

Effectiveness of Mobile Technologies in Primary School Education

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Abstract

Technology is growing rapidly and its solutions are expanding. Due to the COVID'19 pandemic there is a lot of communication happening via mobile technologies including, mobile learning through various apps like Zoom, Google Meet, Cisco WebEx, etc. Many schools have started providing online classes via these apps. Technology is changing how we are witnessing the world. The world seems to be like a data mining field wherein every person is becoming a data analyst in one way or the other but excessive usage of technology has adverse consequences on various aspects of our lives including, physical, emotional, mental, and psychological health. Few studies have focused on how technologies changed the lives of children during this pandemic. These mobile technologies have immense potential but they are also leading to certain psychological issues like stress, anxiety, etc. among young children. This paper would try to investigate if mobile technologies have positively contributed to a child's growth pertaining to his/her learning habits.

Keywords: *School Education, E-Learning, Mobile Learning, Case Study, Technology, Online Education, Teaching, Pedagogy.*

1.1 Introduction

Technology is being considered as an efficient learning tool for helping young children to develop their cognitive, social, and learning skills. Nowadays, young children are exposed to mobile technologies by their teachers and parents. Still, many young learners, teachers, and parents are confronting online classes (Tahir, 2016; Arif, 2016). The situation is similar even after the world is exposed to COVID'19. While discussing the latest technologies, it is imperative to understand various psychosocial aspects of using mobile technologies. It is important to analyze the effectiveness of such technologies in teaching and learning processes and applying pedagogies that could help students to learn in a better way. Mobile technologies support not only traditional classroom lecture-style teaching

but emphasize on innovative and creative methods of learning including, cooperative learning, exploratory learning outside the classroom, and learning through games (Sung et al.,2016). Thus, it is crucial to understand different types of pedagogies that can be used while using these technologies as mentioned by Sung et al. (2016). Researchers have found mixed results of using mobile devices. Only a few studies have addressed how to use mobile devices and its effectiveness in teaching and learning processes. According to Hosokawa et al. (2018), using mobile devices can positively affect cognitive and academic skills but it can negatively affect social and psychological development. For instance, increased usage of computers has led to an increase in social isolation among children resulting in depression and loneliness. Frequent and regular use of mobile technologies led to reduction in parent-child interaction (Hosokawa, 2018; Katsura, 2018). Thus, we need to analyze the positive and negative impacts of using mobile technologies.

This study would focus on understanding the

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700 students in 10 government schools of Patna and Muzaffarpur indicated that out of 733 students, 202 students had no access to smart phones and 154 students could not be reached. Of these, 277 (38%) had smart phones and 114 (16%) had other phones. Among them, 36% of boys and only 28% of girls had access to smart phones. In 95% of 277 cases, the device belonged to a male member of the family and girls were unable to use them for learning purposes. Some of the students also mentioned that they could not access mobile learning due to high internet packages (Jha et al., 2020). Jha et al. (2020) also revealed that girls spend most of their times while doing household chores. So, they have less time which restricts their opportunities to view educational channels being telecasted on TV. As mentioned by Uppal (2016), in rural areas, girl child plays an important role as she has to shoulder responsibilities of mother and has to manage household work, assist her father, nurture her younger siblings. Thus, she has no time for fulfilling her educational needs. Most of the telecasts are projected from nine to ten in the morning and during this time, most girls and boys are helping their families in daily chores and activities. In terms of primary education, this might not be the case in urban areas but it is important to understand that children's mothers are still involved in domestic chores during that time which might add to their burden. Many parents are working from home while their children are indulged in home-schooling which significantly requires their attention. Due to overburden, parents are unable to give sufficient time to children that can exacerbate socio-emotional disparities existing in child's minds. These disparities can occur if a parent indulges too much in household activities (Moroni et al., 2020).

Sung et al. (2016) asserted that 'mobile devices have distinctive features including, individualized interfaces, real-time access to information, context-sensitivity, instant communication, and feedback'. But these features are not enough for positive

learning. Integrating innovative technology requires teachers to acquire new technological and pedagogical skills but most teachers are trying to integrate technology to provide content instead of using them to enhance learner-centric approaches. Millard et al. (2010) have mentioned that building innovative m-learning systems is challenging as innovative technology is associated with innovative practices so, while designing e-learning courses for students, we need to consider the social context in which technology would be deployed. Fewer studies are focusing on how teachers perceive using such technologies (Montrieux et al., 2015).

Therefore, this study would try to bring out narratives from a teacher, primary school student, and a parent as they are the primary stakeholders of teaching-learning processes happening via mobile technologies. This study would also emphasize on how these they are interacting via mobile technologies while taking their experiences into cognizance. It is equally important to observe if mobile technologies can create a facilitating environment for them. Thus, this study would focus on bringing out narratives to understand these objectives.

1.3 Methodology

For understanding the effectiveness of mobile technologies in primary school education, the researcher has conducted three case studies of a child aged 10 years, a parent aged 42 years and, a teacher aged 30 years, selected via both convenience and purposive sampling. It would be interesting to observe how different stakeholders perceive the usage of mobile technologies and their effectiveness while keeping accessibility, affordability, quality, and acceptability (AAAQ framework) in mind.

For conducting these case studies, I have used semi-structured interview guides for conducting phenomenological interviews along with non-

effectiveness of mobile technologies in teaching and learning processes during COVID'19 lockdown on primary school students.

1.2 Review of Literature

More than 1.2 billion children in 186 countries are affected by school closures due to the pandemic (Li et al., 2020). During this period, education system has changed drastically. Teaching remotely or via using online platforms has become the new normal (Li et al., 2020). While the rapid and unplanned move to online education without any training, insufficient bandwidth, and little preparation might affect children's sustained efforts. There is also a possibility that a new form of hybrid model will emerge with significant benefits (Li et al., 2020).

In India, the Ministry of Human Resource Development (MHRD) has launched many e-learning platforms for supporting e-learning as the schools are closed due to pandemic. There are e-learning apps like, e-Pathshala that contain books, videos, audios for classes 1-12 in multiple languages which could be used by parents, teachers, and students. Along with such apps, there is the National Repository of Open Educational Resources (NROER) portal which has varied resources for students and educators in multiple languages including, books, interactive sessions, and videos alongside STEM-based games for classes 1-12 (World Bank, 2020). Thus, mobile devices are becoming a tool for virtual learning (Doolan et al., 2010). Schools have prohibited using mobile devices inside classrooms (Doolan et al., 2010) but COVID has changed the scenario as many students including, primary school students are using them to connect with their teachers and attend their classes online. Doolan & others (2010) have mentioned that ubiquitous usage of mobile technologies might provide newer ways to interact with subject matter but frequent use might also lead to severe health consequences (Hosokawa et al.,

2018).

Hosokawa et al. (2018) claimed that frequently using mobile devices induce behavioral problems including, issues of conduct, hyperactivity, or inattention. It leads to social isolation that hinders opportunities for social interaction with family and friends who are affecting the development of social competence among children. Social interaction, especially face-to-face is an important factor that impacts the social competence of children. Social competence stabilizes over time and is considered as an important parameter of social adjustment. Its absence leads to psychopathological conditions in later life. Thus, excessive use of mobile technologies can lead to social isolation among children. During the pandemic, children are unable to develop their social competencies due to lockdown and social distancing. But we need to differentiate between social isolation and social distancing. Hosokawa et al. (2018) mentioned that children belonging to economically disadvantaged backgrounds may have sleep disorders due to worries that prevent them from easily falling asleep. Mobile technologies require the internet to access e-learning resources and apps and internet charges are expensive these days and economically deprived families cannot recharge every month at least during lockdowns when several families have lost their sources of income due to unemployment and other relevant factors. Lack of accessibility and affordability might push children belonging to poor families to suffer in silence. Thus, class and social status might affect their emo-psycho-social behaviors. It is equally important to observe the rural-urban divide and other barriers like gender that have forced girls to drop out from schools. It is also constraining them from accessing online education (Jha, 2020; Ghatak, 2020). The availability of mobile devices makes us believe that access to technology is not a barrier but often, we tend to ignore the rural-urban divide and structural barriers like gender. A study conducted by The Wire with

participant observation. This study is based on qualitative research design. I have used narrative analysis to bring out my participant's experiences. In analysis and discussion, the researcher has also used a dramatic story-telling format to capture the narratives which lie in multiple folds.

1.4 Analysis and Discussion

1.4.1 Case Study 1: A Class v Student

As I visited his home, I could sense a feeling of aloofness existing in his home. His mother was busy with household chores, his sister, who was studying in class 12th was busy visiting her friends, his father was busy doing his routine job. He was not allowed to play with his friends as his mother was fearful about the spread of COVID'19. It would be interesting to understand how biological age affects lives during pandemics. Often, pandemics affect children and elderly people due to sensitive immune system as Simon et al. (2015) have proved that the young human child is at the risk of contracting many pathogenic viruses, bacteria, fungi, and parasites as their immune systems have recently started to mature and elderly people are infected by bacteria and viruses easily as age affects the immune system which undergoes remodeling and declines wherein the immune system fails to maintain full tolerance to self-antigens often leading to increased incidence of autoimmune diseases (Simon et al., 2015). Thus, World Health Organisation and Central government emphasized on keeping children and elderly people safe and remain inside homes but this has affected my participant's mental health to an extent that he was not just anxious but he was equally tormented as he could not meet his friends and did not receive attention from his family. I found him lost in his tuitions and completing his homework via using his mother's smart phone wherein he was unable to address questions by himself but he was seeking answers from his mother who was busy preparing *rotis*. It was quite clear that social isolation and continuous inattention from parents and sister was

affecting his emotional and psychological well-being wherein we could also notice how the COVID pandemic has over-burdened women who have to undertake unpaid care work without getting much help from their husbands. King et al. (2020) have stated that work from home and school closures may lead to unequal distribution of household tasks including home schooling of children that might be solely borne by women. Thus, they might not be able to give sufficient time to children which can exacerbate socio-emotional disparities existing in the child's minds. These disparities can occur if a parent indulges too much in household activities (Moroni et al., 2020).

For making the child feel comfortable, I sought permission from his mother for interviewing him and also asked my participant to play carrom with me so that he seeks me as a companion for a short span to discuss freely.

Researcher: *Hello! Kaise ho?* (Hello, how are you?)

Child (shyly replied): *Mai thik hoon but thoda sa sad bhi hoon kyonki mummy bahar jane nahi deti COVID ki wajah se* (I am fine but I am a bit sad as my mother does not allow me to go outside due to COVID).

Researcher: *Maine suna hai aaj kal tum bahut padhai kar rahe ho. Padhai ke alawa kya Kya karte ho?* (I have heard that now-a-days, you are focusing on your studies a lot. What do you do except studying?)

Child: *Ma'am log homework itna zyada de dete hain ki kuch aur karne ka mauka hi nahi milta. Magar kabhi kasha papa ke sath cricket khel leta hoon aur... painting kar leta hoon.* (Ma'am gives me too much homework that I don't have sufficient time to do other things but sometimes, I play cricket with my father and engage myself in painting)

Researcher: *Aur kon konsa game khelna miss karte ho?* (Which games do you miss playing?)

Child: *Mere ghar mein carrom hai magar mere sath koi khelta hi nahi hai.* (I have a carrom board in my home but no one plays with me)

Researcher: *Kya main khel sakti hoon tumhare sath?* (Can I play with you?)

Child (excited): *Haan, haan hum baat karte bat khel sakte hain... ye to maine socha hi nahi tha.* (Yes, yes, we can play while talking... I did not think about it).

While looking at the nitty-gritty of this initial conversation, we can observe that my participant feels socially isolated as he is unable to cope up with his homework and he is not getting enough time to do what he likes like, playing carrom. Although, he mentions that he plays cricket with his father and does some painting when he is free but it becomes equally essential to understand why his teachers provide too many home tasks instead of keeping children involved in activities which they are interested in doing. Often, it has been seen that schools only focus on rote-learning rather than focusing on the holistic development of the child. While we were playing carrom, I could observe how patiently he was playing to get the queen which he considered important for winning the game. While, the sense of achievement was still present within him after meeting a person face-to-face, sharing his interests. Even Hosokawa et al. (2018) have emphasized that social interaction affects social competence among children. Thus, primary school students should be involved in activities wherein they can engage with others actively while making them understand why protecting themselves during COVID is essential through fun activities which could also include assignments like, prepare a video on how to keep yourself safe from COVID. During the conversation, it felt that my participant was overwhelmed with his online classes yet, he was quite confident about using his mother's smart phone and the zoom app.

When I discussed with him about his online classes,

he stated,

“ Ek to phone mein sab chota chote dikhta hai aur ma'am kya padhake chali jati hai...kuch samajh mein nahi aata hai” (The size of the content looks small in phone and I am unable to understand what ma'am is teaching).

As Millard et al. (2010) have mentioned that building innovative m-learning systems is challenging as it is associated with innovative practices seems quite evident because attention of students has decreased due to various reasons including, internet accessibility, deficient pedagogical skills relevant for online teaching, etc. as integrating innovative technology requires teachers to acquire new technological and pedagogical skills but most teachers are trying to integrate technology to provide content instead of using them to enhance learner-centred approaches (Sung et al., 2016).

The participant is unable to focus on his studies and stated:

“*Ab to maza hi nahi aata hai padhne mein...ma'am sirf 30 minutes padhati hai magar homework bahut sara de deti hai aur mai next class tak homework mein busy rehta hoon. Ma'am ko samajhna chahiye ki mai itna sara homework nahi kar sakta.*” (I have lost interest in my studies. Ma'am teaches for 30 minutes but she gives a lot of homework and until the next class, I am busy completing home-tasks. Ma'am should understand that I cannot do these many home-tasks).

Therefore, students should not be forced to do home-tasks and teachers must understand the needs and problems of their students but due to lack of face-to-face interaction, teachers are unable to communicate with their students. But, innovative use of mobile technology could address the communication gap existing between teachers and students as mentioned by Millard et al. (2010). Thus,

teachers need proper training in conducting online classes for primary school students. For this, they can focus on interactive modules and online resources launched by the Ministry of Human Resource Development as mentioned by World Bank (2020).

1.5.2 Case Study 2: A 42-Year-Old Parent

While interacting with the child's mother, I could observe the gendered dimensions on an increase in the burden of doing unpaid care work. When I asked her daily routine, she replied:

Ek aaurat ka daily routine kya ho sakta hai. Wahi subah utho, ghar ki saaf-safai karo. Itna karte fail-safe 9:30 baj jate hain, uske baad daily ke kapde dhona, nahana dhona fir bacche ke sath online baithna, uski ma'am ke sath touch mein rehna taki mere bete ka attendance miss na ho jae network problem ki wajah se aur sath me hi khana banana wo bhi ek pyaaz wala khana aur ek bina pyaaz ke jo amma kha sake... itna karte ammo baj jate hai dopahar ke ek. Uske baad khana khake 1 ghante sona fir sham ko 4 baje paani aata hai to filter bharna, dopahar ke jhoothe bartan dhona aur sham ke khane ki taiyari karna uske sath karna bete ka homework karwana aur use tuition chodke aana, use leke aana fir khana banana, thodi der news sunna aur beti ka bhi dhyan rakhna, sath hi amma ki dawaiyon ka bhi dhyan rakhna fir thakke so jana... ye hi to hai ek aaurat ki zindagi” (What a woman's daily routine will look like! I wake up early in the morning then clean the house till it is 9:30 am. Then, I have wash clothes and take bath. Then I have to sit with my son for his online classes and keep in touch with his teachers so that he does not miss his attendance due to network problems along with preparing food for family members: one item with onion and one without onion for my mother-in-law. Till then, it is 1:00 pm then I would serve food and after having lunch, I would take rest for an hour and then at 4 pm, I need to fill water in filter along with washing dishes

and then help my son with his home-tasks and then, drop him at his tutor's home and pick him up after an hour and then, I get busy in preparing dinner while tuning in to some news along with taking care of my daughter and mother-in-law's medicines then I get tired and sleep... this is how a typical woman's life look like!).

This narrative reveal that women are completely domesticated during COVID'19 wherein they have to spend more time in doing unpaid care work without getting any significant help from their spouses as mentioned by King et al. (2020). The participant also reveals that her routine is monotonous and often, she gets bored while performing same activities every day. She has emphasized that lack of proper network disrupts the child's focus and she keeps in touch with his teachers so that he does not miss his attendance as teachers are strict pertaining to their timings. Instead of adjusting, they mark the student absent if they are unable to join the class in time. Thus, it is imperative to understand social contexts while taking online classes.

She has also revealed that maintaining classroom decorum while taking online classes is also a challenge. She gives an example stating that students are often seen speaking together at the same time during these classes and the teacher is unable to identify who spoke first which leads to confusion and might also affect child's performance if his/her voice remains unheard for a long time as Hosokawa et al. (2018) commented 'frequent use of mobile devices induces behavioural problems including, issues pertaining to conducts, hyperactivity or inattention. It leads to social isolation that hinders opportunities for social interaction with family, friends which is responsible for development of social competence'.

She has also revealed that the school is holding online classes to extract money for paying the

teachers whereas there is limited income generation by his father. She emphasized that her child is unable to cope up with these classes and many families cannot afford to buy mobiles and pay internet charges. Thus, online classes are not helpful for every student. She was equally frustrated as it added to her burden of unpaid domestic work as King et al. (2020) have reflected that home schooling is becoming a menace for women.

1.5.3 Case Study 3: A 30-Year-Old Teacher

While interaction with a female teacher revealed that the school is pressurizing them to take online classes to get their salaries. Thus, they have no other option left as teaching is their livelihood. She stated:

Aisa nahi hai ki hum nahi samajhte ki parents aur students pe kya beet rahi hai magar hum bhi majbur hain warna humein salary nahi milegi aur agar salary nahi milegi to ghar ka kharcha chalana mushkil ho jaega kyonki mere husband ki kamai zyada nahi hai aur unki Naukri bhi ab khatre mein hai (We understand what parents and students are going through but we are helpless as school authorities have mentioned that they will not pay us and if I don't earn then it would be difficult to manage household expenses as my husband's income is not adequate to meet our needs and his job is in danger).

She revealed that it is quite difficult to manage timings to complete the lessons via using smart phones due to inadequate training provided to facilitate such sessions. Thus, training is an essential component as mentioned by Millard et al. (2010).

She emphasized that she has to be strict with her students for marking their attendance so that they attend classes regularly otherwise, they would face difficulties to understand the concepts if they fail to attend classes from the beginning. While reflecting on network issues she mentioned that she has to repeat the same concepts many times because some

students complain that they could not hear her properly. Thus, network connectivity and low bandwidth are some of the common problems faced during online classes.

When I asked her if she was paid for bearing the internet charges for these virtual classes she said:

Kash school wale itne acche hote... wo salary dekar hi upkar kar de wahi badi baat hai. Mere kuch students bhi islie nahi padh paa rahe hain kyonki unke parents ko lagta hai ki online baithke padhai nahi ho sakti islie wo apne bacchon ko phone use nahi karne dete aur kafi parents data bhi nahi bharwate hain ek baar khatam ho jane par” (Unfortunately, school authority is not that good... they pay me my salary and that is enough. Many students are unable to attend these classes because their parents think that studies cannot happen online so they do not allow their children to access their smart phones and some of the parents do not even recharge their data pack after it gets exhausted.)

Thus, the acceptability rate of mobile learning is low in semi-urban cities like Korba.

She has also revealed that taking online classes has led to the deterioration of her interest in teaching activities because she is unable to apply innovative methods for teaching which has made her task monotonous. While she is aware of online resources and portals but she mentioned that too many online interactions have affected her eyesight and her doctor has recommended reducing the usage of laptops and other smart phones. She mentioned that she is suffering from severe backbone pain as using technologies like smart phones affects not just human behaviors but also affects our physical health as mentioned by Hosokawa et al. (2018) that frequent use of mobile technologies might have severe health consequences.

1.6 Conclusion

Mobile technologies might act as an effective tool only if they are used in innovative ways and for specific time to maintain the well-being of all the stakeholders involved in the process of learning. The socio-psychological perspectives should be considered while accessing its effectiveness in terms of acceptability, affordability, accessibility, and quality because education is a basic right. Many students are unable to afford and access mobile learning due to lack of acceptability among their parents. Parents are complaining that quality of education cannot be maintained via organizing online classes. There is a need to organizing counseling sessions for parents and students to seek suggestions on improving the quality of virtual classes and making them aware of various advantages that virtual classes might have to increase the acceptability. Thus, it is imperative to train school teachers to hold online classes while introducing them to newer technologies and pedagogies which emphasizes on blended learning. The government should provide smart phones to students who are unable to access them. School authorities must take into cognizance that minimal fees should be charged so that parents can sustain the education of their children as COVID'19 has affected market demand severely as many parents who have lost their jobs or are not being paid by their employers. Teachers must emphasize on creative techniques instead of just giving home-tasks, in which students can assess themselves without taking much help from their parents which would allow mothers to relax for a certain amount of time, reducing their burden of doing unpaid care work. The government should work towards reducing the rate of data packages or provide internet data to all students for free or at minimal cost till the pandemic recedes so that they can effectively attend online classes along with accessing other e-platforms or portals introduced by the MHRD. It seems mobile

learning is the new normal. Thus, it is important to improve its usability and rate of usability without affecting the social competence of children and increases adaptability among them. Efforts should be made to encourage parents and teachers to embrace new technologies in creative ways. To some extent, S.A.T. framework could also be used to balance the knowledge-based transaction activities in between students and teachers. Mechanics of emotions in educational spaces has led me to work on S.A.T. framework. S.A.T. focuses on space, attention and, time. Space could mean not interfering in student's/teacher's personal space and giving them ample opportunities to move back and forth in their lives to work on their mental architectures i.e., theories. Attention could mean that the student/ teacher should get the much-needed help from their teachers or students respectively without intruding too much in each other's personal space. Time could mean investment into building new ideas and shaping them together without morphing/ plagiarizing them. These three elements are crucial for building a feminist classroom. S.A.T. is a co-constructive framework in the broader framework of feminist pedagogy. Henceforth, it is crucial to use innovative and participatory teaching methods to improve learning outcomes and goals.

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