ROLE OF WHATSAPP IN TEACHING AND LEARNING PROCESS IN SCHOOLS IN PAKISTAN

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ABSTRACT

The purpose of this study was to explore the effects of the use of WhatsApp in education and discover the opinions of all stakeholders towards the teaching and learning process in private schools. The study was designed in descriptive research using quantitative as well as qualitative data. We used close-ended questionnaires for quantitative data and semistructured interviews for qualitative data. The sample of the study consisted of all the key stakeholders of the education system: principals, students, teachers, and parents. We conducted interviews with school principals and gathered quantitative data from parents, teachers, and students. The study was limited to private sector schools of Mandi Bahauddin district, Phalia city, in the Punjab province of Pakistan. We used thematic analysis and descriptive statistics to identify the opinions of all the stakeholders about the role of WhatsApp in the teaching-learning process. The use of WhatsApp was encouraged as a supportive technology and recommended by the stakeholders. We also discussed the theoretical and practical implication of using WhatsApp.

Keywords: WhatsApp, teaching, learning, schools, Pakistan

INTRODUCTION

Internet technologies are a growing phenomenon and their use is changing modes of communication and forms of sharing content among users. Social networking applications are extremely popular among younger users and are prevalent across the globe because they provide accessible socialization. These technologies are changing the concept of user interaction based on their focus on customization, which makes them relatable to every individual. Every day there is an increase in the number of users of such social networking forums, which predominantly provide interaction opportunities to individuals and groups to understand different worldviews and discuss evolving and differing thought processes. The scope of such networking applications and software is not limited to socializing alone but also has entered the sphere of education (Aktas & Can, 2019).

During the Covid-19 outbreak, the world shifted the mode of education from traditional to online. Due to lockdowns, state schools were completely closed and only a few private, resourceful schools were able to execute education online. All other private schools had to use innovation in the teaching-learning process to operate and continue the education process. There are easy and common methods for online classes with free content sharing via video software applications such as Zoom, WhatsApp, Google meet etc. All these have certain distinguishing features for engaging students, sharing content, recording video, reducing labor for taking notes, increasing social interaction, reducing formal time constraints, and listening to audios and watching videos as many times as needed for better understanding and learning. This highlights the need to explore the impact of such applications on the teaching-learning process and its outcomes.

The current article aims to explore the role of WhatsApp in the teaching-learning process of students who are online and to see the opinions of other stakeholders involved in the

teaching-learning process, i.e., school principals, teachers, and parents. We considered the opinions of teachers, parents, and school principals to be noteworthy in determining the efficiency of the role of WhatsApp as they can provide a comprehensive picture in comparison to their experience of face-to-face education interactions. The results of the study might add significant knowledge in the literature and can be studied further in terms of its effect on the learning and achievement of students in comparison to the traditional modes of education.

Statement of the Problem

Advanced technology has become a basic necessity of life and, especially since the Covid-19 outbreak, has revolutionized the education system around the globe. The mode of online education has also affected the teaching-learning process and its medium. There are different ways of teaching in Pakistan that the different types and levels of educational institutions have been using in this pandemic and the use of WhatsApp to deliver the lecture is one of them (Abdullah, 2020). As this method of teaching is relatively niche in Pakistan, the acceptance and effectiveness of this mode is yet to be empirically validated. This study explored the use of WhatsApp for education and tried to investigate the opinions of students, teachers, and parents towards the application. This is a threshold study in understanding the opinions of the main stakeholders of the education system in Pakistan. The study is very much needed as Pakistan and its neighboring countries are still not out of danger of Covid-19, and examinations are deferred, and the Cambridge examinations are postponed or school assessed grades are used as an assessment. Hence, the role of WhatsApp in teaching-learning has its space in the education system. The results of this study might help in determining the need of WhatsApp in the education process even after the Covid-19 is over.

LITERATURE REVIEW

After the Covid-19 pandemic, all sectors of life are pretty much dependent upon the use of technology, especially online content sharing applications. The field of education has also been influenced by the online technology and many computer-assisted programs were developed to be incorporated into the teaching-learning process.

The present study focuses on WhatsApp messenger and its role in the online teaching-learning process. WhatsApp messenger is an instant messaging application with features for transferring data including text, content, images, and audio and video files (Sahu, 2014). With the rise of Covid-19 and the imposed lockdown in most countries, the use of free content sharing applications rose. Google Classroom, Google Meet, Skype, WhatsApp, Microsoft Teams, and Zoom are a few examples of free resources that were used as tools for educational content delivery. WhatsApp is a freely available messenger for IOS and android versions, and almost all smart mobile phones use WhatsApp in daily message sharing (Nitza & Roman, 2016). WhatsApp was then used as a medium to transfer educational content to the students during the pandemic.

There were online universities already using and benefiting from WhatsApp. For example, Gasaymeh (2017) studied the use of WhatsApp by students for educational purposes and for educational content delivery. There are studies reporting that WhatsApp groups facilitate the communication between students and teachers thus cultivates a trustworthy environment and increases the interest of the students in learning activities (Abu Alruz, 2014; Roblyer et al., 2010).

Social Interaction through WhatsApp

The concept of formal schooling includes interaction at the student-student and student-teacher levels. WhatsApp has all the components of facilitating that interaction online. Human beings want to be involved in social activities and make friends, which is not restricted in WhatsApp, but to compare with face-to-face interactions in formal settings is quite challenging. Despite being the easiest way of socializing and maintaining relationships, face-to-face interactions have their own limitations that require constant remedies (Hendricks, 2017). Nevertheless, WhatsApp provides all the solutions to social interaction, content sharing, voice note recording, storing and transferring data, deleting irrelevant information, and retrieving what's needed. This makes social interaction an ever increasing and interesting phenomenon.

WhatsApp as an Effective Medium of Instruction

WhatsApp has features that can make sure the medium of instruction is as effective as it can be in

traditional classrooms. Students can ask questions during the lectures and can get further clarification about the assignments, quizzes, and examinations. Students can also connect with other students and continue to satisfy their social and emotional needs as well.

Teachers on the other hand can send both recorded and live video lectures. The assessments and progress reports can be shared with students and parents. Student attendance can be monitored and parents can be brought on board in case there is a lack of participation by students. Parents can conveniently use WhatsApp to learn about the academic activities and achievements of their children. WhatsApp also works equally well in mobile phones of different qualities and brands and functions the same in Android, IOS, and Windows. WhatsApp provides an equal learning opportunity to students of all types, genders, ethnicities, and other demographic subgroups (Durgungoz & Durgungoz, 2021).

WhatsApp in the Eyes of Researchers

There is an increased use in content sharing applications. A few researchers have studied the use of such software and applications in the teaching-learning process and suggested WhatsApp as a collaborative learning tool that has the potential to increase the understanding and achievement of students (Cetinkaya, 2017).

WhatsApp is being used in the developed countries, especially Korea, who uses WhatsApp as a formal learning tool and includes graded learning activities in the semesters in their open university (KNOU, 2021). With the emergence of online education in schools, the easiest and most accessible application is WhatsApp, which does not require any sophisticated computer, mobile, or laptop device but can be used in any smart mobile phone, thus making it a most convenient teaching-learning process medium. WhatsApp is already embraced by the parents and teachers in Pakistan and thus the stakeholders in this research are already using it in their daily lives. The question of using it for educational purposes and the feedback from all stakeholders makes it significant for all educational institutions in Pakistan.

The recent studies show a significant correlation between the teaching activities through WhatsApp and the satisfaction level of students (Rosenberg & Asterhan, 2018). WhatsApp was further reported to include a repetitive mechanism that can contribute to the achievement of students (Saritepeci et al., 2019). These findings encouraged us to investigate the role of WhatsApp in Pakistani settings as well. The private schools have been using WhatsApp for more than one academic session, showing that the phenomenon is as significant than ever. Depending upon the changing paradigm of remote and online learning, WhatsApp can be added formally in the learning activities in educational settings in schools.

Objectives of the Study

The current research focuses on the role of WhatsApp in the teaching and learning process school education in Pakistan. This study was driven by the following objectives:

- To explore the level of students' familiarity with the WhatsApp based teaching-learning process.
- To explore the views of the stakeholders of education about the students' engagement in online class through WhatsApp and the ease of learning using it.
- To investigate the role of WhatsApp based teaching and learning in continuing the education process during the pandemic at private schools in Phalia, Pakistan.

RESEARCH METHODOLOGY

Research Design

Our research was descriptive in nature and we used a mixed-methods approach in this study. We used a quantitative survey research design to collect quantitative data and conducted semistructured interviews to generate qualitative data. A sequential exploratory mixed methods design was used as outlined by Creswell (2003).

Population

The target population consisted of secondary level schools of Phalia in the Mandi Bahauddin district of Punjab. The different participants included in this population were students, teachers, and parents.

Sampling Design

By using the multistage random sampling technique, we selected at the first stage three secondary level schools: (1) Dar-ul-Fazal School Phalia, (2) Ghzali School Phalia, and (3) Pehla Qadam School

Phalia. Twenty-two teachers were selected and the teacher of each subject taught at secondary level to be included in sampling population. The students were selected by using the cluster technique and groups of many students from each class were chosen. In total, 22 teachers, 56 students at the secondary level, and 22 parents were selected. Hence, the total population comprised of 100 participants.

Instrumentation

Separate instruments were used for data collection in this research. For the qualitative data, a semistructured interview was used to generate the data from the participants. The questions were derived from the literature and modified in light of the current online mode of education using WhatsApp.

For the quantitative data, we developed close-ended questionnaires for students, teachers, and parents. The questionnaires were developed on the basis of the findings of the interviews.

Psychometric Properties of the Tools

The questionnaires were developed based on the key themes identified by the interview participants of the study. The content validity of the questionnaire was ensured by the expert opinion of the subject experts. The suggestions of the experts were incorporated into the questionnaire and then the final questionnaire was administered.

Procedure of the Study

The study followed strict ethical considerations. Firstly, the qualitative segment of the study was carried out. Semistructured interviews were conducted by the three randomly selected schools. The principals of the schools were approached with an interview schedule. The interviews were recorded with prior permission of the participants. The questions were repeated for clarity and at the end of the interview the recorded answers were also shared with the participants. We transcribed the interviews and used thematic analysis for analyzing the interviews.

We identified themes for each question, codes were given, and then interpretations were drawn from the coded data. Not only did this analysis help in understanding the mechanics of the teaching-learning process through WhatsApp application, but it also helped in making the questionnaires for the students, teachers, and parents.

The questionnaires were designed separately for each subgroup i.e., students, teachers, and parents. All questionnaires were close-ended and measured on a five-point Likert type scale. Those five points were given weights as 5 for *strongly agree*, 4 for *agree*, 3 for *neutral*, 2 for *disagree*, and 1 for *strongly disagree*. The data were collected and entered in the Statistical Package for social Sciences (SPSS) version 22. Descriptive and inferential statistics were employed. Means, standard deviations, percentages, frequencies were calculated and to get meaningful results.

FINDINGS

Findings of the study are presented in the sequence of the events of the study.

Interview Findings

The principals answered the questions and the extracted findings are presented here. For each question, the themes identified from the answers are mentioned here for brevity.

Question 1. What is the experience of education activities in your schools during the Covid-19 pandemic?

All three participants informed that the educational process was halted because of the pandemic. The school administrations faced serious financial problems because of the closure of academic activities. The fees of students could not be received, and teachers could not be retained without any salary. Therefore, the administration of the schools decided to use online education for resumption of educational activities. From the explanation of three participants, we derived that one of the key driving forces to go online was finances.

Question 2. What resources were required to initiate online education?

The participants elucidated that there were quite a few freely available online software applications available, but the issue was that all such applications required a laptop or at least a personal computer for each student. The target market of the sampled schools and all the public sector schools in Pakistan are not able to afford a personal computer or a laptop for each student. Therefore, the schools could not offer online education through these modes. However, every household nowadays has at least one smart mobile phone that has a WhatsApp application. As a result, it was feasible to use WhatsApp for the delivery of content and allied instructions.

Question 3. How did your schools maintain

the teaching-learning process through WhatsApp?

Two school principals informed us that the teachers used it to record a video lecture in clips of 5–10 minutes and share them in the WhatsApp groups of the students. However, one principal added that the teachers used it to give consultation hours from half an hour to one hour for each subject and took questions from students. The other two principals informed us that some of the students did not have smart mobile phones with them, either their mothers or fathers had those phones, and therefore the consultation hours were not possible. The teachers used to share the video clips in the group and every student, when they got access to WhatsApp on a phone, used it to see the videos and learn accordingly.

Question 4. How do you the see the new role of the teacher using WhatsApp as a teaching-learning tool?

All three participants informed us that the role of the teacher was revised, renewed, and broadened as compared to conventional teaching. Now the teacher has a greater workload. The video recording, notes making, clarity of voice, and content delivery were a few factors that added to the job of the teachers, as highlighted by the participants.

Question 5. What are the hurdles and challenges of shifting to WhatsApp as a mode of teaching-learning process?

The answers of the participants were very specific and cultural to this. They explained that the female teachers initially had to face many problems, especially in higher classes, because they were hesitant to share their face in the video clips. Culturally, the parents and families of the teachers were also not supportive of the idea. This challenge was addressed through the alternative to prepare the notes in replacement of the black/white board and display the notes and books in the video with the voice of the teacher. This was followed by another problem because the mobile numbers of the female teachers were shared with the students and their family members. A few cases of misconduct were found when the female teachers were approached through wrong numbers and indecent messages. One of the participants added that this was not only restricted to the teachers, but the parents also faced the same issue in three to four instances. The contact numbers of parents were also shared, and a few mothers received irritating wrong numbers. To overcome this challenge, the principals held a meeting with the parents and teachers and informed them about the loss of educational activities that may be caused if phones are not used. As a result, it was set a norm that only one hour would be fixed for a question/answer session once the teacher has shared the video clips of the lectures. Beyond that one-hour session no correspondence was allowed.

Question 6. How have you managed this WhatsApp based learning successfully?

The answer provided by all participants was that the parents were the key to this success. The regular meetings with the parents helped them understand the need of this mode of learning. The parents not only monitored their children by following strict timetables, they also frequently showed appreciation to the teachers. The teachers were motivated by the appreciation of the parents and continued their efforts with more energy and dedication.

This was a succinct analysis of the interviews conducted by the researchers. This analysis enlightened us on the WhatsApp based teaching-learning process and hence helped in developing the questionnaires. The following is the separate analysis of the responses received through the questionnaires by students, teachers, and parents.

Quantitative Findings

Before proceeding to the analysis, we checked the reliability of the data that was collected.

Reliability of Questionnaires

The coefficient of Cronbach alpha was used to determine the internal consistency of items for each questionnaire. The reliability of each questionnaire was above 0.8 as displayed in Table 1, which is considered good in quantitative survey research design.

Table 1. Reliability of Questionnaires

SR#	Questionnaires	Cronbach's Alpha
1	Questionnaire related to students	0.944
2	Questionnaire related to teachers	0.854
3	Questionnaire related to parents	0.827

Data Analysis of the Questionnaire Related to Students

The questionnaires were delivered to 56 students who were carefully chosen as participants for the collection of data. The demographic details of the students are presented in Table 2. The questionnaire contained 20 multiple choice questions on the following scale: Strongly Disagree = SD (1), Disagree = D (2), Neutral = N (3), Agree = A (4), and Strongly Agree = SA (5). The students were asked to fill the questionnaires ethically and to best of their knowledge. Table 3 presents the mean and standard deviation values for each question for the students.

Table 2. Demographic Variables of the Students

Gender	F	Percentage
Male	29	51.8
Female	27	48.2
Total	56	100
Age		
Less than 13 years	15	26.8
13 years and older	41	73.2
Total	56	100

Data Analysis of Questionnaire Related to Teachers

The questionnaire was delivered to 22 teachers who were carefully chosen as participants for the collection of data. The demographic details are presented in Table 4. The questionnaire contained 20 multiple choice questions. The participants ticked only one choice for each statement. Table 5 presents the mean and standard deviation values for each question for the teachers.

Table 3. Students' Evaluation about WhatsApp Teaching and Learning

SR.	Items	M	SD
1.	I like studying using WhatsApp.	3.1	1.4
2.	I understand everything what the teacher teaches in WhatsApp classes.	3.1	1.4
3.	I like studying at home rather than going to school.	3.2	1.3
4.	I attend my online classes in time.	3.2	1.2
5.	My fellows and I make mischief in online WhatsApp class.	3.2	1.5
6.	I can understand the lesson teacher teaches via sending voice notes.	3.3	1.6
7.	I do not like group video call for class.	4.1	1.1
8.	I have no problem in understanding the topic being taught in WhatsApp class.	3.8	1.2
9.	My teacher changes the WhatsApp class schedule and timing frequently.	3.7	1.3
10	I cannot read the lesson related posts and comments well in class group.	3.8	1.5
11.	WhatsApp class is a fun way of learning.	3.6	1.6
12	I eagerly wait for WhatsApp class to be held rather than going to school.	3.7	1.4
13.	I find it interesting to do online homework by searching on the internet.	3.7	1.4
14.	I sometimes cheat in WhatsApp class test or exam.	3.9	1.3
15.	I cannot study regularly via WhatsApp based class as I have to borrow my parents' phone when they are at home.	3.5	1.3
16.	I share my ideas and learned lessons with classmates via WhatsApp.	3.6	1.3
17.	I feel lazy in WhatsApp class.	3.8	1.5
18	I send my homework and tasks to teachers regularly.	3.6	1.4
19.	I do not get my assignments/homework marked by the teacher on WhatsApp.	3.9	1.4
20.	I usually skip the lesson after marking attendance in online class.	3.8	1.5

Table 4. Demographic Variables of the Teachers

Gender	F	Percentage
Male	10	45.4
Female	12	54.5
Total	22	100
Age		
Less than 25 years	3	13.6
25 years and above	19	86.3
Total	22	100

Table 5. Teachers' Evaluation about WhatsApp Teaching and Learning

SR.	Item	M	SD
1.	I find it convenient to deliver video lesson via WhatsApp.	2.6	1.2
2.	I am comfortable checking homework sent by students via WhatsApp in the form of images.	2.8	1.2
3.	I think that WhatsApp based learning is an effective medium of instruction.	3.2	1.3
4.	I feel no difficulty in conducting online class.	5.0	8.5
5.	It is easy for me to do time management for online class.	3.5	1.4
6.	My students give better feedback in WhatsApp based online classes.	3.1	1.4
7.	Are you satisfied with reliability of test conducted online?	3.0	1.5
8.	It is easier for me to conduct online tests.	3.5	1.4
9.	My students respond actively in online classes.	3.4	1.5
10	I opine that online WhatsApp based learning is making students punctual.	3.5	1.6
11.	All students follow the schedule of online classes efficiently and properly.	3.6	1.5
12	I face more incidence of nonserious attitude by students in online based learning.	3.7	1.5
13.	I find lesson planning for online classes a difficult task.	3.6	1.6
14.	I feel more comfortable with online classes as a teacher rather than traditional classroom based learning.	3.7	1.6
15.	It is convenient for me to interact with students following the WhatsApp based learning.	3.2	1.6
16.	I receive positive feedback from parents regarding WhatsApp based learning.	3.5	1.6
17.	Parents' involvement and interest in their children's study is being improved when they see their children taking online lessons while sitting in front of them.	3.5	1.6
18	Sending lessons via voice note (audio) is not enough to clear the concept of students.	3.4	1.6
19.	The validity of tests taken via WhatsApp is compromised.	3.3	1.7
20.	All students are able to join the WhatsApp group for class easily.	3.3	1.8

Data Analysis from Questionnaire Related to Parents

The questionnaires were delivered to 22 parents who were carefully chosen as participants for the collection of data. The demographic details of the parents are presented in Table 6. The parents were asked to answer the questionnaires ethically and to best of their knowledge. Table 7 presents the mean and standard deviation values for each question for the parents.

Table 6. Demographic Variable of the Parents

Gender	F	Percentage
Male	8	36.3
Female	14	63.6
Total	22	100
Age		
Less than 35 years	4	18.1
More than 35 years	18	81.8
Total	22	100

Table 7. Parents' Evaluation about WhatsApp Teaching and Learning

SR.	Item	M	SD
1.	I like the emerging WhatsApp based learning.	3.6	1.0
2.	My child takes more interest in studies than the traditional classroom based learning method.	3.6	1.1
3.	It is difficult to check if my child is using the phone to study or not.	3.7	1.3
4.	I do not hold a high opinion about the schedule of WhatsApp based online classes.	3.4	1.4
5.	My child is not able to grasp the concept thoroughly merely listening to audio messages (voice note) lecture.	2.8	1.5
6.	My child gives better feedback in WhatsApp based online classes.	3.3	1.4
7.	My child is keen to attend WhatsApp classes.	3.5	1.3
8.	I do not like my child spending so much time using WhatsApp.	3.8	1.1
9.	The volume of class group messages makes it difficult to find specific messages or lecture topic.	3.8	1.2
10	My child pays much more attention to lessons in WhatsApp based online class.	3.6	1.4
11.	I find significant improvement in the learning of my child via WhatsApp based learning.	3.9	1.3
12	I feel that the teacher cannot pay individual and specific attention to students in online class as compared to physical class.	3.4	1.5
13.	I have found my child cheating while doing homework for the online class.	3.5	1.5
14.	I am satisfied that the education process of my child does not suffer due to WhatsApp based learning.	3.8	1.3
15.	It is convenient for me to interact with the teacher of my child following the WhatsApp based learning.	3.6	1.5
16.	I trust in the validity and reliability of the online exams and tests taken via WhatsApp.	3.7	1.4
17.	I find my child more relaxed and happy studying from home via WhatsApp rather than going to school.	3.7	1.4
18	I think that the teacher does allocate sufficient time for lesson planning and management taking classes via WhatsApp.	3.8	1.5
19.	The teachers' attitude towards teaching is casual on WhatsApp based classes as compared to school-based learning.	3.3	1.6
20.	Due to slow or no internet/power outage, WhatsApp classes are not regularly held.	3.4	1.3

Table 8. Descriptive View of Subgroups of Sample

Respondents	N	M	SD
Students	56	3.55	1.34
Teachers	22	3.42	1.79
Parents	22	3.38	1.31

Table 8 represents the mean and standard deviation values for the subgroups of the sample taken in this study. This descriptive analysis is reported for Students (*M* = 3.55, *SD* = 1.34), Teachers (*M* = 3.42, *SD* = 1.79), and Parents (*M* = 3.38, *SD* = 1.31).

This means that all the three subgroups were in agreement with the WhatsApp based learning, as 3.0 is considered as a cut-off point in a five-point Likert type scale (Abdullah et al., 2015). Overall, in all the quantitative analysis we found that most of the items had the reported mean score of above 3.0. Only two items in the teachers' analysis were found to have less than 3.0 mean score: *I find it convenient to deliver video lesson via WhatsApp* (*M* = 2.6, *SD* = 1.2) and *I am comfortable checking homework sent by students via WhatsApp in form of images* (*M* = 2.8, *SD* = 1.2). The reason for that low mean score is that the videos shared by teachers are still a point of concern in Pakistani culture, and the images shared by the students are not of very good quality because of the different types, quality, and prices of mobile phones. In the parents' questionnaire, one item also reflected a mean score of less than 3.0 but that was a negative statement and its mean less than 3.0 showed its agreement.

DISCUSSION

The present study examined the new normal—the

use of online technology in the teaching-learning process. The use of WhatsApp as a medium of instruction in all teaching-learning activities was considered helpful by the principals, students, teachers, and parents. During this pandemic when the schools were not ready to shift from conventional learning methods to online learning methods, and teachers were not trained to use the online technology for teaching, our study found that WhatsApp based teaching produced some efficient results in continuing the educational process in the schools we sampled.

Despite a few cultural and circumstantial challenges, the schools have managed to continue educating its students. However, there was an increase in the dropout rate seen in Pakistan and many other developing countries. UNESCO (2021) reported that 24 million students are at risk of dropping out and overall, 100 million students will see a reduced proficiency in reading ability due to this pandemic. This pandemic has affected not only the students but also the teachers, who have suffered a great deal. An estimated 63 million primary and secondary school teachers have suffered due to this pandemic (UNESCO, 2021). The world has also accepted the extended role of teachers in continuing providing education in these unprecedented situations.

However, one additional finding that this study has revealed is the role of parents in providing education. Other schools should also involve parents in the teaching-learning process. WhatsApp has academic benefits demonstrated by the availability of the teacher, continued learning beyond the category limits, and rapid access to study materials. Nitza and Roman (2016) have shown that WhatsApp contributes to the sense of belonging and creates a sense of community and family among its users.

The result from the 56 student respondents at school supported the objectives of the studies. The findings showed a significant difference between age, class, and last grades of the respondents, but the difference between the age and locality was insignificant. Effective teaching is multifaceted in nature. Therefore, it is not surprising that many factors influence students' perceptions on effective teaching.

The findings of this research conform with those of Basoglu and Akdemir (2010) who reported that the memory of the students was also influenced by using WhatsApp based learning. These findings, when compared with multidiscipline research, show that the possibilities of WhatsApp were further expanded. Stickler et al. (2020) showed that the nature and type of subject is also pivotal in extending the academic benefits of using the WhatsApp based teaching-learning process. For example, language learning courses can utilize WhatsApp in terms of communicating with colleagues and teachers as well and as platform for grammar and language practice (Jafari & Chalak, 2016).

The information, communication, and technology (ICT) based content can be understood and examined best under the use of technology driven applications. This multiplies the learning process and enhances the higher order thinking domains of the students. A study conducted in Tanzania by Mwakapina et al. (2016) reported enhanced learning and achievement scores of the respondents, which also supported the use of WhatsApp based learning for students.

RECOMMENDATIONS

This study gives a complete picture of effective WhatsApp based teaching and its effect on students. Teachers should work on their knowledge and teaching styles on WhatsApp because it shows a positive effect on student learning and understanding.

Teachers should respect students and give clear instructions and guidance where needed, because this makes students understand the problems and they show progress in their work without making mistakes. WhatsApp messenger can be used as an aide to online education for synchronous and asynchronous modes alike as it has the capacity to include face-to-face video/student counselling etc. WhatsApp is equally supported by students, teachers, parents, and principals for the teaching-learning process.

Learning has become personalized and heavily driven online, which makes WhatsApp a good platform to collaborate, engage, discuss, and strengthen the understanding of students (Amry, 2014) as well as to provide easy lecture delivery and flexible consultation hours for teachers.

The role of parents was enhanced in this WhatsApp based teaching-learning process. The parents need to involve themselves in supervising learning activities through WhatsApp. Schools

should also form school councils and invite the active participation of parents. We recommend replicating this study in other parts of Pakistan and other developing countries to understand the dynamics of different demographics.

CONCLUSION

The purpose of this study was to identify the factors of effective WhatsApp based teaching and their effect on students' achievement. We conducted the study using primary data that was collected from randomly selected 100 respondents, which include both male and female students of grade 7, 8 9, and 10, and 22 teachers, and also 22 parents of these students from three different schools in the city of Phalia in Punjab. The variables that have been identified are gender, age, and name of respondents.

The uses of WhatsApp, from daily social interactions to classroom activities, have a broad scope of increasing cognitive, behavioral, and social developments of students (Jafari & Chalak, 2016). Teachers can evolve through constant comparison of previous lectures and documented student feedback. Every teacher can create their lecture/teaching repository and a list of frequently asked questions, which will revolutionize learning and save time and effort. Different domains of learning can be evaluated through WhatsApp, although this study was limited in its scope to evaluate the assessments methods used through WhatsApp. Other studies can extend their scope to understand the proctored assessment procedures through WhatsApp. This study has some limitations beyond its scope. The size of the sample was small and with larger samples we could better analyze the effect of WhatsApp on students' vocabulary knowledge and other learning aspects.

The current study can be disseminated to spread awareness on the effective use of WhatsApp in the teaching-learning process. WhatsApp adds value to the routine classroom activities and removes the gaps of time and space between students, teachers, parents, and principals.

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