

# Bridging the Informal and Formal Learning Spaces with WhatsApp

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Informal Learning

WhatsApp

Learning supports



*WhatsApp is the most popular mobile instant messaging (IM) app in the global south. Hence, its use in informal and formal learning spaces has significant potential and is worthy of investigation. This study explored how University faculty and students in Namibia and India used WhatsApp for learning support and to bridge the gap between formal and informal learning. From a total of 182 participants, results reveal that WhatsApp has the potential to engage users in an informal and formal learning support and delivery environment. Learning designers and those responsible for professional development need to take note of this instant messaging app and experiment with various culturally contextual learning design models to support learning.*

## Introduction

When it comes to digital-based learning, the question of engagement and presence is often focused on online learning involving traditional computing devices such as desktop computers or laptops. However, in areas where mobile devices are the most widely used computing technology, engagement and interaction between teachers and students looks different. In many parts of the world, interactions between individuals takes place through mobile texting applications to bridge formal and informal learning spaces.

One of the most popular mobile tools is WhatsApp, a free cross-platform mobile application that allows users to make calls (voice) and send messages (text). The app averages one billion daily users globally with the largest share of 459 million users located in India (Ahmed, 2021). Similarly, in Namibia, 65 billion Instant Messages (IM) are sent daily with 98% of those sent through WhatsApp (CRAN, 2019). By comparison, Telecom Namibia, the country's only national fixed-line operator, faces declining voice revenues, which is a global trend due to wider use of mobile phones and the use of Voice over IP (VoIP) applications such as Skype, WhatsApp, and Facetime (CRAN, 2019). In India, 46% of WhatsApp users are between 18-29 years (Silver et al., 2019). Therefore, it is not surprising that on university campuses, research shows (Hamad, 2017; Gachago, et al., 2015) this application has also become a tool of choice to facilitate interactions

between teachers and students to connect formal and informal learning in higher education. Additionally, Namibian and Indian socio-cultural contexts are both community-centered contexts that value social, informal learning. In this paper, we explore the use of WhatsApp to bridge formal and informal learning spaces at the university level in India and Namibia, particularly at a time where the COVID-19 pandemic is making it difficult for face to face learning to take place.

## WhatsApp Usage in Higher Education

### Potential of WhatsApp for Informal Learning

The ubiquity of digital technology is changing the paradigm of education across the globe. Particularly, higher education institutions are harnessing the power of digital technology and mobile learning. In terms of mobility, ease of access, cost effectiveness, and flexibility, WhatsApp scaffolds learners in negotiating their own learning pathways through multiple memberships in diverse social groups. Consequently, the boundary between formal and informal learning has blurred, making it easier to access content, connections, and communication in individualized contexts for support or professional development. WhatsApp has enabled “alternative dialogic spaces for student collaborative engagements in informal contexts, which can gainfully transform teaching and learning” (Bere, 2013, p. 544).

The use of WhatsApp at universities is a global phenomenon. In India, WhatsApp in higher education is being used for syllabus inquiries, examination guidance, photo-sharing, educational content sharing, topic discussions, news updates, class schedule, and as a tool of information dissemination and announcements (Tandale, 2018). Gasaymeh (2017) investigated university students’ use of WhatsApp for personal and educational purposes in Jordan particularly to connect with instructors and peers to ask questions and share educational materials. The results indicated that of the participants:

- 39% stated they use WhatsApp to communicate with classmates
- 10% stated that they communicate with their instructor about matters related to course requirements
- 22% use WhatsApp to publish course announcements
- 24% discuss ideas about courses with their classmates
- 16% discuss ideas related to courses with instructors
- 23% seek help related to course requirements from students who have already taken the course
- 26% percent post links to topics and resources related to courses
- 23% to form student groups for educational purposes
- 24% to organize meetings with classmates regarding the assignment and project required by the instructor
- 15% to communicate with instructors about office hours and meetings
- 21% to get feedback from course instructors.

Pinar and Pinar (2017) conducted a study on Turkish university students’ attitude towards WhatsApp text-based interaction and the usage of emojis to express emotions and ideas. A focus group interview with five male and five female students revealed that Turkish students have a strong disposition to use emojis in their everyday communication. Exceptions are in ambivalent affective situations and stressful situations when they do not use emojis in their WhatsApp communication.

### Potential of WhatsApp for Formal Learning

In the socio-cultural contexts of Namibia and India, where WhatsApp has been a personal and professional tool of communication and learning, WhatsApp effectively connects informal and formal learning spaces by taking learning beyond the walls of the classroom. Informal learning happens as students and faculty communicate with one another in their daily discourse. This informal learning may be tacit and invisible, happening outside of a formal setting (Eraut, 2004). What the use of whatsapp does show though is that it can be used as an Intervention Tool to Improve Educational Outcomes (21st century skills). Specifically, it can be used for collaboration, problem solving and communication.

## Collaboration and Learning Support

WhatsApp could be used to promote mobile collaborative learning and social networking. The study from Thaba-Nkadamene (2020), recommends that teacher education in South Africa should expose pre-service teachers to WhatsApp learning and pedagogies. The use of WhatsApp in education is numerous and varied. In India, it has been used in medical education, particularly with planned educational interventions. Further, teacher training and professional development in India is an area where WhatsApp has been used to provide instructional support to teachers. To counter absenteeism and support teachers in rural India, WhatsApp was used to monitor teaching and provide professional development to enhance teacher effectiveness (Nedungadi et al., 2018). In Southwest India, where science teacher's morale was very low, a WhatsApp group was created with 30 science teachers to fill teacher-identified conceptual gaps and build confidence in teaching (Kumar Singh, 2017).

A perception study of nephrology fellows and faculty using WhatsApp as a teaching and learning tool, found that perceptions were positive. Comfort and control emerged as the main themes. The finding was that the ease of use, familiarity, and cost-effectiveness of the tool can augment student learning during fellowship (Jhaveri et al., 2020). During the COVID-19 lockdown in India, studies showed that the most common mode of consultation was by WhatsApp messages while email was the least preferred method (Pandey et al., 2020; Kapasia et al., 2020).

Albers et al. (2015) surveyed Emirati undergraduate university students (N=118) on the best mobile learning tool for their collaborative project. Findings indicated that WhatsApp is both free and allows for communication in Arabic. These factors contributed to students' preference for WhatsApp. The cross-platform functionality of WhatsApp (i.e., use on iPhone, Android phone, blackberry, and others), language support (i.e., dual language capability), ability to create groups function, media support (i.e., audio, video, images, and text with downloads), and message latency (i.e., typical response time) contributed to WhatsApp platform's communication richness.

## Problem Solving

Kapoor et al. (2019) used WhatsApp with Indian pediatric undergraduate students to discuss five clinical cases in a WhatsApp group. The findings indicated that clinical discussions significantly increased undergraduate students' subject matter knowledge, improved their problem-solving skills, and motivated them to study.

## Communication

Similarly, Nuuyoma et al. (2018), concluded that WhatsApp is a suitable communication tool in maintaining communities of practice among students and lecturers in higher education. The study indicated that certain behavioral issues negatively affect the use of WhatsApp for learning. In the Namibian student subject groups, students noted discrimination in the form of being sidelined with offensive emojis, disturbances through sharing unrelated videos or materials, and fellow students not responding in time to communication or questions of clarity on tasks (Nuuyoma et al., 2018). Furthermore, this study highlighted that the frequent use of WhatsApp leading to addictive behavior and the need to constantly check on posts and status of group members. Inability to balance work-life within WhatsApp seems to be a negative impact in using WhatsApp. The ease of use, access, and relatively cheap connectivity cost appear to be negated if there is a need to educate university students on mechanisms to mitigate the negative effects of WhatsApp (Nuuyoma et al., 2018).

In higher education contexts in India, most of the published WhatsApp research has been situated in medical education (Bakshi & Bhawalkar, 2017; Jhaveri et al., 2020; Kaliyadan et al., 2016; Kapoor et al., 2016). Bakshi and Bhawalkar (2017) examined second- and third-year anesthesia residents' perception of being in a WhatsApp group with a board-certified anesthesiologist with specialization in pain management, and how WhatsApp discussions in pain management presented through clinical scenarios, resident inquiries, and instructional support benefitted anesthesiology residents. Residents felt that WhatsApp discussions were useful. Documentation of details in clinical forms improved from 30% to 100%.

# Potential impediment for use of WhatsApp in informal and Formal Learning

While this article is focusing more towards the benefits of using whatsapp as a learning tool, it should not be taken to mean that everyone embraces this tool. The ability to adopt and embrace Whatsapp for learning is impacted by the perception towards it as well as various technological challenges.

## Perceptions and Use

WhatsApp use has been examined as an intervention tool to determine impact on educational outcomes. Mbukusa (2018) investigated University of Namibia's students' perceptions towards using the WhatsApp application as a learning tool for Teaching Methods of English as Second Language in a Bachelors' degree program. His findings indicated that Namibian students found using WhatsApp effective as a Teaching and Learning delivery mode for the English language. The use of WhatsApp as a platform in formal spaces however is not without challenges. For example, students found it difficult balancing online activities and academic preparation. The platform distracted students from completing assignments and adhering to personal academic schedules. The study, however, did not account for students not having smartphones, hence reliability in terms of the fewer responses to the survey cannot be accounted for. Overall, the study indicated that students preferred this platform for communication and enjoyed it as a tool for learning.

## Technology Challenges

In Kakuma refugee camp in Kenya, WhatsApp discussions provided mobile peer mentoring among teachers in a project entitled *Teachers for Teachers* (Mendenhall et al., 2018). Some of the challenges encountered in this project were lost or broken phones, retrieving WhatsApp data with replacement phones, lack of connectivity, and cost of mobile data which put the sustainability of the project in jeopardy. The time commitment for mentoring on WhatsApp was another constraint.

In the South African context, Mpungose's (2020) study revealed first-year students' perception of using Moodle as a compulsory, university-required eLearning platform was challenging. The alternative proposed in this study was to supplement the more familiar and widely used informal social media application, WhatsApp, with Moodle as an eLearning platform to create equitable educational opportunities.

## Research Questions

Our study was guided by the following questions:

1. How do students and higher education professionals use WhatsApp in university settings in India and Namibia to bridge the gap between formal and informal learning?
2. What are the differences and similarities in the usage of WhatsApp between the two countries or cross-culturally?
3. What has led to the selection of WhatsApp as opposed to other texting platforms (What does WhatsApp allow participants to do that other applications do not)?

## Method

### Research Design

This research used a structured cross-sectional web-based survey instrument to explore how universities in Namibia and India used WhatsApp for learning. The survey was administered electronically through the Qualtrics survey instrument.

## Data Collection Instrument

We pilot tested a draft survey for feedback to 15-20 individuals in the population to be sampled. Following an iterative process of constructing the survey, ten survey questions were identified. After reviewing seven possible surveys, a decision was made to modify Rambe and Bere's (2013) validated survey. The survey had yes or no questions, open-ended questions, and questions based on a five-point Likert scale (i.e., strongly disagree, disagree, neither disagree or agree, agree, and strongly agree). Question groupings were based on constructs such as: mobility; convenience and ease of use; engagement through WhatsApp with open-ended questions on WhatsApp use. Partners in Namibia and India received and reviewed the survey to provide input on linguistic terms and expressions. The goal was to ensure clarity of communication in the survey to be understood correctly in the specific socio-cultural contexts. The final survey consisted of four parts: (1) three yes or no questions and an open-ended question on how students and teachers are using WhatsApp. (2) three open-ended questions on the selection of WhatsApp as opposed to other texting platforms (3) 28 Likert scale questions from strongly disagree to strongly agree on various affordances and usage of WhatsApp to facilitate community and teaching and learning, and two open-ended questions on advantages and disadvantages of WhatsApp (4) demographic questions.

After pilot testing the survey with 15-20 individuals in the population to be sampled, the finalized Qualtrics survey link was sent to local partners to distribute at their universities. In India, the survey was disseminated to graduate and undergraduate students and faculty at Indian Institute of Technology in Varanasi. The faculty and students that took the survey were from the math department. Therefore, in the Indian context, a majority of the student population were from the math discipline. In Namibia, the students and faculty came mainly from the University of Namibia (UNAM). The disciplines represented for students were Economics, Biology, Mathematics, Educational Technology, Education and Languages. The academic disciplines represented were Nursing, Radiology, Human Movement, Public Health, Biology, Mathematics, English, and Human Resource Management. The aim of the survey was to collect a broad overview of a larger academic population in terms of their educational activities on the WhatsApp platform.

## Population, Sample, and Sampling

The population of this study was focused on faculty from Higher Educational Institutions (HEI) in India and Namibia. The probability sampling was aimed at simple random sampling within the population of academics at respective institutions of higher learning in India and Namibia. The subjects (n=182) logged in to take the survey. However, after cleaning up the data, only a total of 110 responses were usable. The rest of the responses (72) were discarded because they were incomplete. The survey was sent to as many institutions in the two countries and sampling was random.

## Data Procedure and Analysis

The data analysis was done with SPSS to generate descriptive statistics with mean and standard deviation of the Likert scale items. The survey offered an option to add an additional option if not in the pre-existing option lists. Additionally, a Likert-scale of 1-5 items with '5' being extremely important and '1' being not important at all. The analysis for this research was mainly frequency distributions and is presented in tables and histograms. The results report on the demographic data followed by matching the data to the research questions.

## Results

The data were collected during COVID-19 pandemic lockdown period which may have impacted participation. The demographic information of the subjects shows that the majority were students (see Table 1). The decision to report all data by country was made due to an overrepresentation of one institution from each country. The subjects from India were predominantly from the Indian Institute of Technology (IIT-BHU), Varanasi with a few others from Indian Institute of Technology, (IIT), New Delhi. The subjects from Namibia came from the University of Namibia (UNAM), with a small sample from The International University of Management (IUM). Despite results from subjects leaning towards mostly students, the dataset remains valuable and relevant for the objectives of this study as it potentially reflects the activities of the Faculty administering the WhatsApp groups.

**Table 1***Demographics of Participants*

		India (67)	Namibia (43)
		instructor/lecturer (4)	instructor/lecturer (12)
Gender	Female	0%	75%
	Male	100%	25%
Age	28-38	80%	47%
	39-59	20%	53%
		Students (63)	Students (31)
Gender	Female	19%	77%
	Male	81%	23%
Age	18-21	97%	50%
	22-26	3%	37%
	27-32	0%	13%
Year in School	2nd year	98%	84%
	3rd year	0%	6%
	Postgraduate (Graduate)	2%	10%

## Faculty Demographics

In India, all four professors who took the survey were male and 80% of them were in the age range of 28-38 years while only 20% were 39-59 years. In Namibia, the faculty participation was higher with 12 participants of which 75% were female and only 25% were male. The age distribution of faculty participants in Namibia was equal where 47% were between 28-38 years and 53% were in the age range of 39-59 years.

## Student Demographics

In India, 63 students participated in the survey out of whom 19% were female while 81% were male. A majority of students (97%) were in the age range of 18-21 years and only 3% were 22-26 years. There were no students in the 27-32 years age range. The majority (98%) were second-year undergraduate students and only 2% were graduate students. In Namibia, 31 students participated in the survey:

- 77% were females and 23% were males
- 50% were between 18-21 years; 37% were between 22-26 years, and thirteen 13% were 27-32 years. A majority of student participants (84%) in Namibia were also second-year university students with 6% third-year students and 10% graduate students.

Examining the pattern of participation, the trend was more towards younger male faculty and students in the Indian context as opposed to more equitable and predominantly female participation among students and faculty across different age groups in Namibia. Since a majority of Indian student participation came from the math department, it could be a contributing reason for the disequilibrium between genders.

## RQ1. How do students and higher education professionals use WhatsApp in university settings in India and Namibia to bridge the gap between formal and informal learning?

The survey data shows WhatsApp is used by educational professionals for educational purposes in both countries. As table 2 shows, a majority of teachers in the sample report use WhatsApp to communicate with students outside of class. While 17% of participating instructors from India indicated they send homework to students via WhatsApp, the number in Namibia was higher with 55%. The majority of teachers from Namibia indicated they receive homework questions from students, whereas the majority of teachers in India indicated they do not.

**Table 2**

*The Selection/Options for Teacher Use of WhatsApp*

	India (6)		Namibia (12)	
	No	Yes	No	Yes
Have you used your WhatsApp to . . .				
1 . . . communicate with students outside of class time?	17%	83%	8%	92%
2 . . . send homework assignments to students?	83%	17%	45%	55%
3 . . . receive homework assignments from students?	80%	20%	73%	27%
4 . . . connect with your students while on campus?	50%	50%	27%	73%
5 . . . receive notification from students about not being able to attend class	25%	75%	20%	80%
6 . . . brainstorm topics	100%	0%	50%	50%
7 . . . receive specific questions related to subject or assignment/homework	75%	25%	30%	70%
8 . . . teach through chat, pics, video, and audio	100%	0%	40%	60%
9 . . . collect data from participants by sending link to online surveys	80%	20%	30%	70%
10 . . . receive concerns and evidence of issues (e.g., not being able to login or an error message, or the like)	25%	75%	20%	80%
11 . . . send out online Moodle (or other LMS) quizzes	80%	20%	80%	20%
12 . . . reschedule classes (e.g., if travelling for conferences/seminars, etc.)	50%	50%	10%	90%

## Faculty Use of WhatsApp to Bridge Formal and Informal Learning

WhatsApp serves a communicative function to bridge formal learning that happens at the university and informal learning that continues through conversations and questions in both contexts. Teachers' use of WhatsApp in India is mainly to communicate information such as announcements and receive communication from students about attendance, homework, issues, and concerns. On the other hand, teachers' use of WhatsApp in Namibia indicates a more active, instructional use of WhatsApp to connect formal and informal learning spaces as they send and receive homework on WhatsApp, brainstorm topics, and teach through chat, pics, video/audio by leveraging the affordances of WhatsApp.

**Table 3**

*The Selections or Options in Survey on Students Use of WhatsApp*

	India (n=63)		Namibia (N=31)	
	No	Yes	No	Yes
Have you used your WhatsApp to . . .				
1. Communicate with instructor/lecturer/teacher outside of class time	30%	70%	6%	94%
2. Receive class homework from your instructor/lecturer/teacher	54%	46%	14%	86%
3. Send completed homework to your instructor/lecturer/teacher	81%	19%	50%	50%
4. Connect with your instructor/lecturer/teacher while on campus	46%	54%	44%	56%

	India (n=63)		Namibia (N=31)	
5. Let instructor/lecturer/teacher know that you are unable to come to class	73%	27%	56%	44%
6. Brainstorm topics	31%	69%	19%	81%
7. Ask instructor/lecturer/teacher specific questions related to subject or assignment/homework	29%	71%	19%	81%
8. Receive instruction (e.g., actual teaching through chat, pics, video, and audio)	48%	52%	11%	89%
9. Collect data from participants by sending link to online surveys	47%	53%	31%	69%
10. Raise concerns and show evidence of an issues (e.g., not being able to login or an error message, or the like)	27%	73%	15%	85%
11. Take online Moodle (or other LMS) quizzes	66%	34%	26%	74%
12. Get clarification on homework/class assignments from your instructor/lecturer/teacher.	27%	73%	7%	93%
13. Communicate with the fellow students for various academic activities	5%	95%	4%	96%

## Student Use of WhatsApp to Bridge Formal and Informal Learning

The usage by students of WhatsApp from students in both countries seems to match the usage of their instructors in both countries as shown in table 3. The highest usage of WhatsApp in both countries relates to contacting teachers for homework or engaging with each other to brainstorm on assignment topics or other academic activities. The student usage in both contexts indicates that WhatsApp is used to create a supportive learning community among students to connect formal and informal learning spaces.

## RQ2. What are the differences and similarities in the usage of WhatsApp between the two countries or cross-culturally?

Table 4 indicates the selection options of the five-point Likert-style questions in the survey. The consequent graphical representations depict the responses from subjects based on the corresponding questions.

**Table 4**

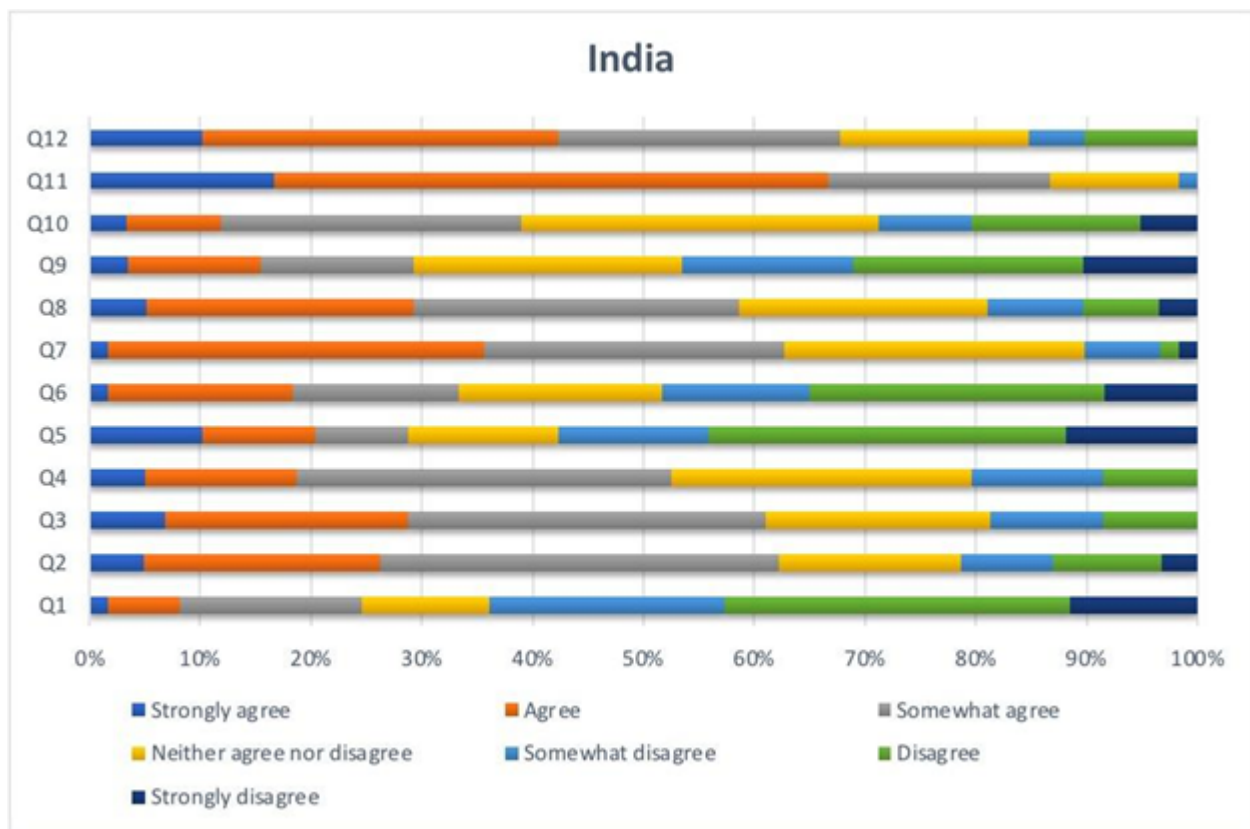
### *Selection Options in the Likert Style Question in Survey*

<b>Q1</b>	<b>I enjoy WhatsApp discussions more than face-to face classroom discussions.</b>
Q2	Receiving questions from my instructor/lecturer/teacher and classmates anytime and anywhere frustrates me because I am not given time to rest.
Q3	Doing classwork through WhatsApp limits how I express myself and my ideas.
Q4	WhatsApp interactions can support face-to-face classroom learning.
Q5	It is not fair to use my WhatsApp mobile data for schoolwork.
Q6	I would recommend using WhatsApp for learning in all my courses.
Q7	I feel I belong to a community when using WhatsApp.
Q8	My grades would be better if I could contact the instructor/lecturer/teacher through WhatsApp after university/college hours.
Q9	WhatsApp is a distraction and should not be used for learning.
Q10	WhatsApp makes learning more enjoyable.
Q11	I use WhatsApp to share educational materials.
Q12	I have been using WhatsApp more to connect with my instructors as a result of COVID.

**Figure 1**

### *Usage of WhatsApp Responses from Indian subjects*

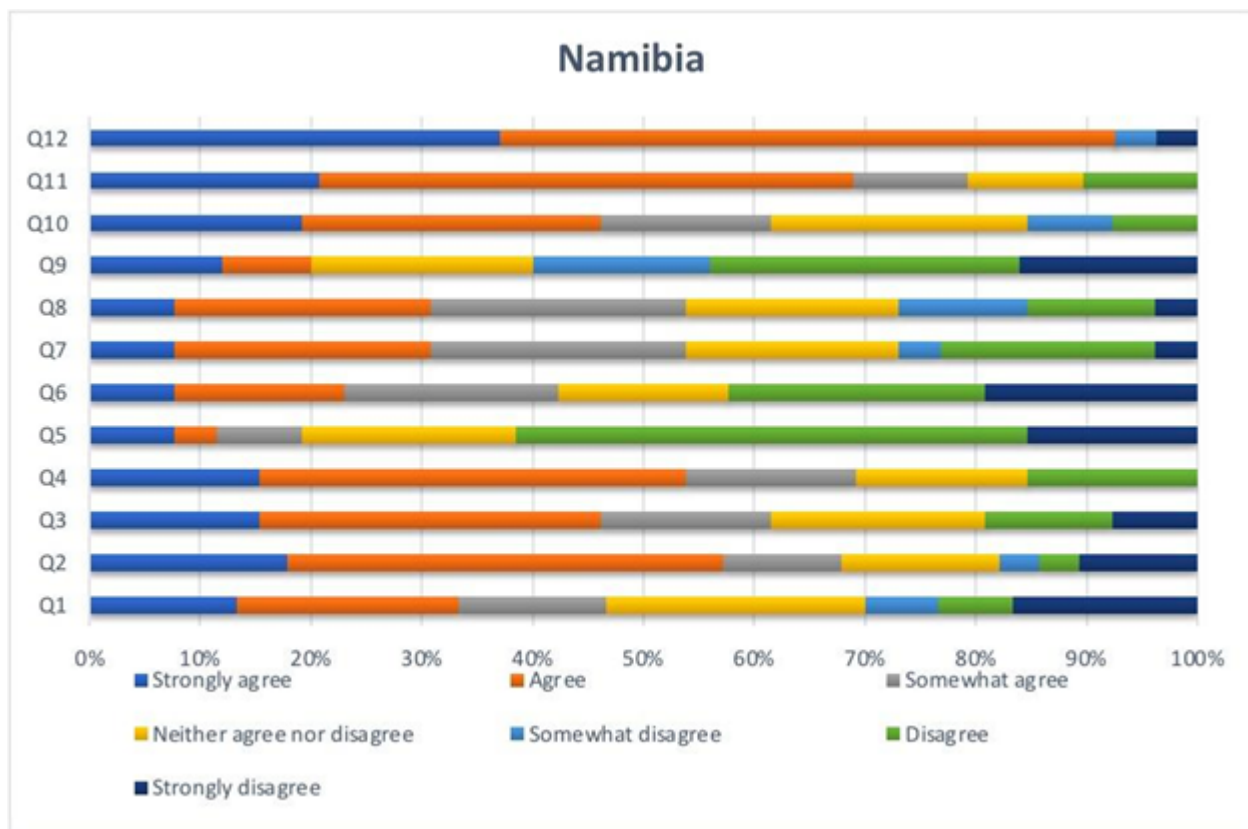




In figure 1, the stacked bar chart shows Usage of WhatsApp from responses from Indian participants.

## Figure 2

*Usage of WhatsApp from Namibian Participants*



In figure 2, the stacked bar chart shows Usage of WhatsApp from responses from Namibian participants.

## Similarities and Differences Between India and Namibia in WhatsApp Usage to Bridge Formal and Informal Learning

WhatsApp usage in both contexts increased during the COVID-19 pandemic. Namibian students' usage patterns increased during COVID-19 as compared to Indian students particularly with regards to how they connect their instructors as can be seen by the high level of strongly agreed or agreed with Q12. Moreover, both student groups used WhatsApp to share educational materials as represented in Q11 thereby connecting formal and informal learning through the use of mobile devices. A majority of both Namibian and Indian students disagreed that WhatsApp is a distraction and should not be used for teaching. Challenges in both contexts were related to students not being given enough time to rest due to constant connection. As mobile learning through informal spaces becomes relevant in students' lives, they need an online supportive community. However, Indian and Namibian socio-cultural contexts also favor close-knit family ties, the wisdom of elders, and oral traditions to form their own conception of community.

Less than half agreed with using WhatsApp for learning in all courses in both contexts. This could indicate that they desire WhatsApp as a supplemental tool to connect formal and informal learning rather than as the main platform for learning. In both Namibia and India, cost did not seem to be a major issue related to use of the application for educational purposes. In the item, "it is not fair to use my mobile data for learning", only 25% of Indian students agreed and about 20% of Namibian students agreed indicating students do not mind using the data for learning. The reasons could be attributed to reasonable, cheap access to mobile data plans. Therefore, mobile technology in both contexts affords connecting formal and informal learning.

There were differences in the way participants perceived their level of enjoyment in learning through WhatsApp. Namibian students found learning more enjoyable on WhatsApp as opposed to Indian students. This may be attributed to active engagement by Namibian instructors to use WhatsApp for instructional purposes as opposed to Indian instructors using it primarily for academic communication. Consequently, more Namibian students enjoyed WhatsApp discussions than face-to-face discussions. As well, there were differences in perceptions of students in Namibia and India regarding WhatsApp's ability to support classroom interactions. Close to 50% of Indian university students and

about 70% of Namibian students agreed with WhatsApp's ability to support classroom interaction. This is indicative of the active role of Namibian instructors teaching through WhatsApp. Sixty percent of Indian students either strongly agreed, agreed, or somewhat agreed to "My grades would be better if I could contact the instructor after university hours," whereas Namibian students had a slightly lower percentage. This may be due to students already receiving instructional support by Namibian instructors. Slightly more students in India (about 62%) expressed a sense of belonging to a community by using WhatsApp than students in Namibia (about 55%). This could be due to the value of fellow students in supporting learning on WhatsApp. WhatsApp interactions with peers creates a community to support learning.

WhatsApp is bridging formal and informal learning spaces in higher education in both contexts through academic communication and active engagement of students in creating a supportive learning community. In Namibia, WhatsApp goes a step further to connect formal and informal spaces by functioning as a supplemental system to teach through multimodal means, to give and receive homework, and to answer student questions. Other than the usual communication with family and friends, and the informal learning activities of sending notices and attending to queries from students and by instructors, it has been reported that formal instruction was attempted on WhatsApp.

The following formal educational activities on WhatsApp were:

- Instructors sent links to content videos to groups; YouTube tutorials and content links were sent to students.
- Notes, PowerPoints, eBooks, and articles were sent to various student subject groups; Instructors sent audio recordings of content where they were teaching in lecture format and gave instructions for assignments.
- Students were tasked to record themselves doing presentations and send them back to the instructor for assessment

Therefore, it provides a unique space where all information, materials, and personnel can be accessed to support learning. The unique socio-cultural contexts of both countries consider WhatsApp to be an effective and efficient mobile application to connect formal and informal learning as it is widely used and easily accessed by everyone irrespective of the social strata or internet access. The majority of subjects reported that WhatsApp has been a good tool to support learning. Therefore, WhatsApp provides equitable educational opportunities for Indian and Namibian populations to connect formal and informal learning with a supportive community of learners.

### RQ 3. What has led to the selection of WhatsApp as opposed to other texting platforms (What does WhatsApp allow them to do that other applications do not)?

**Table 5**

*Reasons for WhatsApp Preference as Compared to Other Platforms Among Participants*

#### **Q5.1\_What led you to choose WhatsApp as opposed to other texting platforms?**

India	Namibia
Is social media most used by student	Cheap
most of my contacts were using WhatsApp	accessibility of it as app
Easy to communicate with known	is easier as you can create group chats and you can post pictures/videos/notes etc.
It is well known in the community.	Video group call
	Because it more convenience to all student, does not require WIFI or and proper network
	I can reach the whole group of students
	Most people use WhatsApp
	It has a rich environment and chat tools for richer expression and sharing of external content
	It's available, it's popular and trending with young people

The answers provided in Table 5, above, by both sets of students (Indian and Namibian) indicate that WhatsApp is deeply embedded within the structure of the society as a tool of communication. Most people use WhatsApp because it is easy to connect with contacts and friends. Additionally, the cost consideration has a considerable benefit for both countries because it is cheaper to use group chat that sends a text message to individuals or groups where regular texting charges are per text message (SMS). The affordances of WhatsApp such as group function, video chat, sharing of external content, cost-effectiveness, feasibility, functionality without requiring WIFI, accessibility, popularity, and prevalence of usage among young people, makes it a relevant tool of learning and communication.

## Discussion

The results from this study indicated the contextual differences between participants in India and Namibia. The data from both contexts will be discussed keeping the historical and socio-cultural factors in mind. First, we will present each historical, socio-cultural context and then examine them cross-culturally to determine patterns and themes informing WhatsApp use as a way to bridge formal and informal learning in higher education.

### Interpretation in the Historical, Socio-Cultural Context

The Indian universities, Indian Institute of Technology (IIT-BHU), Varanasi and Indian Institute of Technology (IIT-D), Delhi are 2 of the 23 autonomous public technical and research universities located across India. They were established in the post-colonial era as institutes of national importance to speed up industrial development in India. These institutes are heavily focused on research in science, technology, and engineering, and are well-funded through grants. The competition to get into one of these universities is very high. This background provides a historical context to analyze the socio-cultural data from India.

In demographics, none of the instructors were females. The discrepancy in employment and gender gap in the competitive STEM field is clearly evident as reflected in the Global Gender Gap Index 2021 rankings (WES, 2021). India ranks 140<sup>th</sup> in the Global Gender Gap Index whereas Namibia ranks 6<sup>th</sup> closing the gender equity gap by 80.9% (WES, 2021). This is demonstrated in the female representation in the survey in Namibia. From 63 students, only 19% were females and 81% were males. An overwhelming majority (97%) of the students were in the age group of 18-21, and only 3% were in the age group of 22-26 – none above 26. 98% of the students were undergraduates in their second year of school, and only 2% of survey participants were graduate students. In the traditional socio-cultural context of India, age is very much related to educational and career potential. Therefore, numerous competitive government jobs have age limits in India.

### Instructors' Usage of WhatsApp as Indicative of their Perception of Formal Learning

In instructors' use of WhatsApp, differences stood out between the Indian and Namibian context. In India, the educational use of WhatsApp served a communicative function. Instructors received notifications from students about not being able to attend class or received issues of concerns and notified students about rescheduling classes. Indian instructors did not use WhatsApp for instructional purposes. None of them used it to teach through chat, video, or pictures or to brainstorm topics with students. Only half of the instructors were available to connect with students through WhatsApp while on campus. In the Namibian context, instructors were more connected and available to students through WhatsApp to answer homework or other questions. 60% used WhatsApp to teach and 50% brainstormed topics with students. WhatsApp was also used to collect data through surveys in the Namibian context. The differences in instructors' use of WhatsApp could be attributed to formal and informal perceptions of learning of instructors on WhatsApp. Indian instructors mainly used WhatsApp as a communication device to send or receive messages from students. Namibian instructors took it a step further to actually teach and brainstorm with students, and to send and receive homework. In the Namibian context, WhatsApp functioned as a supplemental Learning Management System that was easily accessible to students. Current practices in both contexts provided instant connection surpassing temporal and spatial constraints. However, the implication of this finding is the dilemma of

boundaries between personal and professional time with the use of mobile devices for educational purposes, and each educator's individual decision based on context. Professor-student interactions in both contexts provided personalized support and scaffolding to students through WhatsApp.

## Students' WhatsApp Usage as Indicative of their Need for a Supportive Learning Community

Students' use of WhatsApp indicated students in both contexts used WhatsApp to connect with fellow students for various academic activities. Students in both contexts value WhatsApp for peer support in learning. A majority of Indian and Namibian students indicated they used WhatsApp to communicate with professors. There were more similarities than differences in both contexts indicating that students share a similar experience in needing a supportive community of peers and instructors to learn effectively. WhatsApp provides a supportive community of learners for students. Student usage patterns promote knowledge sharing, and student-to-student interactions promote social and academic peer support through WhatsApp's virtual network.

The size of our sample does not render itself generalizable to the population, but it does provide insights from participants in the two countries and can serve as a springboard to a larger data. What is evident in this dataset is the following:

- Student-to-student interactions promote social and academic peer support through a virtual network
- Professor-student interactions provide personalized support and scaffolding to students.
- The use of WhatsApp is supporting the building of a community of learners.
- WhatsApp helps facilitate and maintain open communication.
- Current practices provide instant connection surpassing spatial and temporal constraints.
- WhatsApp usage patterns promote knowledge sharing.

## Conclusion

WhatsApp has become a powerful tool of informal learning and perhaps an indispensable communication medium between students and their instructors in countries where it is readily used. The lines between social usage and academic usage are being blurred as all parts of the cultural context coexist in the app. In other words, while the professors may be using it to remind students of homework, sending announcements, and checking in, students are also sharing in ways that may not be common in the traditional classroom. Ultimately, the data from this study shows it is not more advocacy needed to integrate WhatsApp in school, but rather educators and learning designers must take note of the everyday tools that teachers and learners use and find ways to integrate them in design practices to support learning.

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