









The Role of WhatsApp in Shaping Communication Dynamics among Students

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Abstract. WhatsApp has become a fundamental means of communication among students, serving both social and academic purposes. This study examines the role of WhatsApp in shaping communication dynamics among students enrolled at three different types of institutions: private universities, university colleges, and public universities in Malaysia. This research employed a mixed-methods approach, utilising survey data and sentiment analysis of open-ended responses. The survey was distributed to 183 students through Google Forms. The results showed that 48.1% of students expressed a positive sentiment toward WhatsApp as a tool for academic collaboration, while only 47% indicated neutral views. The remaining 4.9% of students showed a negative view. The majority of participants acknowledged the effectiveness of the platform in enabling collaborative tasks, real-time discussions, and material sharing. Nevertheless, challenges such as excessive messaging and distractions from non-academic material were also observed. The study concludes that while WhatsApp is predominantly perceived as a constructive academic resource, its efficacy is significantly contingent upon group management practices and established norms of digital communication. These results highlight how informal digital platforms are reshaping contemporary academic interactions and underscore the necessity for more explicit guidelines to augment their educational value.

Keywords: WhatsApp, student communication, sentiment analysis

1 Introduction

1.1 Research Background

In this digital age, the way individuals communicate has undergone a significant transformation due to the widespread use of various social media platforms, such as WhatsApp, one of the most extensively used communication tools. WhatsApp not only stands out as a messaging application among students specifically, but it also functions as a medium to share academic content, organise group work, enhance learning experiences, and clarify doubts or discuss academic topics with peers or instructors. As

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stated by Lee et al. (2023), the use of WhatsApp on smartphones has facilitated ubiquitous learning and enhanced teaching and learning approaches due to its widespread global popularity.

This study focuses on the role of WhatsApp in shaping communication dynamics among students, aiming to identify the usage patterns, students' sentiments towards WhatsApp, the effectiveness of WhatsApp in the academic context, and the challenges of using WhatsApp for academic purposes. As supported by Al-Rahmi et al. (2015), there are positive and statistically significant relationships between the interactivity among research group members and research students, and academic supervisors through the expressive use of social media on collaborative learning and engagement. In addition, the higher education environment has been supported by the WhatsApp platform, which has been progressively utilised in facilitating group interaction and collaboration (Annese et al., 2022).

As mentioned by Haque & Wok (2020), the use of WhatsApp among students had a positive impact on the knowledge, attitude, and behavior of postgraduate students at the International Islamic University Malaysia (IIUM). This research highlights the students' sentiment towards WhatsApp as a primary tool for academic collaborations by analysing the answers in the open-ended questions. Besides, the relationship between the WhatsApp features that support academic communication and the challenges was identified in terms of the percentage of positive feedback.

The following are the main research questions this research attempts to answer:

1. How does WhatsApp affect the dynamics of academic communication and collaboration among students?
2. What are students' attitudes and sentiments toward WhatsApp as an academic communication tool?
3. What are the key challenges faced by students when using WhatsApp for academic purposes?

Corresponding to these questions, the research objectives are:

1. To identify how WhatsApp influences communication patterns and collaborative learning among students.
2. To examine students' sentiment and perceptions toward using WhatsApp for academic collaboration.
3. To explore the key challenges faced by students when using WhatsApp for academic purposes.

2 Literature Review

2.1 Introduction to Communication Dynamics in Education

Communication dynamics in education are vital in ensuring the learning environment is positively impacted during the process and interactions between educators and students. As stated by Nazamud-Din et al. (2023), during the previous COVID-19 pandemic, the conventional method of face-to-face interactions was restricted due to the

platform's capacity to link the educators with learners. This statement is also supported by Ong & Abd Karim (2022), who mentioned that WhatsApp is a popular platform that consists of features such as real-time interaction, facilitating connections and collaborations, and has significantly influenced communication dynamics specifically in the educational environment during the Movement Control Order (MCO).

Furthermore, the adoption of messaging applications like WhatsApp has increased the reliance on digital platforms for academic communications, such as supporting formal and informal learning, bridging communication gaps, and gaining positive student perception (Gasaymeh, 2017). According to Syed Chear (2017), WhatsApp has been identified as a common student tool and a widely used application among students through the conducted survey of 60 students at a private university, who reported that 88.2% students frequently used WhatsApp as a communication platform. Based on Berewot & Fibra (2020), WhatsApp has been embraced in group work and project-based learning by evaluating the students' attitudes and competencies towards the platform. In summary, WhatsApp, as a messaging app, also contributes towards the transformation of communication dynamics in communication that providing the pros and cons for the individual depending on how it is being used.

2.2 Overview of WhatsApp as a Communication Tool

With the rise of digital technologies, WhatsApp is known as one of the most popular instant messaging applications worldwide, extending over 2 billion users across 180 countries (Lee et al., 2023). Due to its availability on both mobile and desktop platforms with an internet connection and no subscription fee, WhatsApp became the most preferred platform, particularly among young people. As stated by Soo, (2023), the core functions of WhatsApp include a free messaging and calling service that caters to one-on-one and group interactions, sharing photos and videos, exchanging documents, and sharing location information.

In addition, Rafique et al. (2023) mentioned that WhatsApp also acts as a communication tool that influences the communication dynamics in terms of both interpersonal communication skills and interpersonal relationships. Based on the student perspective at University Teknologi Malaysia (UTM), Morsidi et al. (2021) had stated that WhatsApp usage in education has gained positive feedback among students in developing communication skills. It has also been supported by Jain & Abd Rahman (2016) mentioned that features of WhatsApp, such as WhatsApp groups, had served as an effective communication tool in a learning environment, raised good feedback among students, and positively impacted their educational experiences and scholarly dialogues.

2.3 WhatsApp in an Academic Context

In the academic context, WhatsApp plays an important role in group project coordination, clarifying doubts, peer learning, information dissemination, and announcements. By having WhatsApp as a tool that facilitates collaboration and relationship development among students, the process of sharing updates, communicating among team

members, and managing tasks in real-time has been coordinated to be more structured and efficient (Al-Rahmi et al., 2015). Besides, WhatsApp, as a tool that assists the learning management system, has served as an informal communication channel (Mabaso et al., 2023). In the realm of group projects, this phenomenon can be interpreted as cooperative learning, mutual assistance among peers, and collective problem-solving. Moreover, all those supporting learning media are essential for effective project management and implementation.

Secondly, WhatsApp is not just a platform to share information, but it can also help students to clarify doubts, especially when students need to gain faster feedback from group members or even a supervisor. The misunderstanding about the study can be solved efficiently, and at the same time, can increase the understanding and knowledge among peers and lecturers. In addition, Gomez-Arteta et al. (2022) highlighted the purpose of WhatsApp in university tutoring, especially when this platform facilitated a greater willingness among students to accept assistance in addressing their challenges, such as individual, family, and academic problems.

Next, the quick dissemination of information by using a WhatsApp platform has increased the sharing of knowledge among the students. This component is exceptionally significant in collaborative projects, as the prompt circulation of updates, notifications, and resource exchange is frequently necessary to ensure that all members are synchronized and fully informed (Mabaso et al., 2023). According to Farah Farzana et al. (2024), three main factors contribute to the effectiveness of WhatsApp in disseminating work-related information: speed, accessibility, and clarity. Additionally, it has also been recognized as one of the communication tools that supports high accessibility, is cost-effective, facilitates engagement through group creation, and fosters a sense of belonging among students (Rabotapi, 2024).

2.4 Challenges and Limitations

Amidst the ongoing digital transformation, WhatsApp has become one of the most preferred platforms for communication between communities. But there are still some challenges and limitations of WhatsApp that have been identified, which concern problems such as information overload, distractions, inequity, and privacy concerns. The information overload can be a hindrance when using WhatsApp groups, particularly from an academic perspective. This will lead to distraction when the students sometimes misuse the group purpose with unrelated messages (van den Berg & Mudau, 2022).

Furthermore, the inequity challenges can happen when there are some students not have internet access or smartphone literacy. This statement was supported by Suárez-Lantarón et al. (2022) about the drawbacks of WhatsApp that are associated with the utilization of mobile applications in the educational environment. There are situations where students have limited infrastructure, such as internet access or a limited data plan, especially for students who are hailing from economically disadvantaged backgrounds. Not all students may possess uniform access to internet resources, which can impede their engagement in endeavours that depend on digital materials. For example, in scenarios where a task necessitates online engagement, students lacking consistent internet

access may encounter difficulties in maintaining pace or engaging comprehensively (Martinez et al., 2023).

Besides that, there is potential for a WhatsApp group can affect the interference with students' private lives if not properly planned and managed. According to Lam (2023), the concern related to personal privacy when using WhatsApp has risen since its features, which include inherent transparency and algorithmic operations of numerous media-sharing platforms. This feature not just causes individuals to experience diminished confidence regarding the confidentiality of their data in the digital realm but also introduces a propensity for intrusion into individuals' private lives. Ultimately, each of these digital platforms, like WhatsApp, possesses distinct privacy policies on the collection, utilization, and dissemination of data. Educational institutions and users must familiarize themselves with these policies, as they may not consistently conform to rigorous educational privacy standards, particularly in contexts involving minors (Martinez et al., 2023).

2.5 WhatsApp vs. Other Platforms in Academic Communication

In the current digitalization environment of learning, there are a variety of platforms for information distribution in academia, including WhatsApp, email, Google Classroom, and Telegram, as shown in Table 1. The comparative study between four different academic communication tools has been conducted based on eleven different criteria, such as accessibility, real-time communication, ease of use, group collaboration, academic file sharing, notifications, distraction potential, privacy and moderation, offline access, and integration with LMS. In terms of accessibility, email had a moderate accessibility compared to WhatsApp, Google Classroom, and Telegram since it was used for a more formal purpose. WhatsApp and Telegram provide highly efficient platforms for real-time communication, since both can provide instant messaging and replies, while email has some delay due to the design not being for chat, and for Google Classroom, it has limited real-time communication because of the features that only support comments under the post.

The WhatsApp platform is a very user-friendly platform that supports group collaboration features, consisting of group chats and media sharing. These features assist students in having real-time conversations in their group class, group project, group mentor-mentee, etc, without the need to consume time and money for travelling, specifically when they have an urgency to discuss the subject matter as soon as possible. In contrast, Google Classroom operates as a comprehensive Learning Management System (LMS). This platform provides instruments explicitly designed for educational purposes, such as assignment monitoring, resource allocation, and evaluation. For example, the process of submission and grading tasks has become more transparent with the features that support good collaboration. Although Google Classroom presents a more structured and less distracting setting compared to WhatsApp, it may be deficient in the immediacy and interpersonal engagement that students frequently require for collaborative coordination.

The most similar messenger application compared to WhatsApp is Telegram. The similarity in terms of features supported by both applications, such as easy access

through mobile, instant messaging and replies, user-friendly, support group chat and media sharing, support academic file sharing, and real-time push notifications, has facilitated the administration of larger groups and promoted a more organized dissemination of content. But, in terms of familiarity, most students are more preferred to use WhatsApp due to its accessibility and user-friendliness interface. This had been highlighted by Sutjipto et al. (2022) in the 2020 Katadata Insight Center (KIC) survey. This survey revealed that 98.9% of Indonesian respondents possess the WhatsApp application. On a global scale, the platform boasted 2 billion monthly active users in 2020. The extensive utilization of this application suggests that a majority of students are already well-acquainted with its functionalities.

Table 1. Comparison of WhatsApp and Other Platforms in Academic Communication.

Criteria	WhatsApp	Email	Google Classroom	Telegram
Accessibility	High – mobile-first, widely used	Moderate – more formal, web-based	High–needs institutional setup	High – mobile-first, similar to WhatsApp
Real-time Communication	Instant messaging and replies	Delayed – not designed for chat	Limited – comments under posts	Instant messaging and replies
Ease of Use	Very user-friendly	Requires formal structure	User-friendly, structured	Very user-friendly
Group Collaboration	Excellent – group chats & media sharing	Low – limited to CC/BCC	Good – with assignment tools	Excellent – large group management
Academic File Sharing	Easy – supports documents, images, etc.	Possible – but attachment limits	Built-in file sharing with organization	Easy – supports larger files
Notifications	Real-time push notifications	Email alerts – may be ignored	App/web-based notifications	Real-time push notifications
Distraction Potential	High – mixed with social chats	Low – formal environment	Low – academic-only context	Moderate – depends on group usage
Privacy & Moderation	Limited – no admin content control	High – direct and secure	Moderate – admin control possible	Better than WhatsApp – admin tools
Offline Access	Yes – can view old chats offline	Yes – for downloaded emails	Yes – for downloaded materials	Yes – similar to WhatsApp
Integration with LMS	None	Possible with plugins	Full LMS platform	Limited

3 Methodology

Figure 1 shows the research methodology employed in this study, which covers all the phases involved in the project entitled *The Role of WhatsApp in Shaping Communication Dynamics among Students in three different types of institutions: private universities, university colleges, and public universities in Malaysia*. The mixed-methods approach was employed, consisting of four main phases, which include planning and design, data collection, data analysis and interpretation, and reporting. In this study, respondents were chosen using a non-probability sampling technique based on their availability and desire to participate. Students from Malaysian public, private, and university campuses were given access to the survey online via Google Forms.

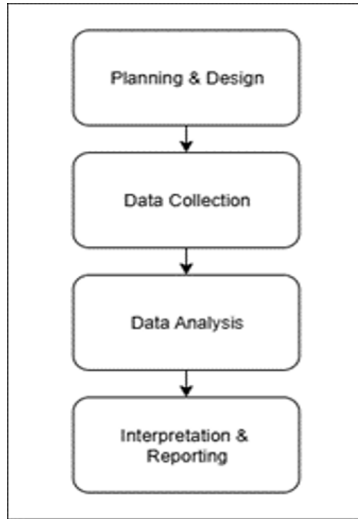


Fig. 1. Research Methodology

In this research, the integration of quantitative and qualitative approaches can be seen throughout the process, as shown in Table 2. The first phase, which is planning and design, has provided the fundamental basis for both Qualitative and Quantitative approaches through a comprehensive literature review and framework development. The application of the Quantitative approach had been conducted through the collection of quantitative data and had been analysed in Phases 2 and 3. The distribution of survey data consisting of structured questions was conducted using Google Forms. The result had been summarized using descriptive statistics by using Microsoft Excel as the analysis tool.

Table 2. Research Methodology Mapping Table

Phase	Activities	Method	Deliverables
Planning & Design	Define research objectives, identify institutions, and design survey questions	Literature review, Google Forms design, pilot testing	Finalised research objectives and validated survey instrument
Data Collection	Distribute the survey to students in different types of institutions	Online survey distribution (Google Forms)	183 valid responses from students
Data Analysis	Analyse survey results (quantitative and qualitative analysis)	Descriptive statistics, sentiment analysis	Sentiment breakdown, insights into collaboration, and challenges
Interpretation & Reporting	Synthesize findings, discuss implications, draft report	Mixed-methods integration, academic reporting	Final report with conclusions and recommendations

Open-ended survey responses were used to gather qualitative data in Phase 2, while sentiment analysis was used in Phase 3. The TextBlob library was used to analyze responses pertaining to students' experiences using WhatsApp for academic collaboration in order to categorize feelings as good, neutral, or negative as shown in Figure 2. According to the results, the majority of students had favorable opinions about WhatsApp as a tool for academic communication, while a smaller percentage had indifferent or unfavorable opinions, as shown in Figure 3. By offering more in-depth understandings of students' experiences, this qualitative analysis enhanced the quantitative findings.

```
[2] import pandas as pd
    from textblob import TextBlob

    # Load your Excel file
    file_path = "Data_Cleaning.xlsx" # Ensure it's in the same folder
    df = pd.read_excel(file_path)

    # Identify the open-ended question column
    column = "17. Would you recommend WhatsApp as a primary tool for academic collaboration? Why or why not?"

    # Clean and prepare responses
    df["Response"] = df[column].fillna("").astype(str)

    # Calculate polarity score using TextBlob
    df["Polarity"] = df["Response"].apply(lambda x: TextBlob(x).sentiment.polarity)

    # Classify into sentiment categories
    def classify(score):
        if score > 0.1:
            return "Positive"
        elif score < -0.1:
            return "Negative"
        else:
            return "Neutral"

    df["Sentiment"] = df["Polarity"].apply(classify)

    # Save results to new Excel file
    df.to_excel("Sentiment_Results.xlsx", index=False)

    # Print basic distribution
    print("Sentiment Distribution:")
    print(df["Sentiment"].value_counts())
```

Fig. 2. Sentiment Analysis Process

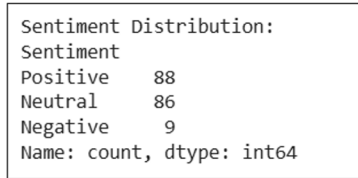


Fig. 3. Sentiment Distribution Result

4 Result and Discussion

A total of 183 students from three different institutions, including a private university (IPTS), a university college, and a public university (IPTA), participated in the current study. Their demographic characteristics are displayed in Table 3. Table 3 shows that the respondents in this study comprise 34.97% males and 65.03% females. More than half of the respondents are female. From the observation, the majority of the university students are female. The age of the respondents involved in this study ranges from 13 to 24 years old and above. They are divided into 3 groups. Based on the research, only 0.55% of the respondents are between 13-17 years old, and 94.54% of the respondents are between 18-24 years old. The remaining 4.92% are from students aged 24 years old and above.

Table 3. Respondents Demographic Profile (n=183)

	Frequency/ Percentage (%)
Gender	
Male	34.97
Female	65.03
Age	
13 – 17	0.55
18 – 24	94.54
24 years and above	4.92
Institution	
Private University (IPTS)	74.32
University College	19.67
Public University (IPTA)	6.01

Table 4 presents the patterns of WhatsApp utilization among the student population, indicating its prevalence as a communication platform. A significant proportion of students (65.03%) engage with WhatsApp a few times a week, whereas 34.97% utilize it daily. All participants are members of more than five WhatsApp groups, indicative of substantial levels of academic and social involvement facilitated by the application. Furthermore, 61.75% indicated that they participate in daily social interactions via

WhatsApp. This result not only shows the features of WhatsApp as a reliable conduit for sustaining both academic and interpersonal communication, but it also shapes students' communication behaviours and promotes collaborative engagement.

Table 4. Usage Pattern ($n=183$)

	Percentage (%)
Frequency of WhatsApp use	
Daily	34.97
A few times a week	65.03
WhatsApp group involvement	
More than 5	100.0
Frequency of social engagement	
Rarely	7.10
A few times a week	31.15
Daily	61.75

Based on Table 5 below, the finding shows the effectiveness of WhatsApp in the academic context, which covers the effectiveness of WhatsApp in enhancing learning, the use of WhatsApp to clarify doubts, the role of WhatsApp in organising group work, and whether the students' faced distractions or challenges when using WhatsApp. A majority of students perceived it as advantageous, with 53.01% categorizing it as highly effective and 44.26% as effective in augmenting their educational experiences. The application is commonly employed to address uncertainties, as evidenced by 98.91% of participants endorsing its utility in this aspect. Moreover, 81.97% expressed that WhatsApp facilitates the organization of collaborative projects. Nevertheless, 67.76% of students acknowledged experiencing distractions or obstacles during their utilization. These results indicate that while WhatsApp considerably enhances collaborative learning and facilitates real-time academic dialogues, it concurrently presents specific limitations that may impede concentration and productivity.

Table 5. Effectiveness of WhatsApp in Academic Context ($n=183$)

	Percentage (%)
Effectiveness of WhatsApp in enhancing learning	
Effective	44.26
Very Effective	53.01
Ineffective	2.19
Very ineffective	0.55
Used WhatsApp to clarify doubts	
Yes	98.91

No	1.09
Helps in organising group work	
Yes	81.97
Sometimes	16.94
No	1.09
Faced distractions/challenges	
Yes	67.76
No	32.24

The results from the second objective, which is to examine students’ sentiment and perceptions toward using WhatsApp for academic collaboration, are reflected in Table 6. The findings indicate that a significant proportion of students (48.1%) possess a favourable perception, underscoring WhatsApp's efficacy in promoting real-time communication, collaborative endeavours, and the exchange of resources. Concurrently, a nearly equivalent percentage (47.0%) articulated a neutral sentiment, implying that, while they acknowledge WhatsApp's academic utility, their experiences may have been influenced by inconsistent engagement, group dynamics, or overlapping social interactions. The minority (4.9%) who perceived the platform negatively likely encountered challenges such as message overload, lack of focus, or digital fatigue. These diverse sentiments yield a nuanced comprehension of students' perceptions, illustrating that, although WhatsApp is predominantly regarded positively as an academic instrument, its effectiveness is contingent upon the manner in which it is utilized and managed within educational frameworks.

Table 6. Students’ Sentiment Towards WhatsApp (*n*= 183)

Sentiment category	Count	Percentage (%)
Positive	88	48.1
Neutral	86	47.0
Negative	9	4.9

Table 7 examines the responses of students pertaining to particular academic communication attributes of WhatsApp. The coordination of group assignments garnered the most favourable feedback, achieving a rate of 81.97%, followed by the sharing of notes and assignments at 55.19%, and class announcements at 44.26%. Notwithstanding these advantages, students also delineated significant challenges: shared files frequently become obscured within the chat history, managing inactive participants during collaborative tasks proves to be difficult, and crucial messages may be obscured amidst irrelevant content. These challenges highlight the organizational constraints inherent to WhatsApp, emphasizing the necessity for enhanced structural and communication management strategies to fully exploit its academic capabilities.

Table 7. Academic Communication Feature Feedback

Feature	Positive Feedback (%)	Challenge Identified
Notes & Assignment Sharing	55.19	Files can get buried in chat history
Group Assignment Coordination	81.97	Difficult to manage inactive members
Class Announcements	44.26	Risk of missing messages among spam

5 Conclusions

In a conclusion, WhatsApp is an application that supports the shaping of communication dynamics among Students, particularly in an academic context. The findings show that this platform has been extensively utilized not just in fostering consistent interaction, but students can also participate regularly through multiple group chats. The use of WhatsApp as a medium for students to clarify doubts, share academic materials, and coordinate group assignments has increased the efficiency of learning. Student can anytime, anywhere share the information and clear their doubts about the study, but it should be done while respecting others' privacy.

Furthermore, students typically regard WhatsApp as a proficient academic medium. A substantial majority assessed it favourably regarding its facilitation of learning assistance and task organization, thereby underscoring its significance within academic processes. Nevertheless, various challenges were also apparent, such as distractions, message saturation, difficulties in managing group interactions, and the potential for overlooking critical announcements. These impediments indicate that the platform's informal and unrestricted character can, at certain times, obstruct concentrated academic participation, particularly when the delineation between academic and non-academic applications becomes indistinct.

Lastly, although half of the students have positive perceptions of WhatsApp usage in the academic context, there is a significant population of students who have neutral sentiments towards WhatsApp. This result highlights that some students still have mixed and inconsistent experiences. Generally, the effectiveness of WhatsApp not just depends on how it is implemented, managed, and integrated into students' academic practice, but it should be used wisely to perceive it as a beneficial communication tool. The challenges and limitations of WhatsApp can be the factors that affect the effectiveness of WhatsApp in shaping the communication dynamic among students if misconduct happens.

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