






# Student Acceptance and Perceptions of Mobile Learning: An Introspection to the Pedagogical Exigencies and Psycho-Physical Hazards of Student Community

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**Abstract.** Digital learning has been ubiquitous for almost all students in the new normal following the pandemic that has padlocked all schools and universities. With the second wave that claimed more than three lakh lives in India, online classrooms have replaced the conventional classrooms that once used to be the abode of knowledge consumption and generation. This transitional shift has affected the perception of both teachers and students towards the teaching-learning process in digital learning mode. M-learning has influenced the entire globe as it eases mobility, affordability, and accessibility. The current study has explored the students' perceptions of mobile learning in various remote parts of southern India. The researchers used descriptive research to understand the nuances of the mobile learning process. The respondents of the research were chosen through the purposive sampling technique, and the data was collected from 489 college students in the outskirts of the southern states of India. A questionnaire that is based on student happiness and frustration with mobile learning was circulated online, and the student responses were analyzed using statistical tools. Students acknowledged comfortable learning conditions, seamless communications, and effective time management, while network volatility, unilateral interactions, and decreased focus were found to be the sources of student grievances. The findings of this report divulge the quality of mobile learning, the acquiescence of this remote learning method, sequels of m-learning in the scholastic life, and the innumerable psycho-physical repercussions of this pedagogical practice which proposed restricted usage of mobile phones.

**Keywords:** COVID 19 · Mobile learning · Student perceptions · Impact of M-Learning · Digital transformation

## 1 Introduction

The recent educational environment unraveled different versions of fringe benefits and challenges. The pandemic and perilous season generated multifaceted impacts concerning the visualization and execution of mobile learning and teaching. The forced shutdown of the educational system brought the culture of e-learning, and educators were forced to deviate from traditional methods to an online mode of teaching culture

(Aleksandar 2020). The practice and procedures of online teaching and learning conceded unprecedented effects in the academic scenario. The precarious situation invoked ingenious contributions in teaching-learning practices. The digital transformation in imparting knowledge witnessed a magnificent exposition of creativity and inventiveness. However, this buoyant picture did not make an exemption to the defeatist nature. The system was exposed to harsh effects of monetary and technical issues, and raised challenges like interaction with the instructor, time to respond, and absence of traditional classroom and on-campus socialization [1]. The pandemic has turned old learning techniques and traditional education systems by exposing varied dimensions of students' learning. Smart devices and mobile phones govern human lives, from entertainment and communication to learning methods. A study by Ofcom states that handheld devices, including smartphones and tablets, are now the most preferred gadgets for accessing the internet, and with the easy availability of internet connection and incremental improvements in both the design and affordability of mobile devices, it is highly preferred for learning processes. Mobile learning postulates the possibility of learning whenever and wherever you want, as long as you have a modern mobile device connected to the Internet [31].

The paper disentangles the challenges involved in mobile learning precisely among the students of rural areas who are more likely sequestered and without access to technological advancements. The study also peruses the responses and perspectives of rural students towards the new-fangled m-learning practices. This academic exercise becomes an instrument in understanding student perspectives on mobile teaching-learning experience and to bring about transformation in devising better online platforms by experimenting on the gaps that exist in the availability of platforms for teaching learning and the ease of using the platforms. The paper unravels students' perspectives regarding the user-friendliness of the system, how it replaces traditional teaching-learning practices, and sets standards for excellence. The study results unveil the failure of the existing remote learning system to promote whole-person development and suggest an urgent need to transform the prevalent learning method into user-friendly, interactive, and student-centered teaching-learning mechanisms. Also, it focuses on identifying the gaps between the traditional method and the remote learning experience of the students. It throws light into the urgency of framing techniques that cater to the needs of both teachers and students for a better experience of teaching and learning. It guides the educationalists in devising suitable systems of remote teaching-learning methods based on participatory, collaborative, user-friendly approaches. It also advocates policy level changes required from governments on education considering the emergencies that may rupture the envisioned values that education will bring to the life of the student community.

### **1.1 M-learning and Higher Education During COVID-19**

The pandemic had a significant impact on higher education, students' academic work, and lives. The number of students required to stay home during the pandemic was 1.59 billion (UNESCO 2020). All the higher educational institutions faced the challenge of continuity of the teaching-learning process without physically attending teachers and students. The only solution for the problem was to depend on online platforms and

support the students through an online mode (Pravat 2020). Social networking sites like Twitter, Instagram, Facebook, WhatsApp, and online platforms such as Google meet, Zoom, WebEx, etc., were beneficial to the teacher and students to have supportive, collaborative learning with knowledge sharing (Elumalai 2020). This transition was sudden, and the effectiveness and satisfaction differed from person to person [33]. The online platforms gained popularity and acceptance due to the ease of use, the flexibility of learning, and the controllable environment. It helped the educators to use these platforms for teaching, assessing, and evaluating the students (Mohammad 2020). M-learning can be perceived as the natural evolution of e-learning with effective communication and personalized mechanisms or a powerful platform for distant learning (M. Al-Emran and K. Shaalan 2015). Mobile devices can be used as an effective learning tool because of their mobility and approachability.

## 1.2 Effectiveness and Benefits of M-learning During COVID 19

M-learning enhanced the educational process during an emergency time like the COVID 19 pandemic situation. It provided flexibility in delivering education and accessing the content and resources though it lacked face-to-face learning (Bakia 2012). [10] says that the use of m-learning in the teaching and learning process would be a more natural and effective way of learning for this generation. A study conducted by [20] and his teams says that students use mobile devices mainly for learning, social interaction, entertainment, and work. Mobile usage in the education scenario presents many opportunities as well as many challenges.

M-learning allows learners to adapt existing mobile features to meet their needs, develop their interests, and construct their own learning (Crompton 2016). M-learning helps in increasing the active learning process. The use of mobile devices permits the students to move and access content and information from anywhere. They are also considered a tool for accessing content by storing it locally on the device or in cloud services (Hamidi & Nitschi, 2018, 2013). Having the flexibility to learn anywhere at a feasible time is considered the greatest advantage of m-learning. It enables knowledge building by learners. The context of mobile learning surpasses time and space constraints. M-learning can take learning outside the classroom, far from the reach and supervision of the teacher, which generates resistance to the use of m-learning by educational institutions and teachers. (Barren 2014). The digital transformation has enabled the students to acquire the study materials on their smartphones, get information online to meet their requirements with the help of learning management systems, access academic databases, etc. The works of Masiu & Chukwuere [23] have emphatically stated that the smartphone has made students' academic lives easier, as the candidates can access the information on the gadgets through electronic learning [e-learning] and mobile learning [m-learning].

## 1.3 Problems and Challenges of M-learning During COVID 19

An article published in India Today (2020) showed that young people, school children, used their mobile phone six h/day [hours per day] on average before lockdown, increasing to over eight h/day on average during the lockdown. A study conducted by

Mehdipour and Zerehkafi [2013] says about the different technical, social, and educational challenges in m-learning. Technical challenges for m-learning include connectivity and battery life, screen size and key size, having required bandwidth for nonstop/fast streaming, multiple standards, multiple screen sizes, multiple operating systems, reworking existing e-learning materials for mobile platforms, and limited memory. Social and educational challenges for m-learning include accessibility and cost barriers for end-users, digital divide, security or pirating issues, no demographic boundary, disruption of students' personal and academic lives, and risk of distraction.

An online article by Hindustan Times (2020) reported that the longer hours children spent online classes using mobile phones affect their health in different ways, including headaches, eye problems, and stress. As children depend more on mobile phones, they get addicted to this device, which is worse than cannabis addiction. The study also reported that increased mood swings could be observed in the children due to the increase in screen time. An article written by Balram [2020] about the usage of small-screen devices in e-learning states that the usage of mobile phones affects the sleep cycle and also the physical and mental health of children. The increase in screen time usage for other activities along with academic activities tends to increase anxiety and depression. Nandy [27] says that the mental health of the children is highly affected due to the prolonged online classes, and they succumb to health issues like eye strain, headache, and fatigue due to lengthy screen time interaction. Physical health is also deteriorating in many aspects (Narayana, 2020). The troubles of eye strain, obesity, mood swings, depression, etc., are treated as part of excessive screen time (Bruce 2020).

## 2 Methods

The study was focused and conducted among the students of rural areas who were challenged with inaccessibility to technological headway. The study's major objectives were to understand the problems of the mobile learning experience of the rural students, know their level of satisfaction in m-learning, and analyze the physical and psychological problems among the students due to the increase of screen time. Through the quantitative method of research using descriptive design, researchers tried to understand the problems and needs of online learning. Using the purposive sampling technique, a Student Satisfaction Index/scale based on various criteria was sent to 489 [N = 489] students, and responses were collected through a google form. Statistical tools of Percentile and Carl Pearson's Correlation were used for data analysis and interpretation. Inventory on physical problems and inventory on psychological problems were developed. The gravity of the physical and psychological problems was assessed on a five-point scale of "Nil-Mild-Moderate-Severe and Acute/ Profound." Researchers consulted practicing psychiatrists, psychologists, and other professionals who are working with people having psychological problems during COVID and prepared the inventory on physical and psychological problems. Ethical considerations of the research were keenly taken into account during all the phases of research, especially during data collection by obtaining the consent of the respondents for the data collection, and confidentiality of the data was maintained to the maximum. The

dignity of the respondents was given priority by avoiding questions that might hurt the sentiments of the respondents.

### **3 Results and Discussion**

#### **3.1 Level of Satisfaction of M-learning Among the Students**

This statistical reflection became an eye-opener for all of us as it depicted students' level of satisfaction regarding the m-learning process. 27.20% of the total respondents belonged to the average level, 22.10% low, and 8.20% very low level of satisfaction, which pointed towards the need to rethink and restructure the existing mobile teaching-learning process. Only 26.40% of the respondents treated m-learning seriously, and 16.1% of the respondents are highly satisfied with the existing process. It required the necessity to transform the existing process into a participative and collaborative system of learning.

#### **3.2 Academic Support**

5.3% of respondents strongly agreed, and 43.8% of students agreed that proper academic support was given to the students during m-learning. 40.9% of students were neutral on the academic support given to them, 5.1% of the respondents strongly disagreed, and 4.9% of students disagreed that they were not given proper academic support. The varied reasons for the poor academic support included ignorance of the technical aspects, poor quality of data network, and unplanned lectures.

#### **3.3 Meeting Academic Expectations**

Only 8.8% of the respondents strongly supported this concept. 29.7% of the total respondents were of the opinion that the academic expectation was met properly in the mobile learning process. 45.6% of the respondents were neutral on their views on meeting the academic expectation, 11.2% of the respondents said online teaching did not meet their expectations, and 4.7% strongly disagreed with it. Poor quality of data network, lack of involvement, quick completion of syllabus, and lack of face-to-face communication were the major reasons for the poor materialization of academic expectation.

#### **3.4 The Technological Expertise of Students**

5.9% of the total respondents were excellent in the field of technological expertise, 32.7% had high expertise, 51.7% proved to be average in the field, 6.5% had low expertise, and 3.2% had no technical know-how regarding the digital device and its usage. As the majority of the respondents belonged to average or poor expertise in technological know-how, m-learning had severe implications on academic growth, holistic development, and self-confidence.

### **3.5 The Inability of M-learning to Promote Cohesiveness**

Only 6% of the respondents agreed that they had very high comprehension and cohesiveness, 37.2% had high comprehension, 44.8% were neutral on the concept, 3% said low cohesion, and 9% said there was no proper cohesion in mobile learning. The majority of the students felt that due to the lack of face-to-face interaction, inability to listen to the teachers for a longer time using gadgets, distractions from the family, and lack of proper academic environment, mobile teaching and learning failed in meeting the purpose.

### **3.6 Lack of Interest in M-learning**

10.8% of the respondents had a very high interest in m-learning, 16.8% had high interest, 44.6% had average interest, 13.9% had low interest, and 13.9% had a meager interest in m-learning. Most of the students had no interest or little interest in m-learning as it did not become attractive, and there were more attractions on other technical usages than learning.

### **3.7 Engagement and Involvement**

Only 9% of the respondents were actively involved in m-learning. 16.8% of the respondents somehow managed their involvement, but 53.4% of the respondents had minimum or no involvement in m-learning. 12.8% of respondents had fair involvement, and 8% of the respondents had poor involvement in m-learning. The major reasons were; lack of interest in learning, different online games as the substitutes for online classes, and the implicit assignments, tests, and seminars.

### **3.8 The Inability of Promoting Intellectual and Holistic Growth**

M-learning, to a great extent, failed to promote the intellectual growth and holistic development of the students. 13.5% of the respondents had very high growth and development, 19.8% had high growth and development, 46.6% were neutral in their opinion, 4.8% had low growth, and 15.3% had no growth and development. Scholastic empowerment of the students did not occur as m-learning could not impact much on students' interest and involvement in the online class.

### **3.9 Screen Time of the Respondents**

5% of the respondents had 0–3 h of screen time, 28% of the respondents used their mobile for 3–6 h, 42% of the respondents used their mobile 6–9 h per day, and 25% of them used the device 9–12 h. Screen time of the respondents varied from the range of 3–12 h per day. The majority of the respondents' screen time was between 6–9 h as they spent four hours of online classes, two hours of homework and self-study, and another two hours for mobile games and accessing social media. 42% of the total

respondents spent a minimum of eight hours per day on mobile, which might cause severe implications on their physical and psychological growth and development. 25% of the respondents [male] spent more than 10 h a day on online gaming, social media, homework given by the teachers, self-study, and online classes.

### 3.10 Physical Problems

The researchers prepared an inventory for understanding the gravity of the physical problems of the students during the pandemic, which was set on a 5-point scale measuring acute, severe, moderate, mild, and no physical problems.

**Table 1.** Showing Health issues due to m-learning and allied activities

Sl. No	Physical Problems faced	Nil [%]	Mild [%]	Moderate [%]	Severe [%]	Acute [%]
1	Eye problems	10	13	28	35	14
2	Neck Problems	13	17	29	29	12
3	Backache	16	14	24	36	10
4	Headache	14	09	28	35	14
5	Nervousness	08	14	21	35	22
6	Sleep disorders	15	05	29	32	19
7	Muscular pain	14	10	18	38	20
8	Fatigue	07	08	26	29	30
9	Obesity	18	13	32	24	13

The table shows the urgency of immediate response towards the physical problems faced by the respondents. Lack of physical exercise, longer hours of mobile use, changes in the sleeping pattern, radiation from the device, inappropriate learning practices, eating patterns, etc., are the major reasons for the physical problems faced by the respondents. Increasing screen time, blue light emission, concentrating on the screen for a long time has caused problems.

### 3.11 Psychological Issues

Significant symptoms of mental ill-health were taken for the data collection, and a mental health inventory on a five-point scale of 0–4 was prepared by the researchers and circulated among the students.

**Table 2.** Showing psychological problems due to m-learning and allied activities

Sl. No	Mental issues faced	Nil [%]	Mild [%]	Moderate [%]	Severe [%]	Profound [%]
1	Anger	15	18	24	26	17
2	Mood swings	12	20	23	29	16
3	Stress	18	20	24	24	14
4	Anxiety	12	19	25	27	17
5	Irritability	10	16	26	30	18
6	Hatred	20	24	22	22	12
7	Intolerance	10	15	27	30	18
8	Addictions	28	20	18	25	9
9	Lack of interaction	10	17	23	37	13
10	Social isolation	11	15	23	35	16

Behavioural changes were noticed among the students due to m-learning and the possible impacts on their psychological development. The majority of the students undergo mental trauma as m-learning creates psychological imbalances due to the long hours of mobile usages. Many times, respondents have shown symptoms of acute stress, anxiety, and depression which require immediate attention.

### 3.12 Correlations Between Cohesiveness and Satisfaction of Student-Friendly M-learning

The variables were analyzed with the help of the Carl Pearson correlation test. The cohesiveness of the students and satisfaction of the student-friendly m-learning were closely related [ $P = .493$ ] at the significance level [ $p$ ] of 0.000. The level of online teaching enhanced the cohesiveness of the students [7%], and the level of satisfaction in making the m-learning process student-friendly [7%] was related to each other. Since the m-learning was not student-friendly, the cohesiveness of the students was badly affected. As students found this mobile learning process very difficult to manage, they were dissatisfied and could not comprehend what was taught to them.

### 3.13 Correlation of Interest in Online Classes and Involvement and Engagement of the Student in Online Classes

The interest in mobile learning and involvement and engagement in the m-learning classes were related [ $P = .747$ ] at the significance level [ $p$ ] of 0.000. Interest in mobile learning would affect the participation of students in online classes. The results explained that the students were not interested in the m-learning process, and thereby, they had a low level of involvement and engagement in the same.



### **3.14 Correlation of Academic Expectation with Intellectual Growth**

The academic expectation of the students and intellectual growth through mobile learning were correlated [ $P = .341$ ] at the significance level [ $p$ ] of 0.000. The students who achieved their academic expectations [4%] and the ability to experience intellectual growth by m-learning [15%] were related to each other. Therefore, from the derived result, it was clear that m-learning did not meet the students' expectations, and thus they lacked intellectual growth through the mobile-assisted learning process.

### **3.15 Correlation of Screen Time and Physical Problems**

The screen time and physical problems encountered by the respondents were correlated [ $P = .584$ ] at the significance level of 0.000. As the screen time increased, physical problems like eye problems, obesity, headache, back pain, neck pain, nervousness, sleep disorders, fatigue, muscular pain, etc., were high. The increase in screen time aggravated the physical problems of the respondents drastically.

## **4 Recommendations**

### **4.1 Engagement and Interest**

The students' ennui to attend the mobile-assisted learning process deteriorated the ambiance of classroom learning. Most of the students were not interested in m-learning due to other attractions of the internet, mobile games, social media, etc., and hence teachers needed to create interest among the students by making their classes interactive, attractive, and fun-filled. Activities could be incorporated to make the class interactive and interesting.

### **4.2 Holistic Growth**

As the m-learning process was unilateral and mainly focused mostly on the subject coverage, it might not fulfill the holistic growth of the students. It was recommended to integrate more exercises to ensure the holistic growth of each student by the participatory teaching-learning process, counselling, mentoring, and involvement in different online social sensitization programs.

### **4.3 Technical Know-How**

The majority of the students were not technically efficient in using online platforms; mainly to submit assignments, write exams, upload exam sheets, and so on. Proper training should be given to the students to ensure their maximum participation.

#### 4.4 Screen Time

Students use mobiles on an average time of 8 h per day. It causes severe health issues and psychological problems. Thus, measures are to be taken to limit the screen time of the students by restricting the syllabus, controlling social media usage and gaming, etc.

#### 4.5 Health Issues

M-learning and allied use of mobile for social media usage and online gaming cause serious health hazards due to overuse of the mobile for longer hours. Students, parents, and teachers are to be aware of the problems that may occur due to the excessive use of mobile for learning and restrict the use of the usage of mobile. Alternative measures like yoga, meditation, physical exercises, proper diet control practices, etc., are to be resorted for solving health issues.

#### 4.6 Psychological Issues

Psychological issues are to be taken seriously, and proper care should be taken for behavioural changes and emotional imbalances. Counselling services should be made available to the students to solve their psychological problems.

### 5 Conclusion

The current pedagogical practices and learning strategies have created increased ingression of mobile learning, which evolve unparalleled and revolutionary effects in the academic exercises. Also, the challenging time and unpropitious effects ingrain an inclination to the overdependence on mobile phones and other digital devices for educational purposes. The m-learning strategies can, to a certain extent, reconcile the rescindments, aloofness, snapping off the on-campus socialization, etc., in the educational environment. However, the promising picture unravells hostile and imperilling aspects too. The m-learning process marks diminishing satisfaction among the students as it cannot substitute the traditional classroom environment and corroborate the holistic growth and development it promoted down the centuries. The practice also delineates the backlashes of physical and psychological predicaments. Since the current educational system demands an intense proclivity to cybernated and technological media, the mobile learning exercises are to be imbued more with quality techniques and approaches to promote academic curiosity, holistic growth, and intellectual erudition.

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