagement. Lack of variety in teaching methods, repetitive materials, or a dull presentation style demotivate students. They prefer dynamic and interactive learning experiences that keep them engaged and interested. Participants stated:

"*Madalas iiwan ko lang nakaopen yung klase pero may iba akong pinagkakaabalahan like panonood ng kdrama at iba pang minsan ay mga walang kwentang bagay.*" *(I frequently leave the class open while I attend to other matters, such as watching K-dramas and sometimes engaging in other trivial activities.)*
"*Too many distractions.*"
"*Boring, too many distractions.*"
"*Distraction in digital environment.*"

3.9. Lack of timely feedback and support

Timely feedback and support are essential for student motivation and learning progress. Students feel motivated when teachers provide prompt feedback on assignments and queries. Supportive feedback acknowledges student efforts and provides guidance for improvement, fostering a supportive learning environment. Participants stated:

"*Lack of clear instructions or feedback on assignments.*"
"*Inconsistent or ineffective communication from teachers.*"
"*When students have questions or need clarification, but the teacher takes days to respond, it affects my motivation to stay engaged in the course.*"

3.10. Unclear expectations and poor organization

Unclear expectations and poor organization create confusion and stress for students. Lack of clarity in course requirements, assignment deadlines, and communication channels leads to difficulties in navigating the learning process. Students value well-organized course materials and clear communication from teachers. Participant stated:

"*Struggling by the internet connection and sometimes I just do self-study.*"
"*Self-studying is not easy when the teacher were only giving materials.*"
"*When the time is you can't have signal and then you can't catch the topics.*"

In today's world, education is rapidly changing as we move towards online learning. This shift brings a variety of experiences and obstacles for students as they engage virtual classrooms. There are several key themes that emerge, shaping the narrative of contemporary education. Firstly, the theme of "technical issues and challenges" is similar to Khanal *et al.* [31], who emphasize how technical barriers disrupt learning and demotivate students. Likewise, the importance of engaging content, as highlighted in this study, aligns with the findings of several studies [1], [4] which emphasize the role of interactive and multimedia elements in sustaining student interest. The theme of "supportive learning environment" resonates with previous study [32], stressing the significance of instructor support and connection. The study also supports the previous findings [20], [21], regarding the importance of active participation and collaborative learning. Additionally, concerns about monotonous content are in line with previous studies [23], [24] highlighting the need for dynamic teaching methods. This study contributes practically by offering actionable guidelines for creating engaging online learning environments, theoretically by expanding understanding of motivation in online contexts, and methodologically by providing rich qualitative insights through document reviews and focus group discussions.

The teacher's role in motivation is pivotal to inspire students to push boundaries and strive for excellence. Educators serve as guides, igniting curiosity and dedication. Interactive tools bridge the digital gap, enhancing collaboration and enriching learning experiences. Technology facilitates dynamic discussions and deeper connections among peers. Quality discussion topics drive exploration, inviting students on a journey of discovery. Thought-provoking subjects awaken curiosity and drive inquiry. Quality communication lays the foundation for engagement, fostering meaningful connections in the online world. Clear channels facilitate effective learning experiences. However, technical issues can be a major obstacle to academic pursuits, disrupting the flow of knowledge. Despite efforts, poor connectivity threatens the learning journey. In the online learning landscape, these themes interweave, shaping the modern educational experience. Through engagement, understanding, confidence, motivation, technology, discourse, communication, and resilience, students embark on a transformative journey towards knowledge in the digital age.

The study's results have important implications for education, particularly in online learning settings. Teachers can enhance their teaching methods by focusing on strategies that motivate students. These strategies include delivering engaging content, encouraging active participation, incorporating interactive elements, and setting clear expectations. Additionally, the research highlights the need to address technical challenges and promote meaningful teacher-student interactions. From a policy perspective, the study suggests that education policies should prioritize effective online teaching practices and work to bridge the digital divide.

4. CONCLUSION

The following study thoroughly examines how online teaching practices can impact students' motivation and demotivation in an online mathematics learning environment. The results shows that well-structured, engaging content delivery, active participation opportunities, and a supportive learning atmosphere significantly improve students' motivation and engagement. These factors help students stay focused, involved, and persistent in their learning. On the other hand, technical issues, lack of meaningful interaction, and feelings of isolation can lead to disengagement and frustration, hindering the learning process.

The study provides valuable insights for educators by emphasizing the importance of using diverse teaching methods to stimulate student interest and create a dynamic learning environment. The findings underscore the need for effective communication and timely feedback between instructors and students, as well as the importance of clear expectations and structured guidelines to prevent confusion and stress. While the study offers important implications, its relatively small sample size and focus on a single region limit the broader applicability of the results. Future research should aim to investigate these practices across larger, more diverse populations and explore the long-term impact of various online teaching strategies on student motivation and performance. Additionally, further research could explore the integration of innovative technologies such as gamification and interactive platforms in promoting sustained student engagement.

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Eduard M. Albay		✓	✓	✓		✓		✓		✓	✓	✓		

C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

DATA AVAILABILITY

The data that support the findings of this study are available from the corresponding author [ACL], upon reasonable request.

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