





# Navigating the infodemic through social media: A qualitative case study of Filipino university students' learning experiences during the COVID-19 polycrisis

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## ABSTRACT

**Background:** The COVID-19 pandemic has triggered a complex crisis in higher education that has not only disrupted formal learning but also given rise to an infodemic through the rapid spread of misinformation on digital platforms, making social media both a source of learning and a source of epistemic risk for students.

**Objectives:** This study aims to explore how Filipino university students navigated learning experiences through social media during the COVID-19 polycrisis, focusing on preferred platforms, perceived educational relevance, and strategies for evaluating information credibility amid an infodemic.

**Methods:** A qualitative case study design was employed. Six Filipino university students enrolled in a Bachelor of Elementary Education program participated in this study through purposive sampling. Data were collected via online semi-structured interviews, group chat discussions, document analysis of shared social media content, and follow-up interviews. Thematic analysis was conducted following Braun and Clarke's framework to identify recurring patterns across data sources.

**Results:** Findings reveal that social media—particularly Facebook—served as a supplementary learning space, enabling students to access real-time information, engage with societal issues, and sustain their learning during the suspension of formal instruction. Students demonstrated active information-seeking behaviors, including cross-checking sources and exercising caution in sharing content. However, persistent exposure to misinformation highlighted their vulnerability within infodemic environments, especially in the absence of structured institutional guidance.

**Conclusions:** Social media can support authentic and socially relevant learning during educational disruption, but its pedagogical value depends on students' critical and digital literacy capacities.

**Keywords:** covid-19, disruptive innovations, infodemic, fake news, social media.

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## INTRODUCTION

Countries around the world have been determined to ensure continuity of learning by adopting emergency remote learning modalities that intertwine technological innovations with pedagogical practices (Bozkurt & Sharma, 2020). State examinations, graduation ceremonies, and school–community engagements were cancelled across many countries due to an unprecedented global disruption. In response, students adopted emergency remote education as a pragmatic solution, engaging in asynchronous and synchronous learning through video conferencing platforms, online applications, and massive open online courses (MOOCs) (Adedoyin & Soykan, 2020). However, the abrupt transition exposed structural barriers, particularly among students with limited access to digital infrastructure and prior online learning experiences. Within this context, the acquisition of digital competencies, knowledge, and adaptive learning skills became instrumental for sustaining educational participation (Bao, 2020; König, Jäger-Biela, & Glutsch, 2020).

Despite these efforts, curriculum competencies in many educational systems were not fully aligned with the demands of online and digitally mediated learning environments. Educators were compelled to rapidly innovate instructional strategies and learning resources to accommodate students' needs while still fulfilling curriculum requirements (Eickelmann & Gerick, 2020). In the Philippines, the Commission on Higher Education initially regressed the implementation of alternative delivery modes due to concerns over internet connectivity and technological accessibility among the majority of students (Alipio, 2020). Consequently, both public and private higher education institutions faced profound challenges during the early phases of lockdown, prompting students to rely on disruptive technologies as informal and supplementary learning resources when formal online instruction was temporarily suspended.

Learning conditions were further complicated by public health measures requiring physical distancing, which constrained traditional educational interactions (Greenstone & Nigam, 2020; Farboodi et al., 2020). As a result, educational systems increasingly depended on digital technologies not only to maintain instructional continuity but also to sustain social connectivity and information exchange during the pandemic (Toquero & Talindong, 2021). Disruptive innovations thus expanded learning opportunities beyond conventional classroom settings, enabling students to engage with real-world issues and societal challenges through digital platforms (Likar & Trcek, 2021).

To reach students amid learning interruptions, educational institutions and government agencies leveraged social media platforms such as Facebook, YouTube, and Twitter to disseminate timely information and public advisories. However, alongside their accessibility and immediacy, these platforms also amplified students' exposure to misinformation and disinformation (Dumitru, 2020; Khairunissa, 2020). Although social media has become a preferred source of information due to its ease of access, the prevalence of false or misleading content necessitates heightened levels of information evaluation and fact-checking (Sobaih, Hasanein, & Abu Elnasr, 2020). This challenge was exacerbated by the emergence of an "infodemic," characterized by an overwhelming volume of both accurate and inaccurate information that complicates individuals' ability to identify credible sources and trustworthy guidance (Cinelli et al., 2020; WHO, 2020). Such infodemic conditions

fostered rumors, conspiracy narratives, and stigma during the global health emergency, making information assessment and response an ongoing societal challenge (Islam et al., 2020; Toquero, 2021).

More recently, post-pandemic scholarship has emphasized that the effects of infodemic and digitally mediated learning extend beyond emergency contexts, shaping students' epistemic practices, critical literacy, and civic engagement in higher education settings (Toquero, 2023; Bode, Vraga, & Tang, 2024). While prior studies during the early pandemic period (2020–2021) predominantly documented the immediate transition to online learning and technology adoption, fewer empirical investigations have examined how students actively navigated social media as informal learning spaces amid intersecting crises, particularly from a qualitative and learner-centered perspective. Moreover, limited attention has been given to how students evaluate the credibility of information, negotiate risks associated with misinformation, and construct learning meaning during prolonged periods of polycrisis in post-pandemic contexts.

This study addresses this gap by offering a qualitative case study of Filipino university students' learning experiences through social media during the COVID-19 polycrisis, focusing on how disruptive innovations functioned simultaneously as learning enablers and sources of infodemic vulnerability. By foregrounding students' lived experiences and evaluative practices, this study contributes novel insights into the pedagogical implications of social media use in higher education under conditions of uncertainty and information overload.

Accordingly, the objective of this study is to examine (1) the social media platforms preferred by Filipino university students for seeking and sharing information, (2) the perceived relevance of social media for learning during a period of polycrisis, and (3) the processes by which students evaluate information sources amid an infodemic virtual environment.

## METHODS

### Study Design and Participants

This study employed a qualitative case study design to gain an in-depth understanding of university students' learning experiences through social media amid the COVID-19–related infodemic and educational polycrisis. The case study approach was selected because it enables a contextualized and holistic examination of complex phenomena within real-life settings, particularly when the boundaries between the phenomenon and its context are not clearly evident (Crowe et al., 2011).

The case under investigation involved a group of university students whose formal classes were suspended for an entire academic semester (March–August 2020) due to nationwide lockdown measures in the Philippines. Data collection was conducted between April and June 2020, during the period of strict home quarantine that followed the declaration of community lockdown on March 13, 2020. This temporal and contextual framing enabled the researchers to capture students' lived experiences of learning, information-seeking, and sense-making through social media during an unprecedented disruption to higher education.

Consistent with qualitative inquiry, this study aimed not to generalize its findings but to generate context-specific insights that illuminate how disruptive innovations functioned as alternative learning spaces during a period of compounded crisis in higher education (Kuhfeld et al., 2020; Grewenig et al., 2020).

Participants were selected using purposive sampling, based on their active engagement in online group discussions related to pandemic experiences and information sharing. All students in an exclusive academic-related group chat were invited to participate. Initial screening of group interactions identified eight students who consistently contributed to discussions and demonstrated willingness to share reflections. Of these, six students agreed to participate fully and provided informed consent.

The inclusion criteria were: (1) willingness to participate, (2) sustained online interaction with the researcher, and (3) consistent engagement in discussions about home quarantine experiences and COVID-19-related information. The participants were college sophomores enrolled in a Bachelor of Elementary Education program, aged 19–20 years, and residing in General Santos City, Philippines. Their sustained participation, including message exchanges, photo sharing, and reactions to pandemic-related issues, provided rich qualitative data suitable for in-depth analysis.

### **Ethical approval statement**

Ethical approval was not required for this study, as it involved minimal-risk qualitative research with adult participants and did not include clinical or experimental procedures. All participants provided informed consent prior to data collection. Participation was voluntary, and confidentiality was ensured through anonymization; only social media content explicitly permitted by participants was analyzed. The dual role of one researcher as both course instructor and researcher was acknowledged and managed to minimize the power imbalance.

### **Data Collection**

Data were collected through multiple qualitative sources to enhance depth and credibility. Prior to data collection, participants were informed about the study's purpose, procedures, and ethical safeguards, and written informed consent was obtained. One of the researchers, who was also the course instructor, created a separate Facebook Messenger group to facilitate structured interactions with the participants from March 14 to June 2020. Data sources included:

1. Semi-structured written interviews, administered online;
2. Group chat interactions, focusing on discussions related to COVID-19 and learning experiences;
3. A ten-item COVID-19 awareness questionnaire adapted from UNESCO;
4. Content observation of participants' public Facebook timelines, conducted only with explicit permission; and
5. Follow-up online interviews to clarify responses and support data triangulation.

The ethical use of social media data was guided by principles of voluntary participation, informed consent, privacy protection, and contextual integrity. Only content that participants explicitly allowed the researchers to access was analyzed, and all identifying information was anonymized to protect confidentiality.

### **Research Instruments**

A semi-structured qualitative interview guide was developed to explore students' experiences of using social media as a learning resource during the pandemic. The instrument initially contained eight questions and underwent two rounds of revision to enhance clarity and relevance, resulting in five final questions. In addition, a ten-item UNESCO-based questionnaire was used to assess participants' foundational

knowledge of COVID-19 during the early phase of the pandemic. All instruments were administered online due to the strict quarantine measures in place.

To ensure the validity and trustworthiness of the data, several validation strategies were employed. Method triangulation was achieved by integrating interviews, chat interactions, questionnaires, and social media observations. Member checking was conducted by clarifying interpretations during follow-up interviews, while peer debriefing involved discussing emerging themes among the research team to minimize individual bias.

Regarding the researcher's positionality, one researcher served as the instructor to the participants during the academic term. This dual role was acknowledged and managed by emphasizing voluntary participation, ensuring that non-participation carried no academic consequences, and maintaining reflexivity throughout data interpretation to mitigate power dynamics.

## Data Analysis

Data were analyzed using thematic analysis guided by the six-phase framework proposed by Braun & Clarke (2006). The analysis began with an in-depth familiarization of the dataset through repeated reading of interview transcripts, group chat conversations, and supplementary materials to gain an overall understanding of participants' experiences. This process enabled the researchers to identify preliminary patterns and meaningful segments within the data.

Subsequently, initial codes were generated inductively by systematically examining participants' accounts and labeling relevant excerpts that reflected significant ideas related to learning experiences, information-seeking behaviors, and perceptions of social media use during the pandemic. These codes were then compared and organized to identify potential themes that captured broader patterns of meaning across the dataset.

The emerging themes were continuously reviewed and refined through iterative comparison within and across data sources to ensure internal coherence and a clear distinction between themes. During this phase, overlapping or redundant themes were merged, while ambiguous categories were clarified and refined to ensure consistency and clarity. The finalized themes were then clearly defined and named to reflect their conceptual significance and relevance to the research objectives.

Finally, the analytic narrative was constructed by integrating the themes with illustrative excerpts from participants' accounts, allowing for an interpretive explanation of how students navigated social media as learning spaces amid the infodemic. Throughout the analytic process, themes were allowed to emerge from the data rather than being imposed a priori, thereby ensuring that the findings remained grounded in participants' lived experiences.

## RESULTS

This section presents the findings derived from the thematic analysis of students' narratives regarding their learning experiences through social media amid the COVID-19 infodemic. The analysis generated four main themes, each comprising several sub-themes that reflect students' patterns of information-seeking, learning engagement, and evaluative practices in digital environments.

### Preferred Online Platforms for Information-Seeking

This theme captures how students selectively utilized social media platforms as

primary gateways for accessing information during the pandemic (Figure 1). The analysis indicates that students gravitated toward platforms that combined accessibility, familiarity, and perceived credibility, with Facebook emerging as the most dominant source.

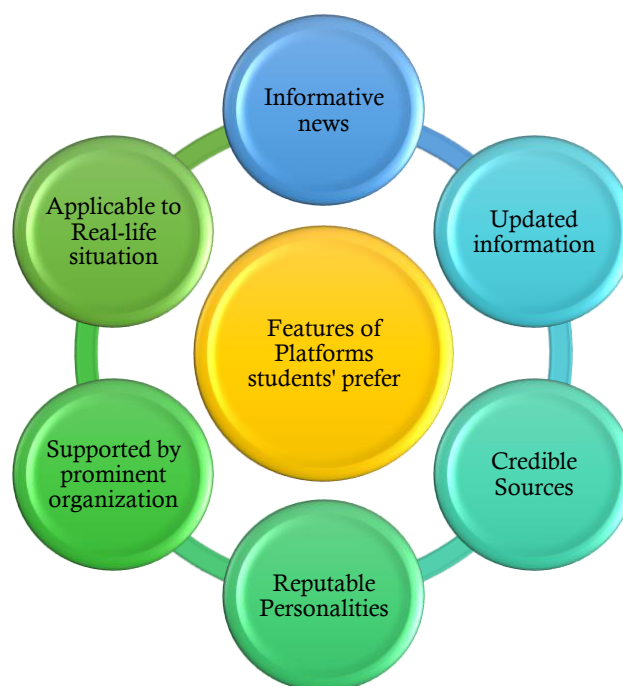
Two sub-themes were identified: (1) reliance on mainstream social media platforms and (2) selective engagement with institutional sources (Table 1). Students reported frequent exposure to pandemic-related information through Facebook feeds, which served as both a social and informational space. However, they did not consume information indiscriminately; instead, they demonstrated discernment by cross-referencing posts with official health organizations and reputable news agencies.

*“I started reading shared posts on Facebook, but I directly went to the websites of the CDC and WHO to verify the information,” (L).*

This pattern suggests that students were not passive consumers of online information but instead actively navigated multiple sources to construct an informed understanding. The key finding from this theme highlights Facebook's dual role as an entry point to information and a bridge to authoritative knowledge sources, rather than a sole determinant of students' beliefs.

**Table 1.** Overview of Themes and Sub-Themes

Sample Codes	Sub-Themes	Main Themes
Facebook as primary source; checking WHO pages	Reliance on mainstream platforms	Preferred online platforms
Learning beyond school tasks	Authentic learning experiences	Supplementary role of social media
Sharing to raise awareness	Civic-oriented learning	Relevance during polycrisis
Checking credibility; avoiding fake news	Information evaluation strategies	Navigating the infodemic



**Figure 1.** Features of Platforms that Students' Seek for Information

## Social Media as a Supplementary Learning Space

This theme reflects students' perceptions of social media as an alternative learning environment during periods of formal instruction suspension. Analysis revealed that social media facilitated authentic, self-directed, and context-based learning, extending beyond traditional academic tasks.

Two sub-themes emerged: (1) experiential learning through real-life issues and (2) learner autonomy and curiosity-driven engagement. Students described how exposure to pandemic-related content enhanced their awareness of health, social responsibility, and global events.

*“Online learning made me curious about what is happening in the world, not just about school lessons,” (L).*



**Figure 2.** Benefits of Learning through Social Media Platforms

These narratives suggest that learning during the crisis extended beyond curriculum outcomes to encompass broader processes of meaning-making. The key finding highlights social media's role in promoting informal learning that is both socially relevant and personally meaningful, particularly in contexts where institutional learning has been disrupted (Figure 2).

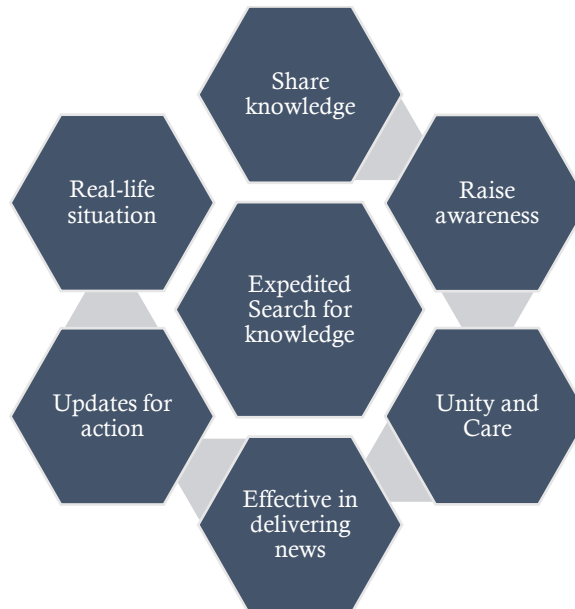
## Relevance of Social Media during Polycrisis

This theme explores students' perspectives on the role of social media in promoting learning and awareness amidst overlapping crises (Figure 3). The analysis shows that students perceived social media as a tool for collective awareness-building and civic responsibility.

Sub-themes included (1) information dissemination and awareness-raising, and (2) shared responsibility during crisis. Students emphasized the importance of sharing accurate information to counter panic and misinformation.

*“Through online platforms, we can share correct information and help others understand the seriousness of the situation,” (B).*

This finding highlights that students positioned themselves not merely as learners but as active participants in public information ecosystems, suggesting a form of digitally mediated civic learning.



**Figure 3.** Relevance of Learning through Social Media

The university strives to offer courses that are responsive to the demands of the present day. The students emphasized that they can utilize social media platforms to learn from real-world events, rather than focusing solely on knowledge obtained from books.

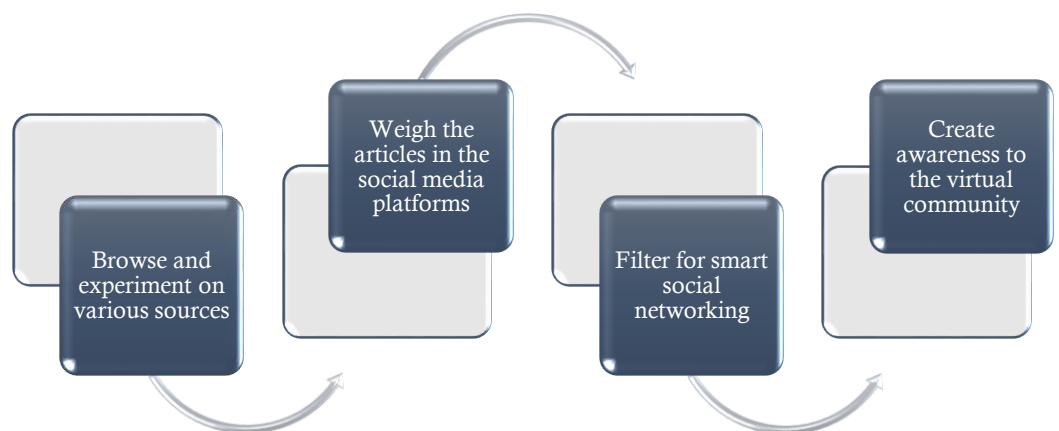
**Evaluating Information in an Infodemic Environment**

This theme captures students' strategies for navigating misinformation in social media. The analysis revealed a multi-step evaluative process involving scrutiny, comparison, and critical reflection.

Sub-themes consisted of (1) critical evaluation of credibility and (2) reflective restraint in sharing information. Students acknowledged past experiences of unintentionally sharing misleading content, which later prompted more cautious behavior.

*“I realized that sharing without checking only worsens the situation,” (A).*

Taken together, these accounts demonstrate that students' evaluative practices evolved from reactive sharing to reflective judgment, signaling a maturation of critical digital literacy under crisis conditions (Figure 4).



**Figure 4.** Students' Process of Evaluating Information in Social Media Platforms

The pre-service teachers scan vast amounts of information from different sources. Some news, for example, is shared in their Facebook Feed. Aside from browsing different websites to share on their newsfeed, they also surf the internet for additional sources. The participants also shared that they learned various things about COVID-19 from reading the information spread on social media platforms.

*L: These online platforms link me to deeper presentations of scholars, doctors, scientists, and experts of political science, society, and whatnots. Looking at one article, I was able to learn various things about the behavior of the viruses, the mechanisms that enable them to survive...*

*C: Through the information given by these online platforms as a student who experienced quarantine I could still learn by surfing the internet and read information about COVID19.*

*T: Since we are under enhance community quarantine, browsing websites is the easiest way to know COVID-19 more. Aside from reading articles about COVID-19, I also watched video clips from Facebook on how medical frontliners experienced treating COVID-19 patients and even how they handle COVID-19 casualties. There are also times I watched animated videos about how COVID-19 spreads and affects people. There are also reminders from government agencies that has been advertise in social media accounts like Facebook and Instagram.*

After browsing through news and articles from social media and health websites, the students evaluated the sources before sharing them on their social media newsfeeds. They agreed that social media is highly valuable in sharing the latest information about COVID-19 to their friends, family, and the online community as a whole.

*J: Most of us are on Facebook right now that's why we are aware of this things. Facebook helps a lot in sharing information to our friends are relatives. But be aware because some information are fake.*

*L: I have scary and weird online experiences related to CoVid-19 pandemic. In addition, what I found to be very compelling articles based on factual data, and logical analysis of circumstantial evidences and scenarios are flagged down by social media platforms and label them as scam, or the accounts who shared them may have deleted the contents of a viral investigative exposition of relevant data regarding the CoVid-19 or SARS-CoV-2.*

*A: Well as usual, everything has its advantages and disadvantages. There are times I feel like, those articles I've read are not factual and will just carelessly share those on my Facebook timeline. But what I've learned is that, what I did wasn't actually helping the public but just worsening the situation. The whole world is already in panic so if one shares what they've read without critically understanding those and will just immediately share them without even evaluating and mutely criticizing what have been written therein, then the effect will be the opposite of what was expected. Again, one must read between the lines before sharing.*

The students also shared that fake news is rampant on social media, and at times, they shared information that was not verified because the news seemed plausible in some aspects. There were also videos shared online that were later found to be fake after scrutiny, and additional information was reviewed in relation to what was presented in the video. Due to the widespread dissemination of fake news, students are now cautious about the information they share, as they are aware that

misinformation is prevalent on social media, which can only exacerbate the situation and cause panic among people during a crisis.

One participant emphasized the application of critical thinking in scrutinizing the articles and information. Before sharing the articles, the students carefully scrutinized them. They pointed out that the articles are helpful so long as they are adequately evaluated. Students can recognize the characteristics of trustworthy sources from websites and platforms, and screen articles or news for credibility, reputation, applicability, and other relevant factors.

*A: So what I did to help the public read factual articles, I myself have evaluated and weighed all the articles I've had read and those that I'm about to read whether they're worth the share or would just simply cause panic. These online platforms are actually useful if properly evaluated.*

*L: Like, a misinformed or unaware teacher goes to jail with her son over a trivial post. Just as how focused we are in educating people regarding the pandemic, such should also be our resolve to educate people on the dangers of expressing our unfiltered and raw emotional grudges against the government online.*

Some participants are also very vocal when it comes to sharing their views on local and national governments, especially during the crisis. All participants in this study strongly concur that social media, as a platform, helped them obtain knowledge and provided them with ideas about COVID-19. It also awakened them to the issues that confront society during this emergency. The information on social media keeps them updated on the trends of the virus and whether there are effective medicines that can serve as vaccines.

*C: By these, I can share knowledge to my family, relatives, friends, and schoolmates which they can also share to the other people for us to be aware on how to avoid these kind of virus. These information will help us to strengthen our immune system to avoid illnesses nowadays. The online platforms keep us updated on what's happening around us especially in our community. They give us knowledge and ideas for us to awaken our minds that this is not just simple crisis but a pandemic which serve as the challenge to fight with unity. Online platforms really helps us to create awareness to those protocols regulate by the government and DOH.*

*T: We don't know when this pandemic will end, hence I want to spend my ECQ time on learning new things thru online learning [social media]. Online platform is also very useful in creating awareness of COVID-19. Higher Education should have solutions on how students continue to learn behind this pandemic. Educational platforms really helps students to learn nowadays. We should not limit ourselves to learn in books.*

The participants agreed that social media can create awareness among people to fight COVID-19. They constantly updated their newsfeed relative to the latest news and pertinent information about COVID-19. This context demonstrated that social media can create awareness among students themselves.

Overall, the results demonstrate that students' engagement with social media during the pandemic was not random or purely consumptive but was characterized by selective use, reflective evaluation, and meaning-oriented learning practices. These findings provide empirical grounding for understanding how social media functioned simultaneously as a learning resource and a site of risk for infodemics.

## DISCUSSION

This study explored how Filipino university students navigated learning through social media during a period of polycrisis, with particular attention to platform preferences, the educational relevance of social media, and students' strategies for evaluating information amid an infodemic. The findings demonstrate that students did not merely consume information passively but actively engaged in selective platform use, informal learning practices, and reflective evaluation of information credibility. These patterns suggest that social media functioned simultaneously as a learning resource and a site of epistemic risk during educational disruption (Toquero, 2023).

Consistent with earlier research, the findings reaffirm that social media platforms facilitate access to information, peer interaction, and informal learning beyond formal instructional settings (Awidi et al., 2019; Manca, 2020; Sobaih & Moustafa, 2016). Similar to Sobaih et al. (2020), students in this study utilized social networking sites to maintain social support and collective awareness during crisis conditions. However, unlike studies that primarily emphasize the social or affective benefits of social media use, such as relational closeness and well-being (Clark, Algoe, & Green, 2018), the present findings foreground students' epistemic engagement, particularly their efforts to verify information and mitigate misinformation risks.

In line with Toquero (2021), students acknowledged challenges in distinguishing credible information from false or misleading content, underscoring the persistence of infodemic conditions in digital environments. At the same time, the findings extend previous work by demonstrating that students' evaluative practices evolved over time—from reactive information sharing toward more reflective and critical judgment—echoing observations by Mirbabaie et al. (2020) regarding sense-making processes in crisis-related communication networks.

While social media platforms such as Facebook, Instagram, and TikTok served as accessible gateways to information, their effectiveness as learning spaces was not primarily determined by technological affordances alone. Rather, students' learning experiences were shaped by their ability to exercise critical thinking, source evaluation, and self-regulation when navigating information overload. This finding challenges overly optimistic assumptions that digital platforms inherently enhance learning and instead highlights the conditional nature of social media's educational value, which depends on users' digital literacy capacities.

Importantly, the findings also suggest institutional gaps in structured guidance for information evaluation. Although students independently developed filtering strategies, the absence of systematic institutional support—such as explicit digital literacy integration within university curricula—may have placed excessive responsibility on students to navigate infodemic risks on their own. This reflects broader policy-level shortcomings in higher education responses to crisis-driven digital learning environments.

Although not the primary focus of this study, socio-economic and contextual factors likely influenced students' engagement with social media for learning. Students residing in urban areas with relatively stable internet access may have experienced fewer barriers to platform use compared to peers in geographically remote or economically disadvantaged settings. Similarly, differences in social capital, access to devices, and prior exposure to digital learning tools may have shaped students' ability to verify information and participate actively in online

learning spaces. Gendered patterns of social media use and information-sharing behaviors, as documented in prior research, also warrant consideration in future investigations. These contextual dimensions suggest that students' digital learning experiences during polycrisis are unevenly distributed and mediated by structural inequalities.

The findings have several implications for higher education institutions and policymakers. First, universities should move beyond emergency-driven digital adoption and institutionalize digital and information literacy as core curricular components, particularly in teacher education programs. Second, higher education policies should provide structured guidance on ethical information-sharing practices, source evaluation, and responsible social media engagement during crises. Third, institutions should recognize social media as a supplementary learning space and develop pedagogical frameworks that harness its potential while mitigating infodemic risks.

## LIMITATIONS OF THE STUDY

This study has several limitations that should be acknowledged. First, the small number of participants limits the transferability of findings to broader student populations. Second, data collection occurred during the early phase of the COVID-19 pandemic, which may not fully capture evolving digital learning practices in post-pandemic contexts. Third, reliance on self-reported experiences and social media observations may introduce response bias. Finally, the study did not systematically examine socio-economic, gender, or geographical differences, which could further illuminate variations in students' digital learning experiences. Future research employing larger samples, longitudinal designs, and mixed-method approaches is recommended.

## CONCLUSIONS

This study examined how Filipino university students navigated learning through social media during the COVID-19 polycrisis, focusing on their preferred information platforms, the relevance of social media as a supplementary learning space, and their strategies for evaluating information credibility amid an infodemic. Addressing these research objectives, the findings indicate that students actively utilized social media platforms—particularly Facebook—as accessible gateways for learning, information-sharing, and social awareness during periods of educational disruption.

The results demonstrate that social media supported students' democratic and authentic learning experiences by enabling access to real-time information, fostering social consciousness, and facilitating learning anchored in real-life societal issues. At the same time, students were required to engage in evaluative practices, such as cross-checking sources, filtering information, and exercising restraint in sharing content, to mitigate exposure to misinformation. Despite these adaptive strategies, students remained vulnerable to infodemic risks, particularly when distinguishing between official and unofficial information sources.

Based on these findings, this study suggests several implications for higher education. First, digital and information literacy should be systematically integrated into teacher education and higher education curricula, with explicit emphasis on

critical source evaluation, ethical information-sharing, and media literacy competencies. Second, higher education institutions should recognize social media as a supplementary learning space and develop clear institutional guidelines and pedagogical frameworks that support its responsible use during emergency and post-emergency contexts. Third, universities and policymakers should provide structured support mechanisms, such as faculty-led guidance and policy-driven digital literacy initiatives, to reduce students' reliance on self-directed strategies alone when navigating infodemic environments.

This study has several limitations that warrant consideration. The small number of participants and the specific institutional and geographical context limit the transferability of the findings. Additionally, data collection occurred during the early phase of the COVID-19 pandemic, which may not fully represent students' evolving digital learning practices in post-pandemic settings. Future research is therefore recommended to involve larger and more diverse student populations, incorporate socio-economic and contextual variables, and employ mixed-method or longitudinal designs to further examine the role of disruptive technologies in higher education during public health emergencies and beyond.

## **AI DISCLOSURE STATEMENT**

Artificial intelligence tools were used solely to assist with language refinement and manuscript editing. The authors take full responsibility for the content and integrity of the study.

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## **DATA AVAILABILITY**

The data that support the findings of this study are available on request from the corresponding author, EMT. The data are not publicly available due to restrictions containing information that could compromise the privacy of research participants.

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## **CONFLICT OF INTEREST**

The author hereby declares that this research is free from conflicts of interest with any party.

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