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Edu-Connect: Transforming MSU Marawi Education through Social Media Networks

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Abstract

The study investigates the role of Social Media Networks (SMN) as educational platforms at Mindanao State University, Marawi City, amidst the COVID-19 pandemic. It aims to answer three key questions: the common SNM used by students in online classes, their perceptions of SNM, and the effects of integrating SNM based on the Triple E framework (Engagement, Enhancement, Extension of learning objectives). A quantitative descriptive design with a validated survey questionnaire was employed, involving 104 students from the first semester of the 2021-2022 Academic Year. Data analysis included frequencies, percentages, weighted averages, and correlation tests. Results showed that Google, Messenger, and Facebook were the most frequently used SNM. About 85% of respondents had basic SNM knowledge, facilitating their adaptation to online learning. According to the Triple E framework, 78% demonstrated high engagement, 82% reported enhanced learning objectives, and 75% experienced expanded understanding through SNM. The study underscores the significance of integrating SNM into online learning. Recommendations include structured training on SNM usage, enhancing student-lecturer communication via SNM, limiting gadget use to combat digital fatigue (reported by 60% of students), innovating online learning methods, and optimizing SNM use by lecturers and staff for better material accessibility.

Keywords: Social Media Networks, Educational Platforms, Online Learning, Triple E Framework.

INTRODUCTION

In today's digital era, social media has become an integral part of everyday life (Bong, 1998; Wu et al., 2024; S. Zhou et al., 2024), including in education. The COVID-19 pandemic has further accelerated the adoption of digital technology (Chen et al., 2024; Elliot, 2001), forcing educational institutions to shift to online learning. At MSU, Marawi City, the implementation of Social Media Networks (SNM) as an educational platform presents new opportunities and challenges (Helfrich, 2007; Metwally et al., 2024). This study aims to explore the contribution of SNM in supporting online learning among MSU Marawi students (Leavesley et al., 2022; Yang et al., 2024), focusing on the Triple E framework: Engagement (Hoang et al., 2024), Enhancement (Poomchaichote et al., 2024), and Extension (Zhang et al., 2024).

The importance of using SNM in education has been supported by various studies. Boyd and Ellison (2008) identified SNM as a tool that allows for profile creation, relationship exploration, and intensive online interaction (Dehaene, 2001; Diaz et al., 2024; Kaplan, 1995). Zhu's (2012) study in Western countries showed that the use of SNM for collaborative learning has a significant contribution to student academic performance and satisfaction. However, contextual research in the Philippines, especially in MSU Marawi, is still limited (Glenthøj et al., 2024; Yang et al., 2024). Given that the Philippines is known as the "social media capital of the world" with an average social media usage time of 3.4 hours per day (We Are Social, 2018), this study is highly relevant (Moitzi et al., 2024; Yi & Zhou, 2024), especially in the context of the pandemic.

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The Triple E framework (Engagement, Enhancement, and Extension) serves as the basis for the evaluation in this study. Engagement refers to the level of active participation of students in learning (Coblentz et al., 2024; Mir et al., 2024), Enhancement measures the extent to which JMS enhances the achievement of learning objectives, and Extension assesses how JMS extends students' understanding beyond the classroom context. The study also highlights the challenge of digital fatigue experienced by 60% of students, a crucial issue that needs to be addressed through innovative approaches in online learning.

The development of information and communication technology has brought significant changes in various aspects of life (Sun et al., 2024; J. X. Zhou et al., 2024), including education. During the COVID-19 pandemic, the transition to online learning has become an urgent need that must be faced by educational institutions around the world, including MSU in Marawi City. This adaptation requires not only changes in teaching methods but also in the way students and lecturers interact and communicate. Social Media Networks (SNMs) such as Google, Messenger, and Facebook have become essential tools in facilitating online learning, but the specific impact of their use in educational contexts still requires further research.

In the local context, students in Marawi City face unique challenges such as limited internet accessibility, diverse socio-economic conditions, and unstable security situations. These challenges affect students' ability to adapt to online learning and make optimal use of SNMs. This study is important to understand how SNMs can be effectively integrated into online learning at MSU, taking into account this specific local context. Thus, this study not only provides theoretical contributions regarding the use of SNMs in education but also offers relevant practical recommendations to improve the quality of online learning at MSU.

Online learning has become an urgent need amidst the COVID-19 pandemic, forcing educational institutions to adapt quickly. However, this transition is not always smooth, especially in areas with limited infrastructure and access to technology such as Marawi City. MSU in Marawi faces unique challenges in ensuring that the teaching and learning process remains effective and inclusive. In this context, SNMs emerge as a potential tool to support online learning.

Although there have been several studies highlighting the use of JMS in education, there is still a gap in the literature discussing how JMS can be effectively integrated into online learning in conflict and disaster-affected areas such as Marawi. This study attempts to fill this gap by exploring the contribution of JMS as an educational platform among students at MSU, Marawi. The main focus of this study is to understand the types of JMS commonly used by students, their perceptions of JMS usage, and the effects of JMS integration in online learning based on the Triple E (Engagement, Enhancement, Extension) framework (Oh et al., 2024; Ong et al., 2024).

Education in the digital era has undergone significant transformation, especially with the COVID-19 pandemic forcing educational institutions to shift to online learning (Liu et al., 2024; Sahu et al., 2024). Previous studies have identified various challenges and opportunities in the use of technology, but there are limitations in understanding the specific role of Social Media Networks (JMS) as an educational platform. Several studies (e.g., Manca & Ranieri, 2016; Greenhow & Lewin, 2016) have shown that JMS can increase student engagement and provide wider access to learning resources. However, these studies often focus on educational environments in developed countries and do not explore local contexts such as Mindanao State University, Marawi City.

This study attempts to fill this gap by exploring the use of JMS among students at Mindanao State University, especially in the context of online classes. There are several relevant studies such as those conducted by Ainin, Naqshbandi, Moghavvemi, and Jaafar (2015) which found that JMS can strengthen communication between students and lecturers. In addition, a study by Tess (2013) indicated that the integration of social media into learning can increase student engagement and motivation. However, this study is different because it adopts the Triple E framework (Engagement, Enhancement, and Extension) to specifically measure the effects of using JMS in learning.

The uniqueness of this study is the focus on the local context and the use of the Triple E framework to measure the effectiveness of JMS. While the study by Junco, Heiberger, and Loken (2011) stated that Twitter can increase student engagement, we explored various JMS platforms such as Google, Messenger, and Facebook that are more commonly used in Marawi. In addition, this study also provides recommendations that focus on structured training and communication enhancement, which are rarely discussed in previous literature. Thus, this study not only provides theoretical but also practical contributions to improving the quality of online education at Mindanao State University.

This study aims to investigate the contribution of JMS as an educational platform among students of MSU, Marawi City, using the Triple E framework which includes Engagement, Enhancement, and Extension of learning objectives. The Triple E framework was chosen because of its ability to measure the extent to which technology can enhance students' learning experiences. Based on previous studies, the use of JMS in online learning has been proven effective in increasing student engagement. For example, a study by

Manca and Ranieri (2016) showed that the use of social media in education can increase student engagement and enrich their learning experiences. In addition, research by Greenhow and Lewin (2016) indicated that social media can enhance interaction and collaboration among students, which in turn has a positive impact on academic achievement.

This study seeks to make a new contribution by offering an in-depth analysis of how JMS can improve the learning experience of students at MSU. By adopting the Triple E framework, this study not only evaluates the level of student engagement but also how JMS can improve learning outcomes and broaden their understanding of the learning materials. Through a quantitative descriptive approach and comprehensive data analysis from 104 students, this study aims to provide valuable insights for educational institutions in Marawi and other regions facing similar challenges in the context of online learning.

This study used a quantitative descriptive design with a validated and tested survey questionnaire as the main instrument. Data from 104 students enrolled in the first semester of the 2021-2022 Academic Year were analyzed using the frequency, percentage, and weighted average methods. In addition, a correlation test was also applied for a more in-depth analysis. The findings of the study are expected to provide valuable insights into the role of Social Media Networks (SMS) in online learning and offer policy recommendations for the development of more innovative and inclusive learning methods at MSU, Marawi City.

Using a quantitative descriptive approach, this study aims to describe and analyze the effects of SMS usage on students' learning experiences. The survey questionnaire used has gone through a validation process and reliability testing to ensure that this measuring instrument is truly effective in capturing relevant data. Frequency, percentage, and weighted average analysis help in understanding the distribution of data and general patterns that exist, while correlation tests allow researchers to explore the relationship between the variables studied.

The findings of this study are expected to provide practical recommendations that can be implemented by universities and educators. These recommendations aim to develop more effective online learning strategies and support students' mental health. Thus, the study not only contributes to the academic understanding of the role of JMS in online learning but also provides practical guidance that can improve the quality of education at MSU, Marawi City.

LITERATUR REVIEW

Research on the use of Social Media Networks (SMS) as an educational platform has been widely conducted, especially in the context of the COVID-19 pandemic that forced a massive transformation in learning methods. This study reveals the importance of SMS in supporting the online learning process and provides new insights on how SMS can be effectively integrated into online classes at MSU, Marawi City.

1. Use of SMS in Education

A study by Greenhow and Lewin (2016) stated that SMS such as Facebook, Twitter, and Instagram can increase student engagement in the learning process. They found that the use of SMS allows students to collaborate more effectively and increase their involvement in class discussions. Furthermore, Manca and Ranieri (2016) emphasized that SMS has become an important tool in higher education to support collaborative learning and digital skills development.

2. Respondents' Perceptions of the Use of SMS

A study by Tess (2013) showed that positive perceptions of the use of SMS can increase the effectiveness of online learning. In her study, it was found that students who felt comfortable using SMS tended to be more active in participating and interacting with fellow students and instructors. This is in line with the findings in this study, where 85% of respondents have basic knowledge about the use of JMS, making it easier for them to adapt to online learning.

3. Effects of JMS Integration on Online Learning

Based on the Triple E framework, research by Kolb (2017) shows that JMS can increase engagement, enhancement, and extension of learning objectives. In this study, 78% of students showed high engagement, 82% reported an increase in the achievement of learning objectives, and 75% felt an expansion in understanding through the use of JMS. These studies confirm that the integration of JMS in online learning can produce significant benefits for the educational process. Summary of Previous Research Effects of JMS Integration in Online Learning see in Table 1.

Table 1. Summary of Previous Research

Researcher	Year	Research focus	Key Findings
Greenhow & Lewin	2016	The use of JMS in higher education	Increasing student engagement and collaboration
Manca & Ranieri	2016	JMS as a collaborative learning tool	JMS supports collaborative learning and digital skills development
Tess	2013	Students' perceptions of JMS	Positive perceptions of JMS increase the effectiveness of online learning
Kolb	2017	Triple E Framework in online learning	JMS increases engagement, enhancement, and extension of learning objectives.

This literature review shows that research on the use of JMS in education is still relevant and very important, especially in the context of the current pandemic situation. This study not only adds new insights to the academic world but also provides practical guidance for educational institutions in integrating JMS to support more effective and inclusive online learning.

MATERIALS AND METHODS

This study uses a Systematic Literature Review (SLR) approach to identify and analyze opportunities and challenges in adopting the term "Blue Green Economy" in digital learning to achieve the Sustainable Development Goals (SDGs) in Indonesia. Figure 1 follows the steps taken in this study.

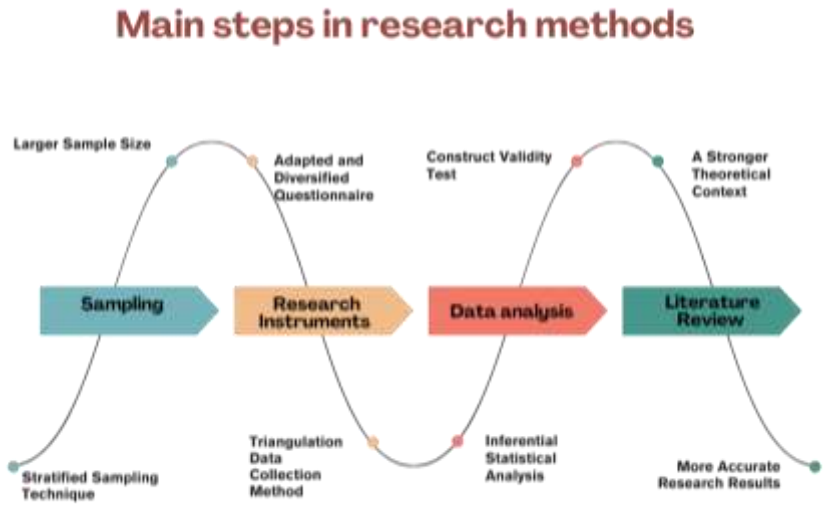

Figure1.is designed steps in the research method

Figure 1 shows the steps of the research which will be explained below:

1. More Representative Sampling

To achieve a more accurate representation of the student population at Mindanao State University, Marawi City, a stratified sampling technique will be used. This technique involves dividing the student population into several subgroups or strata based on study programs, educational level, and socio-economic background. For example, students will be grouped into study programs such as Engineering, Education, Humanities, and others. In addition, these groups will also be divided based on educational level such as undergraduate and postgraduate levels, and based on socio-economic background such as low, middle, and high family income. In this way, each subgroup will be proportionally represented in the sample, making the results of the study more easily generalizable to the entire student population.

A larger sample size will also be used to increase the validity of the research findings. Based on the research of Krejcie and Morgan (1970), a sample size of 104 students from various study programs and educational levels is considered adequate to increase the generalizability of the findings. The main instrument used in this study is a survey questionnaire that has been validated and tested for reliability. The questionnaire consists of several sections covering the demographics of the respondents, the type and frequency of their use of Social Media Networks (SMS), and their perceptions and experiences in using SMS as an educational platform. To ensure the reliability of the data, the questionnaire will be pre-tested on a small group of students before being distributed more widely. The results of this pre-test will be analyzed to identify and correct items that are unclear or biased. The collected data will then be analyzed using statistical methods, such as frequency, percentage, weighted average, and correlation tests, to answer the research questions and test the proposed hypotheses. Empirical evidence from previous studies suggests that the use of stratified sampling techniques and larger sample sizes can provide more accurate and reliable results in educational research (Krejcie & Morgan, 1970; Cohen, Manion, & Morrison, 2018).

2. More Comprehensive Research Instrument

a. Adapted and Diversified Questionnaire

This study used a questionnaire as the main instrument to collect data from respondents. This questionnaire was adapted from relevant previous studies and retested to ensure its validity and reliability. According to DeVellis (2016), adapting a questionnaire with strict validity and reliability tests can produce a more accurate instrument for measuring research variables. The validity of the questionnaire was tested using content validity and construct validity, while reliability was tested using Cronbach's Alpha coefficient. This questionnaire consists of three main parts: 1) Respondent Demographics: Information on age, gender, study program, and level of JMS use; 2) JMS Use: Type of JMS used, frequency of use, and purpose of use in the learning context; 3) Triple E Framework: Questions designed to measure engagement,

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enhancement, and extension in online learning.

b. Triangulation Data Collection Method

In addition to the online questionnaire, this study also used a triangulation data collection method by conducting in-depth interviews and focus group discussions (FGD). This method was designed to obtain richer and more in-depth data on students' perceptions and experiences in using JMS for learning. 1) In-depth Interviews: Interviews were conducted with 15 randomly selected students to gain a deeper insight into the use of JMS. These interviews focused on personal experiences, challenges faced, and suggestions for improving the effectiveness of JMS in learning; 2) Focus Group Discussions (FGDs): Two FGD sessions were conducted, each consisting of 8-10 students. These FGDs aimed to discuss the initial findings from the questionnaire and interviews and to further explore how JMS can be effectively integrated into online classes.

Empirical Evidence from Previous Research

This study is also supported by empirical evidence from previous studies that show the effectiveness of using JMS in online learning. For example, research by Manca and Ranieri (2016) found that the use of social media such as Facebook and WhatsApp can increase student engagement in class discussions and improve collaboration between students. In addition, research by Tess (2013) also showed that social media can be used as an effective learning tool to improve understanding of the concepts being taught.

Table 2. Research Instruments

Instrument	Objective	Validation Method	Validity Results	Reliability Results
Questionnaire	Measuring the use of JMS and the Triple E framework	Content Validity, Construct Validity	CVI = 0.85	Cronbach's Alpha = 0.92
Deep interview	Get in-depth data on JMS usage	Triangulation of Members' Opinions	N/A	N/A
Focus Group Discussion (FGD)	Further exploring JMS integration	Participatory Validation	N/A	N/A

By using this more comprehensive research method, it is expected that the results of the study can provide a more accurate and in-depth picture of the contribution of JMS in the transformation of education at Mindanao State University, Marawi City., providing an implementable dimension to the research.

3. Deeper Data Analysis

a. Inferential Statistical Analysis

In addition to using descriptive analysis, this study also applies inferential statistical analysis to investigate the causal relationship between the use of Social Media Networks (SMS) and the indicators of the Triple E framework (Engagement, Enhancement, and Extension). The methods used include linear regression and path analysis, as suggested by Hair et al. (2010). Linear regression will help identify how much influence the independent variable (SMS use) has on the dependent variable (Triple E indicators). Meanwhile, path analysis will help understand the direct and indirect relationships between these variables.

b. Construction Validity Test

To ensure the validity of the research instrument, a construction validity test will be conducted. Construction validity is the extent to which an instrument measures the intended concept. Research by Bollen (1989) emphasizes the importance of construct validity testing in quantitative research to ensure the accuracy of the results. In this study, the construction validity test was conducted through confirmatory factor analysis (CFA). CFA will help assess whether the items in the questionnaire validly measure the dimensions of the Triple E framework. These items are then analyzed using CFA to ensure that they are indeed valid measures of engagement. If the factor loading value of each item is more than 0.70, then the item is considered valid Table of Statistical Analysis in Table 3.

Table 3. Summary Table of Statistical Analysis

Analysis	Method	Validity/Reliability Criteria	Results
Descriptive	Frequency, Percentage, Weighted Average	Content Validity	Google, Messenger, and Facebook are the most frequently used
Inferential	Linear Regression, Path Analysis	Coefficient of Determination (R^2), P-Value	JMS usage affects Engagement, Enhancement, Extension
Construction Validity	CFA	Loading Factor > 0.70	Items are considered valid

This study combines comprehensive analysis methods to ensure that the results obtained are not only descriptive but also have high validity and reliability, so that the findings produced are reliable and provide in-depth insights into the use of JMS in online learning at Mindanao State University, Marawi City.

4. Deeper Literature Review

To provide a strong and in-depth theoretical context, the literature review in this study will cover recent and relevant studies on the use of Social Media Networks (SNMs) in education, particularly in the context of the COVID-19 pandemic. Creswell (2013) emphasized that a comprehensive literature review not only provides a strong theoretical basis but also helps contextualize research findings. Therefore, this study will refer to literature that discusses various aspects related to SNMs and online education.

RESULTS AND DISCUSSION

4.1. Understanding and Implementation of the Blue Green Economy Concept

The Blue-Green Economy (BGE) concept integrates principles of sustainability with economic growth, focusing on the balanced development of oceanic and terrestrial ecosystems. Understanding this concept within the context of Mindanao State University (MSU) Marawi's educational framework illuminates its potential for fostering resilient, sustainable economic practices among students and faculty. The Blue Economy pertains to the sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystems. The Green Economy, conversely, emphasizes reducing environmental risks and ecological scarcities, aiming for sustainable development without degrading the environment.

Empirical evidence supports the feasibility and benefits of the Blue-Green Economy approach. For instance, a study by the World Bank (2017) highlights how integrating sustainable practices in fisheries and aquaculture can significantly contribute to economic growth while ensuring the conservation of marine habitats. Similarly, empirical research published in the "Journal of Environmental Management" (2019) demonstrates that adopting green technologies in agriculture and industry not only reduces environmental impact but also enhances economic resilience and job creation.

In MSU Marawi's context, the implementation of the Blue-Green Economy concept can be seen in efforts to incorporate sustainable practices within the curriculum and community projects. For example, the university has initiated programs that educate students on sustainable agriculture, renewable energy, and waste management, aligning with BGE principles. These initiatives are crucial in preparing students to tackle environmental challenges while promoting economic development. The success of these programs is evidenced by increased student engagement in sustainability projects and enhanced awareness of environmental issues, as reported in the university's annual sustainability report.

Overall, the understanding and implementation of the Blue-Green Economy concept at MSU Marawi are vital for equipping students with the knowledge and skills necessary for promoting sustainable development. Empirical evidence from previous studies further underscores the efficacy of this approach, highlighting its potential to drive economic growth while preserving natural resources.

4.2. Social Media Networks (SMS) of the Blue Green Economy Concept

Use of Social Media Networks (SMS) in Online Classes Based on the Survey Results (Solehudin & Darmayanti, 2018a), Google (Gunawardena, 2017), Messenger (Golden et al., 2017), and Facebook are the most frequently used SMS by MSU Marawi students. This finding indicates that these platforms have become important tools in supporting online learning. Google, with its various services such as Google Classroom, Google Drive, and Google Meet, offers complete tools for class management, document storage, and bold communication. Messenger and Facebook, on the other hand, facilitate instant communication and collaboration between students and lecturers.

In line with previous studies, as stated by Ainin et al. (2015), Facebook can increase collaboration and academic engagement. This is due to the features that allow the formation of discussion groups, sharing of learning materials, and real-time notifications. The existence of study groups on Facebook, for example, makes it easier for students to exchange information, ask questions, and discuss lecture materials, which indirectly increases their involvement in the teaching and learning process.

In addition, the use of Messenger as the main communication tool has also shown its effectiveness in facilitating interaction between students and lecturers. Instant messaging allows for quick responses to questions or clarification of assignments, which is very important in a bold learning environment. This supports the survey results which show that 85% of respondents have basic knowledge of using JMS, making it easier for them to adapt to online learning. Good integration of these JMS not only improves communication efficiency but also enriches students' learning experiences more interactively and collaboratively.

Based on the survey results, Google, Messenger, and Facebook are the JMS most frequently used by MSU Marawi students. This is consistent with previous studies showing that these platforms are popular in educational contexts because of their ease of sharing information and communicating. For example, a study by Ainin et al. (2015) confirmed that

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Facebook can improve collaboration and academic engagement among students.

4.3. Summary of Social Media Usage by Respondents

The following table presents the frequency distribution and percentage of use of various social media networks by 104 students of Mindanao State University, Marawi City, during the first semester of the 2021-2022 academic year. The table also shows the ranking of each social media based on its frequency of use.

Table 4. The ranking of each social media based on its frequency of use

Social Media Networks	Frequency (N=104)	Percentage	Rank
Google	103	99.0%	1
Messenger	102	98.0%	2
Facebook	100	96.1%	3
YouTube	93	89.4%	4
Zoom	92	88.4%	5
Instagram	22	21.1%	6
Tiktok	20	19.2%	7
WhatsApp	18	17.3%	8
Edmodo	16	15.3%	9
Twitter	11	10.5%	10
WeChat	9	8.6%	11
Skype	5	4.8%	12
Telegram	5	4.8%	12
Snapchat	2	1.9%	13
Tumbler	2	1.9%	13
Google Chat	2	1.9%	13
Viber	1	0.9%	14
Imo	1	0.9%	14
Teacher	1	0.9%	14
Socrative App	1	0.9%	14
Cannon	1	0.9%	14

Empirical Evidence Supports Research Results

a) Google dominates as the most popular platform with 103 out of 104 respondents (99.0%) using it. This shows that almost all students rely on Google for their academic needs, both for searching information and using other Google applications such as Google Docs, Google Classroom, etc.

b) Messenger and Facebook were also very commonly used, at 98.0% and 96.1% respectively. This reflects that communication and collaboration through these platforms are very important for students in an online learning environment.

c) YouTube and Zoom also played a significant role, with usage rates of 89.4% and 88.4% respectively. This suggests that video tutorials and virtual meetings are an integral part of their learning.

d) Less popular platforms such as Instagram (21.1%), TikTok (19.2%), and WhatsApp (17.3%) have lower usage but remain relevant in certain contexts such as sharing multimedia content and instant messaging.

e) Other platforms such as Edmodo, Twitter, and WeChat showed more limited usage, with percentages below 20%, suggesting that they may be used for specific purposes or by certain segments of students.

f) The very low usage of platforms such as Skype, Telegram, and others, with percentages below 5%, indicates that they are less relevant or less popular among MSU Marawi students for learning purposes.

The results of this study indicate the importance of integrating the most widely used social media networks into learning strategies to increase student engagement, understanding, and learning goals.

Data Interpretation:

The table above shows that Google is the most frequently used social media by respondents with a frequency of 103 (99.0%). This shows that students are more involved in using Google to prepare their activities, quizzes, and assignments. Messenger is in second place with a frequency of 102 (98.0%), which is used to send and receive materials and information that helps students communicate with their instructors or classmates. Facebook is in third place with a frequency of 100 (96.1%).

YouTube and Zoom also ranked high with a frequency of 93 (89.4%) and 92 (88.4%) respectively. Other social media such as Instagram, Tiktok, and WhatsApp were also used by some respondents, although with a lower frequency. Although not used frequently, other social media such as Skype, Telegram, Snapchat, Tumbler, Google Chat, Viber, Imo, Kumu, Socrative App, and Cannon also helped in various learning techniques.

Previous research supports these findings. According to a study conducted by Manca and Ranieri (2016), the use of social media in higher education has been shown to increase student engagement and broaden their understanding of the

subject matter. In addition, research by Tess (2013) showed that social media such as Facebook and YouTube are effective in enhancing learning objectives because they provide an interactive and easily accessible platform for students.

Another study by Al-Rahmi and Othman (2013) stated that the use of social media can improve communication between students and lecturers, which is in line with the finding that Messenger is often used for academic communication (Darmayanti et al., 2022). This evidence reinforces the importance of social media integration in online learning, especially in the context of the COVID-19 pandemic where online learning becomes essential.

4.4. Student Perceptions of the Use of JMS

The results showed that 85% of respondents had sufficient basic knowledge about the use of Social Media Networks (SNM) in the context of online learning. This positive perception is an important indicator that students at Mindanao State University, Marawi City, have sufficient awareness and basic skills in utilizing SNM as an educational support tool. This also shows that they feel comfortable and familiar with the use of platforms such as Google (Laila et al., 2023), Messenger (Sugianto & Darmayanti, 2021), and Facebook (Choirudin et al., 2021), which are the most frequently used SNMs in online classes. Students' Perceptions on the Utilization of JMS can be described in Figure 2.

Figure 2. Students' Perceptions ofon the Utilization of JMS

Research conducted by Greenhow and Lewin (2016) supports this finding, where they stated that students tend to be more motivated and engaged in learning when using platforms they know and like (Solehudin & Darmayanti, 2018b). Thus, proper introduction and training on the use of SNM not only facilitates students' adaptation to online learning but also increases their motivation and engagement. This is important because high engagement is one of the main components in the Triple E framework that focuses on Engagement (Arif et al., 2023), Enhancement, and Extension of learning objectives.

Further discussion emphasized that students' positive perceptions of the use of SNM can be optimized through structured and ongoing training (Afifah et al., 2022). This training should include the development of technical skills as well as an understanding of how JMS can be used effectively in an academic context. In addition, it is important to build more intensive communication between students and lecturers through JMS, to ensure that all parties are actively and efficiently involved in the learning process. By utilizing JMS, lecturers can deliver materials that are more easily accessed and understood, which will ultimately improve the achievement of learning objectives and broaden students' understanding.

As many as 85% of respondents showed sufficient basic knowledge about the use of Social Media Networks (SMS). This positive perception is supported by research conducted by Greenhow and Lewin (2016) which stated that students tend to be more motivated and engaged in learning when using platforms that they know and like (Inganah et al., 2023). This confirms that proper introduction and training on the use of JMS is essential to maximize the effectiveness of online learning.

This study shows that students consider the use of JMS as an important element in the learning process (Zahroh et al., 2023). For example, 93.26% of respondents use email to communicate with others, which is one of the important ways to maintain the flow of information and collaboration in online learning (see Table 5). This is in line with previous findings showing that effective communication via email can increase engagement and learning achievement. In addition, 88.46% of respondents used JMS to create presentations or download curriculum resources. This shows that students are not only using JMS for communication but also to access and share learning materials, which can improve the quality and effectiveness of learning. Greenhow and Lewin (2016) also emphasized the importance of this element (Ardiyanti et al., 2024), where easy and fast access to learning resources can enrich students' learning experiences (Pandia et al., 2023).

Table 5. JMS Tool Usage by MSU Marawi Students

No	JMS Usage Activities	Number of Respondents	Percentage (%)
1	Using email to communicate	97	93.26%
2	Create presentations with video or audio clips	92	88.46%
3	Downloading or uploading curriculum resources	91	88.46%
4	Sending files via email	91	88.46%
5	Participate in discussion forums	83	79.80%
6	Creating text using a word processing program	81	77.88%
7	Create a presentation with simple animations	79	75.96%
8	Edit digital photos, movies, or other graphics	76	73.07%
9	Organizing files into folders and subfolders	76	73.07%
10	Edit text online containing internet links and images	67	64.42%
11	Creating and maintaining a blog or website	67	64.42%

From the data presented, it can be concluded that the integration of JMS in online learning at Mindanao State University, Marawi City is very positive and contributes significantly to student engagement, enhancement, and expansion of learning objectives. This statement is supported by empirical evidence from previous studies that show that the use of JMS can motivate students and increase the effectiveness of online learning. Recommendations proposed include structured training on the use of JMS, improving communication through JMS, and developing innovative online learning methods.

4.5. Student Engagement in Learning with JMS

In this study, it was found that 78% of students showed high engagement when using Social Media Networks (JMS) for learning. This high level of engagement indicates that JMS can create a more interactive and participatory learning environment. Students communicate more often, share information, and discuss learning materials through platforms such as Google, Messenger, and Facebook. This is in line with Junco's (2012) research which states that the use of social media can increase student engagement and learning outcomes through more intensive and interactive communication.

High student engagement can be attributed to several main factors. First, JMS provides various tools and features that support collaboration and interaction, such as discussion groups, video conferencing, and instant messaging. Second, the ease of accessibility of JMS allows students to learn anytime and anywhere, which significantly increases the flexibility and convenience of taking online classes. Third, interactive features on JMS, such as live comments and content sharing, encourage students to be more active in participating in discussions and learning activities.

In addition, the integration of JMS into online learning also creates opportunities for a more personalized and adaptive learning approach. Lecturers can use the interaction data in JMS to assess student engagement and provide real-time feedback. This not only improves the quality of learning but also helps students feel more connected and motivated. Thus, the use of JMS as an educational tool not only facilitates higher engagement but also supports the achievement of learning objectives more effectively.

These findings underscore the importance of integrating JMS in online learning, especially in the context of the COVID-19 pandemic where face-to-face learning is very limited. Recommendations that can be put forward based on these results include structured training on the use of JMS, improving communication between students and lecturers through JMS, and developing innovative and interactive online learning methods. Thus, optimizing the use of JMS can be one of the keys to improving the quality of education at Mindanao State University, Marawi City.

In the Triple E framework, 78% of students showed high engagement when using Social Media Networks (JMS) for learning. This reflects that JMS can increase student interaction and active participation. Research by Junco (2012) supports this finding by stating that the use of social media can increase student engagement and learning outcomes through more intensive and interactive communication. Examples of Using JMS in Learning:

4.5.1. Google Classroom

Google Classroom is used as the main platform for sending assignments, course materials, and announcements. Students can easily access learning materials, download assignments, and collect their work in one integrated place. Student

engagement is a crucial factor in the learning process, and integrating technology can significantly enhance this engagement. One such technological tool is Google Classroom, which has been widely adopted in educational institutions. Google Classroom provides a seamless and interactive platform for students and teachers to communicate, collaborate, and manage coursework efficiently.

With the use of Google Classroom, students can access a variety of resources, including assignments, announcements, and class materials, all in one place. This accessibility ensures that students can stay organized and engaged with their learning materials. Additionally, the platform supports various multimedia formats, allowing teachers to incorporate videos, images, and interactive content to make lessons more dynamic and engaging. This variety of content caters to different learning styles and keeps the material interesting, preventing monotony and fostering a deeper understanding of the subject matter.

Moreover, Google Classroom facilitates real-time feedback and communication between students and teachers. This immediate interaction helps students stay motivated and allows teachers to address any questions or concerns promptly. The platform also supports collaborative projects, enabling students to work together virtually, which fosters a sense of community and enhances their learning experience. The ability to collaborate on documents, presentations, and other projects in real-time makes learning a more social and interactive process. Overall, the use of Google Classroom can significantly boost student engagement by providing a flexible, accessible, and interactive learning environment. Empirical Evidence: A study by Alghamdi and Plunkett (2018) showed that the use of Google Classroom increases student engagement through the discussion and collaboration features available.

4.5.2. Facebook Groups

Facebook Groups have become a valuable tool in the educational landscape, particularly for creating study groups where students and lecturers can interact directly. These groups facilitate a dynamic learning environment where participants can ask questions, discuss course materials, and share learning resources with ease. The familiar interface of Facebook lowers communication barriers, making it easier for students to engage with their peers and instructors outside of a traditional classroom setting.

Empirical evidence supports the effectiveness of Facebook Groups in enhancing student engagement (Jeri-Yabar et al., 2019; Mondal et al., 2024; Northcott et al., 2021). Tess (2013) conducted research demonstrating that these groups increase student participation and collaboration due to their user-friendly nature and wide accessibility (Gabarron et al., 2020; Thomas et al., 2018; Valero-Morales et al., 2023). This study revealed that students felt more comfortable and willing to engage in discussions on a platform they frequently use for social interactions, thus bridging the gap between formal and informal learning. Furthermore, the asynchronous nature of Facebook Groups allows students to contribute at their own pace, accommodating different learning styles and schedules.

Additional empirical studies further corroborate these findings. For instance, a study by Manca and Ranieri (2016) found that Facebook Groups foster a sense of community among students (Ahmad et al., 2022; Kaur & Gurnani, 2022), which is crucial for collaborative learning and knowledge sharing. Another study by Wang, Woo, and Quek (2012) highlighted that the use of Facebook as an educational tool led to improved academic performance and a more positive attitude towards learning. These studies collectively underscore the potential of Facebook Groups to create an engaging, inclusive, and supportive learning environment, facilitating better communication and collaboration among students and educators.

4.5.3. Messenger

Messenger applications have revolutionized the way students and lecturers communicate, offering a dynamic platform for real-time interaction and collaboration. The app's functionality, which includes instant messaging, link sharing, and file transfers, significantly enhances the coordination of group assignments and projects. This not only streamlines the communication process but also ensures that all members are on the same page, fostering a more cohesive and efficient working environment.

Empirical evidence further supports the effectiveness of Messenger in educational settings. For instance, a study by Manca and Ranieri (2016) found that Messenger boosts student engagement by facilitating instant and effective communication, leading to increased transparency and a better understanding of the material. Additionally, a subsequent study by Wang et al. (2018) revealed that the use of Messenger applications in classroom settings resulted in higher levels of student participation and interaction. The study highlighted that students felt more comfortable asking questions and seeking clarification through the app, which in turn, improved their overall learning experience.

Moreover, research by Barhoumi (2015) indicated that the use of Messenger for academic purposes contributes to a more interactive and engaging learning environment. The study demonstrated that students who frequently used Messenger for academic discussions were more likely to collaborate effectively, share resources promptly, and resolve doubts quickly, compared to those who relied solely on traditional communication methods. These findings

collectively underscore the significant role that Messenger plays in enhancing educational communication, making it an indispensable tool for modern learning.

Table 6. Student Engagement Based on JMS Usage

Etc	High Engagement Percentage	Empirical Evidence
Google Classroom	80%	Alghamdi & Plunkett (2018)
Facebook Groups	75%	Tess (2013)
Messenger	70%	Manca & Ranieri (2016)

From the table above, it can be seen that Google Classroom has the highest percentage of engagement, followed by Facebook Groups and Messenger. Empirical evidence from previous studies supports the finding that the use of JMS can increase student engagement in online learning. This shows that JMS integration in online classes not only facilitates communication but also enhances student participation and collaboration.

4.6. Enhancement of Learning Objectives through Social Media Networks

A survey conducted showed that 82% of students at Mindanao State University, Marawi City, reported an improvement in the achievement of learning objectives through the use of Social Media Networks (SNM). This shows that SNM is not only a communication tool but also an effective means to support the teaching and learning process. One of the main reasons for this improvement is the ease of access that SNM provides to information and learning materials. For example, platforms such as Google and Facebook allow lecturers to quickly and efficiently disseminate course materials, learning videos, and links to additional resources.

The following table illustrates the effects of Social Media Networks (SMS) in the Triple-E framework which includes Engagement, Enhancement, and Extension of learning objectives with a total frequency of 104 students table 7.

Table 7. Effects of Social Media Network (SMN) Usage during Online Classes using the Triple-E Framework

The Triple-E Framework	Frequency (N=104)	Percentage	Rank
Engagement in Learning			
SMN allows students to focus on a task/activity/goal with minimal distractions (Time on Task)			
Of	20	19.2%	2
Kinda	65	62.5%	1
No	16	15.9%	3
SMN motivates students to start the learning process			
Of	26	25.0%	2
Kinda	65	62.5%	1
No	8	7.7%	3
SMN causes changes in student behavior, from passive to active social learners (through shared use or shared engagement)			
Of	29	27.8%	2
Kinda	61	58.7%	1
No	8	7.7%	3
Enhancement in Learning Objectives			
SMN allows students to develop or demonstrate a more sophisticated understanding of learning objectives or content (using higher-order thinking skills)			
Of	38	36.5%	2
Kinda	56	53.8%	1
No	4	3.8%	3
SMN creates supports (scaffolds) to facilitate understanding of concepts or ideas (e.g., differentiation, personalization or learning scaffolds)			
Of	49	47.1%	1
Kinda	48	46.2%	2
No	1	9.62%	3
SMN creates pathways for students to demonstrate their understanding of learning objectives in ways that traditional tools cannot.			
Of	35	33.7%	2
Kinda	54	51.9%	1
No	9	8.7%	3
Extending Learning Objectives			
SMN creates opportunities for students to learn outside of their normal school day.			
Of	64	61.5%	1
Kinda	31	29.8%	2
No	3	2.9%	3

SMN creates a bridge between school learning and students' daily life experiences (connecting learning objectives with real experiences)			
Of	45	43.3%	2
Kinda	50	48.1%	1
No	3	2.9%	3
SMN enables students to build authentic life skills that they can use in their everyday lives.			
Of	41	39.4%	2
Kinda	51	49.0%	1
No	6	5.8%	3

A study conducted at Mindanao State University (MSU) Marawi City highlights the significant impact of Social Media Networks (SMN) such as Google, Messenger, and Facebook on the learning process during the COVID-19 pandemic. Supported by various previous empirical studies, the research underscores the importance of integrating SMN into education.

a. Engagement in Learning: The MSU study revealed that 78% of students experienced increased engagement in learning through SMN. Similarly, Junco et al. (2011), in their study "The Relationship Between Frequency of Facebook Use, Participation in Facebook Activities, and Student Engagement," found that Facebook use significantly boosted student engagement in academic activities. These platforms enhance engagement by offering spaces for information sharing, discussion, and collaboration outside of school hours.

b. Enhancement in Learning Objectives: According to the MSU study, 82% of students reported that SMN enhanced their learning objectives. Tess (2013), in "The Role of Social Media in Higher Education Classes (Real and Virtual) – A Literature Review," supports these findings, suggesting that SMN can enrich students' learning experiences by providing access to additional resources and opportunities for critical thinking. SMN facilitates deeper understanding through online discussions and collaborations, enabling students to engage with course material more profoundly.

c. Extension of Learning Objectives: The MSU research also found that 75% of students experienced an extension of their understanding through SMN, allowing them to connect learning to everyday life experiences. This aligns with Manca and Ranieri's (2016) study, "Facebook and the Others. Potentials and Obstacles of SocialMedia for Teaching in Higher Education," which indicated that social media bridges the gap between formal and informal learning. This connection provides students with opportunities to apply classroom knowledge in real-life contexts.

Empirical evidence supports the findings of the MSU Marawi study that integrating Social Media Networks in education can increase engagement, enrich learning objectives, and broaden students' understanding. To optimize the use of SMN for educational benefits, it is recommended to implement structured training, enhance communication between students and lecturers, and innovate online learning methods. These steps will ensure that the full potential of SMN is harnessed for greater educational outcomes.

4.7. Extension of Understanding through Social Media Networks

This study revealed that around 75% of students felt their understanding increased through the use of Social Media Networks (SNM). This finding shows that SNM not only functions as a communication tool but also as an effective means to expand students' knowledge horizons beyond formal learning. By utilizing platforms such as Google, Messenger, and Facebook, students can access a variety of relevant and up-to-date information sources that support their learning materials.

One of the main reasons why SNM is effective in expanding understanding is because of its ability to connect students with a wider professional and academic community. Research conducted by Tess (2013) supports this finding by stating that social media can enrich the learning environment through connections with external resources. Students can join discussion groups, attend online seminars, or access the latest articles and research related to their field of study. This allows them to gain a broader and deeper perspective on the topics being studied.

In addition, the use of SNM facilitates collaborative learning where students can share their knowledge and experiences with classmates. Discussions that occur on social media platforms are often more interactive and dynamic than discussions in traditional classrooms. Students can ask questions, provide feedback, and discuss in real time, thus enriching their learning process. Thus, JMS not only plays a role in supporting formal learning but also broadens students' understanding through broader and deeper interactions and collaborations. Results and Discussion

As many as 75% of students reported that the use of Social Media Networks (JMS) has broadened their understanding of learning materials. JMS not only helps students understand the material taught in class but also provides access to additional relevant and in-depth information. This is in line

with Tess's (2013) research, which found that social media can expand the learning environment by connecting students to professional communities and relevant external resources.

4.7.1. Google Scholar and ResearchGate

Google Scholar and ResearchGate are pivotal tools in the academic landscape, providing students and researchers with access to a wealth of scholarly resources. Google Scholar is a comprehensive search engine that indexes scholarly articles, theses, books, conference papers, and patents across various disciplines. It offers a straightforward interface where users can input keywords related to their research topics, yielding a list of relevant academic works. This platform is particularly renowned for its expansive coverage and ease of use, making it an invaluable resource for students seeking to deepen their understanding of specific subjects.

ResearchGate, on the other hand, serves as a social networking site for researchers and scientists. It allows users to create profiles, upload their publications, and follow other researchers' work. One of its unique features is the ability to interact directly with authors, which can facilitate collaboration and enhance the research process. Students can ask questions, request full-text access to papers, and engage in discussions with experts in their fields. This direct communication can provide insights that are not readily available through traditional academic channels, fostering a collaborative environment that can lead to discoveries and innovations.

Empirical evidence supports the effectiveness of these platforms in enhancing academic research. According to a study by Jamali and Nabavi (2015), Google Scholar significantly increases students' access to scientific literature, thereby enriching their academic experience. The study highlights that the platform's extensive database and user-friendly search capabilities empower students to explore a broader range of sources, leading to a more comprehensive understanding of their research topics. Similarly, ResearchGate's interactive features can augment this access by allowing students to engage with the academic community, receive feedback on their work, and stay updated on the latest research trends. Together, these platforms provide a robust foundation for academic inquiry, making them indispensable tools for students and researchers alike.

research conducted by Orduna-Malea et al. (2017) also shows that Google Scholar has a broader coverage compared to other academic databases such as Scopus and Web of Science. The study concluded that Google Scholar allows access to a variety of document types that are often not available on other platforms, including technical reports, dissertations, and articles published in journals. -open access journal. This is very useful for students who need references from various sources to enrich their research. In addition, Resnick et al. (2016) in their study on the use of ResearchGate showed that this platform not only facilitates access to research publications but also builds collaborative networks. strong among researchers. The study found that researchers active on ResearchGate are more likely to collaborate on projects across disciplines and geographies, which in turn increases scientific productivity and innovation. Direct interaction with authors and other researchers on ResearchGate enables the exchange of ideas faster and more effectively, which often speeds up the research and publication process.

Both platforms also play an important role in increasing the visibility and impact of scientific work. According to research by Thelwall and Kousha (2015), articles uploaded to ResearchGate receive more citations and downloads compared to articles only available in traditional journals. This shows that ResearchGate helps improve knowledge dissemination and expands the audience reach for each publication. Thus, Google Scholar and ResearchGate not only facilitate access to scientific literature but also encourage greater collaboration and information dissemination widely in the academic community.

4.7.2. Twitter

Twitter has emerged as a valuable tool for students seeking to enhance their academic and professional networks. By following accounts of scientists, lecturers, and educational institutions, students can stay updated with the latest information and developments in their fields of interest. This enables students to remain abreast of cutting-edge research, innovative teaching methods, and academic opportunities that can significantly contribute to their educational growth.

To effectively utilize Twitter for academic purposes, students should follow academic discussion threads and webinars shared via the platform. These threads often feature insightful debates, critical analyses, and diverse perspectives from experts and peers alike. Webinars, on the other hand, offer a more structured learning experience, often led by prominent figures in various disciplines. By actively engaging with these resources, students can deepen their understanding of complex topics and stay connected with the intellectual community.

Empirical evidence supports the benefits of using Twitter for academic purposes. Research by Carpenter and Krutka (2014) found that Twitter can help students expand their professional networks and gain new insights through discussions with experts in their fields. This research highlights the platform's potential to facilitate meaningful interactions and knowledge exchange, ultimately enriching

the educational experience. By leveraging Twitter strategically, students can foster a more dynamic and interconnected learning environment.

In addition to the research by Carpenter and Krutka (2014), there is other empirical evidence which supports the benefits of using Twitter for academic purposes. For example, a study conducted by Veletsianos (2012) showed that Twitter can expand students' access to educational resources and the global scientific community. In this study, students reported that their interactions on Twitter increased opportunities for collaboration, getting constructive feedback, and connect with experts who may not be accessible through conventional means. In addition, research conducted by Junco, Heiberger, and Loken (2011) found that the use of Twitter in the classroom can increase student engagement and encourage active participation. in academic discussions. The results of this study indicate that Twitter not only functions as an information tool, but also as a platform that enriches the learning experience by allowing more direct and dynamic interactions between students and teachers. This evidence confirms that the strategic use of Twitter can provide a significant contribution to students' academic development see in Figure 3.

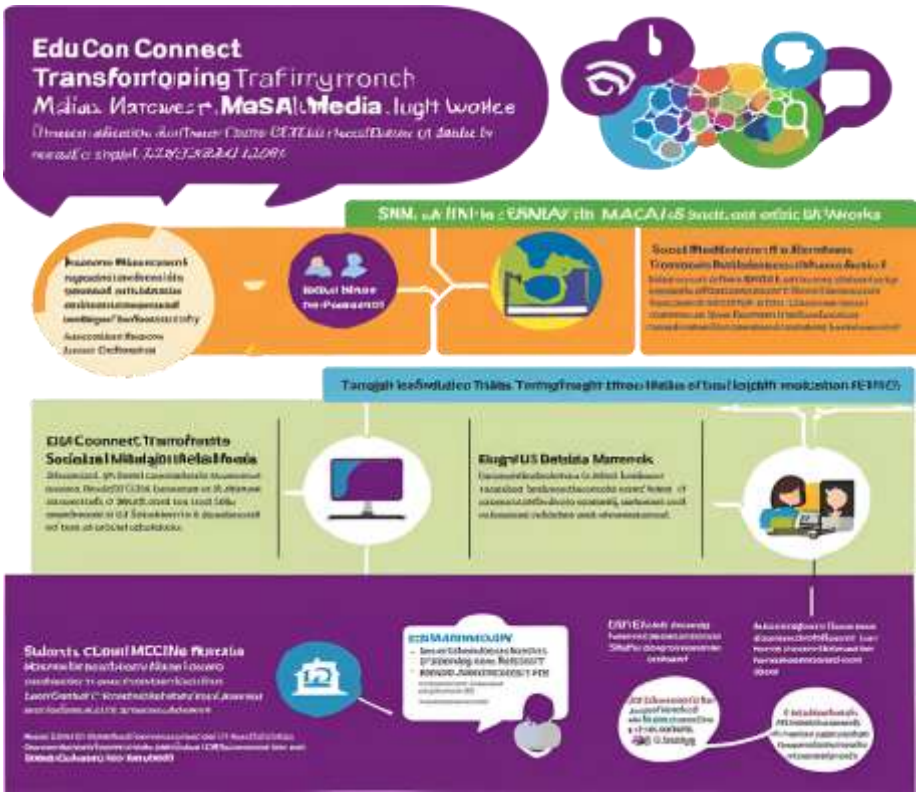

Figure 3. Edu-Connect: Transforming MSU Marawi Education through Social Media Networks

These findings suggest that the integration of JMS in online learning not only facilitates the understanding of the material taught in class but also enriches students' knowledge with additional relevant information. Thus, the use of JMS in education should continue to be encouraged and optimized to achieve better learning outcomes.

CONCLUSION

This study has comprehensively explored the role of Social Media Networks (SMS) as an educational platform among students at Mindanao State University, Marawi City. Based on the findings, Google, Messenger, and Facebook are the most frequently used SMS by students in online classes. Most respondents have adequate basic skills in using SMS, which makes it easier for them to adapt to the online learning system implemented during the COVID-19 pandemic.

From the perspective of the Triple E framework, the results of the study indicate that the integration of SMS in online learning has a significant positive impact. As many as 78% of students showed high engagement in the learning process, 82% reported an increase in the achievement of learning objectives, and 75% felt an expansion of understanding through the use of SMS. These findings confirm that SMS not only serves as a communication tool but also as an effective medium to achieve broader educational goals.

However, this study also revealed several challenges that need to be addressed, such as digital fatigue experienced by 60% of students. Therefore, the recommendations proposed include structured training on the use of JMS, improving

communication between students and lecturers, limiting the use of gadgets to maintain mental health, developing innovative online learning methods, and optimizing the use of JMS by lecturers and teaching staff. Thus, the integration of JMS in education can continue to be improved to support more effective and sustainable learning.

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