

Exploratory Study On The Impact Of Online Virtual Classroom Education On Physical & Mental Health And Development Of Social Skills Of Children

Louis Manohar
(Bosconet, Delhi, India)

Abstract:

Background: This study was done in the context of the sudden shift of educational system from the conventional classroom environment to virtual schooling at home through online teaching during the COVID-19 pandemic. Substantial literature has brought out the positive and negative impacts of virtual schooling; for example, few of the positive effects are increase in social connections using the technology, helps in accessing resources and knowledge, children are more safer at home, etc. However, the negative impacts are more severe, particularly, on the health of the children participating online classes through electronic devices. As the children spend most of their active time indoors and watching the small, lighted screen the children are prone to physical and mental health issues. In this context, this study attempts to explore the physical & mental health issues, social behavioural problems, and learning issues of children participated online classes.

Materials and Methods: In this exploratory study, cross-sectional survey method and quantitative analytical process were applied. Data were collected from 200 children in the age group of 6 to 18 years both male and female and urban and rural locations, who participated the online classes. A structured closed-end self-reporting questionnaire was used.

Results: This study established the negative effect on physical health, mental health, and learning & participation issues of children of online virtual schooling. Findings confirmed the significant and positive relationship between the screen time and the various issues experienced by the children. Gender, age, and location type differences were indicated.

Key Word: Online education, Digital device, Mental health, Physical health, Social behaviour, Learning,

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I. Introduction

Despite the fact that online mode of learning is gaining popularity for education above certain level, how far this online virtual classroom will be effective and safe for children is a subject to be analyzed. Naturally, children need the physical presence for effective communication. But in the online virtual classroom, physical interaction between the teachers and the student is absent. Children has to spend most of their active time in learning either in the classroom or online. Children need to be physically active and should have peer interaction for their holistic development of physical & mental health, and social skills.

The COVID-19 pandemic has forced the children to spend more time in front of the smartphone, or tablet, or laptop, or desktop computer screens. As children were forced to spend most of their active time indoors, watching the small, lighted screen, their eyes become strained and dry; they did not have opportunity for physical activity, which affects their food intake, health, and proper healthy growth. Unlike classroom education, online home-based education deprives the children from peer interaction, socialization, deprives them from cultivating problem solving skills, inability to face any problems, and other social skills, such as empathy, learning, cooperation, helping others, setting boundaries, etc. which are very important for the holistic and healthy growth of a child and also when he/she becomes an adult. In the classroom education, children have the opportunity to clear their doubts by consulting and getting help from their peers and get it clarified from their teacher. But, in the online learning, most of the children shy away from raising their doubts. This affects their learning ability and academic performance and they lose academic motivation. The learning difficulties may result in decline in learning motivation.

While International bodies and governments work towards the SDG for equality and education to all, the sudden shift due to COVID-19 developed a digital divide, particularly in India, in accessing education through digital devices. Secondly, the sudden shift to virtual schooling in India, absence of adequate and proper

infrastructure and network, denied the equality in accessing education; particularly the poor and rural children were left out.

The objective of this study was to explore the challenges and problems for the children participate in online learning, to examine the time spent by the children to participate in the online classes using different types of devices, consequent effect on physical, mental, behavioral, and learning outcomes, association of the negative outcomes with gender, age, and location type.

II. Review Of Literature

Selassie et al (2021) explored the college students' interest in online learning. The study revealed significant positive correlation between lockdown measures and accessibility of resources online and the college students' interest. However, no significant mediation of students' interest in the relationship between accessibility of online resources and online learning.

Mudenda (2021) studied the extent of psychological impact of covid-19 on Bachelor of Pharmacy students. The results showed that Pharmacy students experienced anxiety (44.7%), unable to relax (38.1%), feeling of restlessness, quickly annoyed, and fear without any reason (45.1%), etc. The findings confirm negative psychological impact on the Bachelor of Pharmacy students.

Narees and Aara (2021), using qualitative and quantitative methods did a study to understand the undergraduates' experiences and expectations of e-learning during COVID-19 pandemic situation. Interestingly, the findings showed that the undergraduate students were generally happy, but less than their expectations, with the e-learning even though they did not have the prior experience in e-learning. However, it was suggested to have a blended method, i.e. e-learning with conventional method of learning.

Das, B. (2021) raised his concern that the 2020 academic year will be lost in the future or much more in the future. He emphasized the urgent need for innovation and implementation of alternative educational systems and evaluation methods,

Bhattacharya *et al.* (2020) studied the status of education during COVID-19 pandemic among the students of Public Schools in Kathmandu, also critically reviewed the various policies. Important findings were: most of the students reported that they did not have a laptop or smartphone. The students suggested using radio as the medium, which would reach more students, particularly poor and in rural settings.

Rajput *et al.* (2020) explored the impacts of COVID-19 on education divide in Pakistan. Focus group method was used. The findings of this study were that further widening of existing education divide could be associated with inputs from the families, gender, and schools. The major reasons for further widening were weak education system, and the digital divide.

Srivastava *et al.* (2020) studied the positive and negative impacts of COVID-19 pandemic and the e-learning system on the education system in India. The negative impacts were: due to the digital divide a large proportion of the student population in India are left untouched. The unplanned online teaching, lack of training to teachers, unsuitable curriculum for online learning would leave the teachers and the students frustrated, which may result in poor academic performance. Lack of devices and internet connectivity and the economic position of poor families would increase the school dropouts. The positive outcomes are: educational institutions may shift to a model of blended teaching and learning. New pedagogical system will emerge.

III. Material And Methods

Sample Size and Selection Method

Two-hundred children, both male and female, of urban and rural locations, in the age group of 6 to 16 years in Tiruchirappalli, who were participating in the online classes, were the subjects for this study. The average age of the subjects was 10.84 years (± 3.452) Equal number of male & female and urban & rural children participated in this study. None of these children or their family members were infected by COVID-19.

Sources of Data

In this study, both secondary and primary data were used. Secondary data were collected from previous research studies and authentic reports. Primary data were collected from the 200 selected children participating in the online classes. The selected children's parents were also part of the study. Data were collected during the period January to April 2021.

Measures and Data Collection Instruments

Structured closed-end self-reporting questionnaire was used for collecting the primary data from the selected samples. The questionnaire comprised of questions to collect information on basic demographic details and four psychometric scales, viz. physical health issues (5 items), mental health issues (7 items), social behavioral issues (5 items), and learning issues (8 items). The severity of these four issues were measured with five-point Likert scores ranging from 1 = never to 5 = almost always.

Methodology and Statistical Analysis

This exploratory study used cross sectional approach and quantitative analytical methods. Data was analyzed using SPSS Version 20. Descriptive statistics were generated for the total sample for gender, age, location type, and screen time. Independent samples *t*-tests were applied to assess the significance of differences between gender, local type. One-way analysis of variances test was used to examine the differences between device groups. Bivariate Pearson’s correlation test method was used to examine the strength of association between screen time, physical health issues, mental health issues, social behavioral issues, online class participation challenges, and learning effectiveness. The level $P < 0.05$ was considered as the critical cutoff value for statistical significance.

IV. Result

Screen Time

During the COVID-19 pandemic, time spent by the children watching the screen increased as they were attending online classes using smartphones, laptops, or desktops. Responses showed that children spent less than one hour to about seven hours in a day watching the screens (online classes).

Table no. 1 Average Screen Time per day by the Children

Average screen time per day	Frequency	Percentage
1 hour per day	20	10.0
2 hours per day	15	7.5
3 hours per day	52	26.0
4 hours per day	80	40.0
5 hours per day	33	16.5
Total	200	100.0

Table no.1 shows that nearly 56.5 per cent of the children had more than three hours of screen time per day, which was well above the safety recommendations of the American Academy of Paediatrics. About 26.0 per cent of the children were using their online devices for about three hours or more per day. Children studying higher grades had to watch the screen for longer time in a day [$F(5, 194) = 216.632, p = .000 < .01$].

Type of Device Used

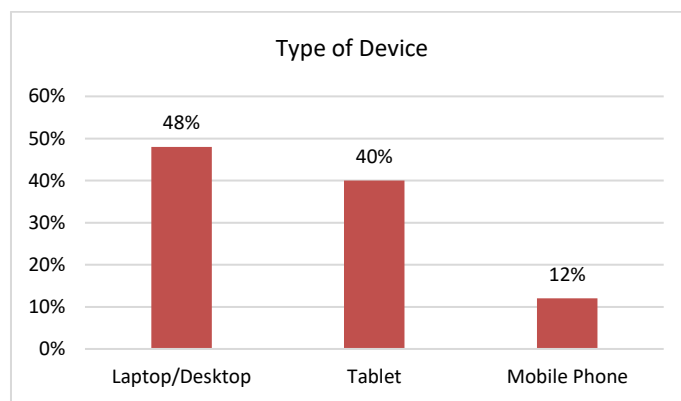


Figure 1 Distribution of Respondents by the Device Used

Laptop, desktop, tablet, and mobile phones were the commonly used devices by the children for participating the online classes. Of this, about half (48%) of the respondent children used either laptop or desktop. Forty per cent of the children used tablet device and very few (12%) used mobile phones for participating in the online classes. More than 88.0 per cent of the mobile phone user students were in rural locations or poor households.

Challenges in Participating Online Class

Difficulty experienced by the children participating in the online classes were explored with five parameters, viz. learning environment, technical issues, skills in using the devices, availability of suitable device, and internet connectivity.

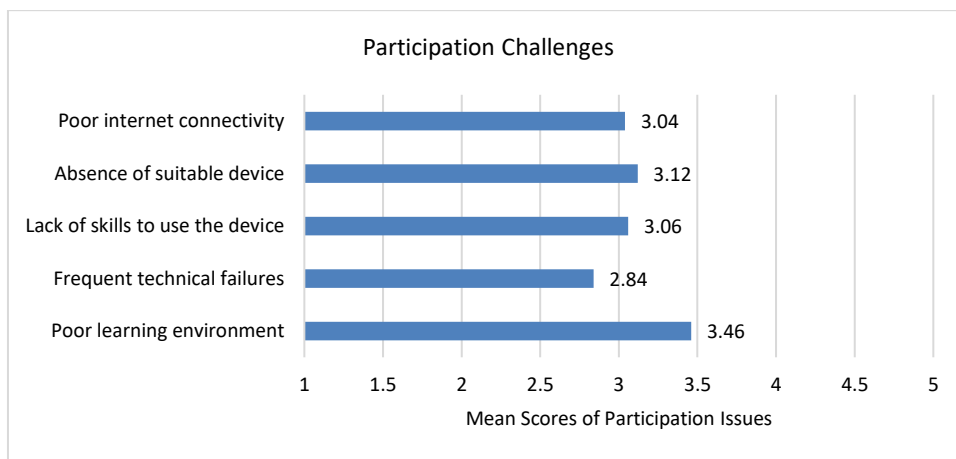


Figure 2 Mean Scores of Challenges of Participating in Online Class.

Comparatively, poor learning environment was the most challenging issue reported by the students ($M = 3.46 \pm 1.333$). Availability of suitable device was the second major barrier ($M = 3.12 \pm 1.509$). Lack of skills to use the device ($M = 3.06 \pm 1.087$), poor internet connectivity ($M = 3.04 \pm 1.604$), and frequent technical failures ($M = 2.84 \pm 1.192$), were also reported as barriers of participation in online class. Participation-related challenges significantly differed between rural and urban locations. Rural children experienced more participation issues compared to children of urban locations [$t(198) = 26.621, p = .000 < .01$]. Particularly for rural children, lack of proper internet connectivity was a major issue (Mean Difference = 3.040, $p = .000 < .01$). The second major challenge for the rural children was lack of access to suitable device (MD = 2.750, $p = .000 < .01$). More than 88.0 per cent of the rural children had access only to mobile phones to participate. Further, the home environment was not conducive for learning for the rural children (MD = 2.120, $p = .000 < .01$). Results endorse the rural-urban digital divide.

Effect on the Physical Health of the Children

Studies have found that duration of watching smartphones or laptop or monitor is positively correlated with physical health issues, particularly among children and adolescents. Studying online, results in sitting in poor or bad ergonomics leads to back pain and neck pain; increased risk of frequent headaches (Wang *et al.* 2017). Intense light from the mobile phone screen causes eyestrain and increases the risk of macular degeneration. Duration of watching mobile screen delays when children go to bed (Hale and Guan, 2015; Carter *et al.* 2016). Dry eye disease was found to be associated with duration of screen-time (> 2 hours daily). Screen time is associated with obesity of the children. Smartphones emit radiofrequency energy and the amount depends upon the type of phones and the technology. International Agency for Research on Cancer (IACR) reported the possibility of linkage between the radiation of smartphones and carcinogenicity (Frei *et al.*, 2011). Absence of social activity and staying inside most of the time results in other physical health concerns. The results of this study is also in line with the above reports. The students were asked to report whether they felt increased eyestrain, headache, neck & back pain, and discomfort. The parents' opinion was also sought to report the level of changes in the various physical health issues.

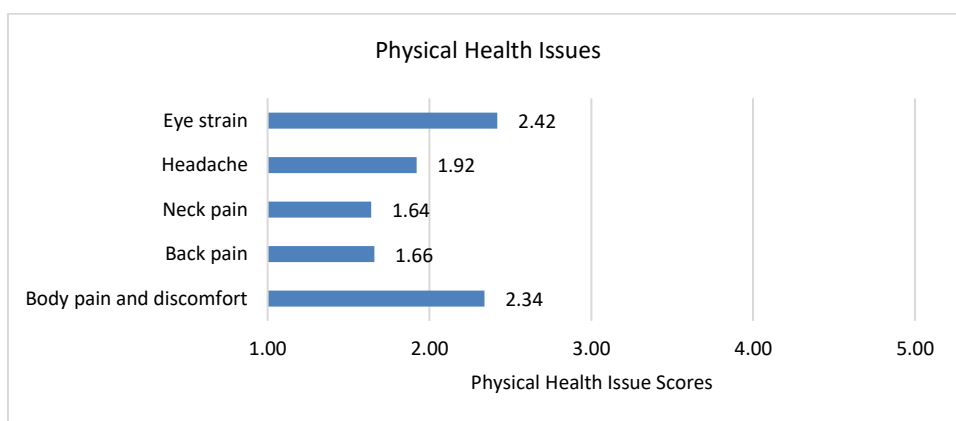


Figure 3 Mean Scores of Physical Health Issues

Mean scores (figure) showed increase in physical health issues due to participation in online classes. More than 31.0 per cent of the children reported increased eyestrain/screen fatigue and general body pain. Twenty-six per cent reported headache, 22.0 per cent felt back pain, and 21.0 per cent complained of neck pain. Eyestrain was more severe ($M=2.42 \pm .942$) followed by general body pain ($M=2.34 \pm 1.072$). Eyestrain issue was greater among boys [$t(180) = 7.896, p = .000 < .01$] and back pain was higher among girl children [$t(180)= 6.262, p = .000 < .01$]. This implies that participation of online classes would likely to escalate eyestrain, body pain, along with headache, and neck pain.

Effect on the Mental Health of the Children:

Increased screen-time leads to anxiety and headaches among the children. Online learning reduces social interaction, which causes depression for the children. Bruce (2020) found evidence to show that screen time would likely to increase the students’ depression, anxiety, and stress. Asian Journal of Psychiatry reports about 58% of Indian students experienced increased stress, emotions, anger, anxiety, loneliness, hopelessness, and unhappiness. Zelazo and Muller (2002) established that online learning (e-learning) significantly increases the ‘adaptability risk’ for the young brains.

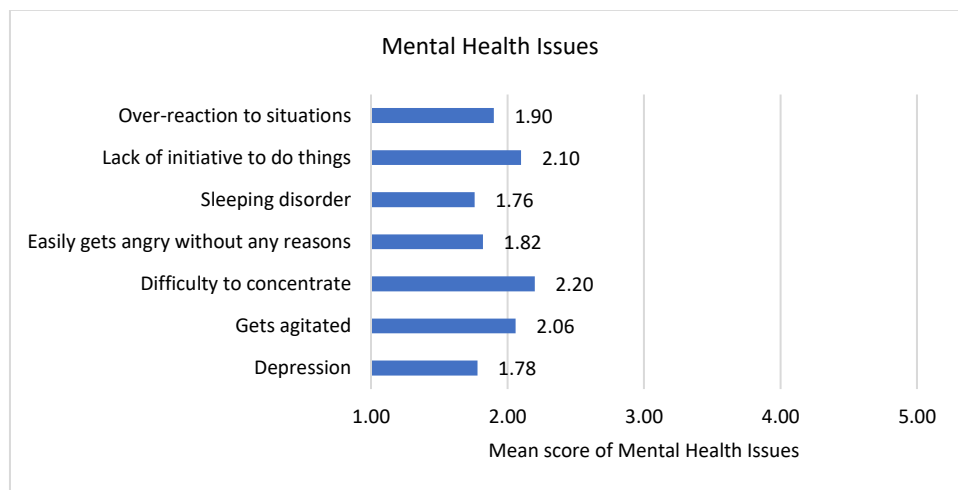


Figure 4 Mean Scores of Mental Health Issues

In this study, more than 75.0 per cent of the children experienced sleep disorder and depression. About 72.0 per cent reported feeling of restlessness, poor concentration, and anger. Difficulty to concentrate was more severe ($M=2.20 \pm 1.098$) followed by lack of initiative to do things ($M=2.10 \pm 1.027$). Other mental health issues were easily getting agitated ($2.06 \pm .883$), over-reaction to situation ($1.90 \pm .730$), feeling of anger without any reason ($1.82 \pm .714$), feeling of depression ($1.78 \pm .703$), and sleep disorder ($1.76 \pm .682$). Though overall mental health issues did not significantly differ between boys and girls, certain specific mental health issues were higher among boys. For example, over reaction [$t(198) = 5.380, p = .000 < .01$] and difficulty in concentrating on the teaching through the screen [$t(198) = 2.613, p = .000 < .01$] were significantly greater among boys. Mental health issues were not different significantly between rural and urban students [$t(198) = 1.008, p = .314 > .05$].

Effect on Social Skills of Children

Online learning has prevented children’s opportunity for interacting with each other face to face. Danielle Campbell, of American International College reports that now children spend most of their time on technology devices, which have ruined their communication and socialization skills and they have trouble having face-to-face conversation. According to University of California, Los Angeles (UCLA) psychology study, children’s social skills, viz. empathy, recognizing emotions, may decline as they use the digital media for communication and interaction. Bosaki and Astington (1999) reported that in-person school environment is significantly correlated with the student’s social interaction skills with peers and empathy. A control and experimental group study by Wolpert (2014) endorsed that those students, who did not use any media devices showed better ability to read facial emotions and other nonverbal cues to emotion, compared to media device users.

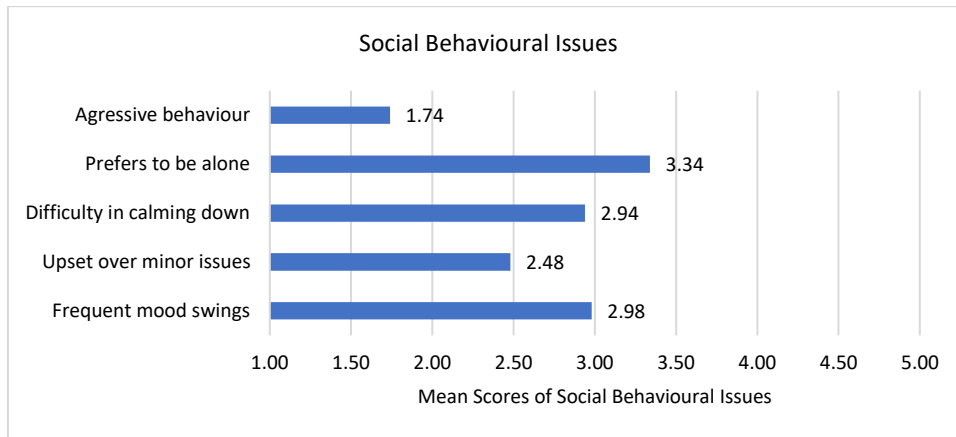


Figure 5 Mean Scores of Social Behavioural Issues

In this study, the changes in the social behavioural skills of the children participated in the online classes were assessed. Five behavioural issue symptoms were examined. The parents of the sample subjects responded to these questions. The parents were asked to compare the children’s behaviours during the regular in-person classroom education and due to participation in the online classes. The parents reported considerable changes in their children’s social behaviour. Mostly, the children preferred to be alone ($M = 3.34 \pm 1.246$) and frequent mood swings were observed ($M = 2.98 \pm 1.228$). The children were found to be very upset even over very minor issues ($M = 2.48 \pm 1.027$) and a marginal increase in aggressive behaviour of their children ($M = 1.74 \pm .772$) was also observed by the parents. Significant differences in social behaviour changes between genders were observed. Change in social behaviour was observed mostly among boys. Particularly, boys were observed to have more difficulty in calming down [$t(198) = 4.087, p = .000 < .01$] and mostly preferred to be alone [$t = 198) = 4.002, p = .000 < .01$]. Other issues, like frequent mood swings, being upset over minor issues, aggressive behaviour were also significantly higher among boys than girls were. Overall, behavioural changes were significantly observable among boys compared to girls [$t(198) = 4.170, p = .000 < .01$]. Findings revealed that change in social behaviour was associated with the age of the children. Change in the social behaviour issues were very much noticeable among older age children [$F(5, 194) = 7.481, p = .000 < .01$]. Particularly, older children preferred to be alone ($M = 3.88 \pm 1.070$). Comparatively, the changes in the social behaviour was more obvious among 12- and 16-year-old children.

Learning Issues of Students

Face-to-face communication and eye contact are crucial when teaching young children (Flom and Johnson (2010). Learning is effective only when the student see the teacher face-to-face and physical being (Gross and Ballif (1991). But in online mode of education, face-to-face, eye contact, and physical being are missing. Firth *et al.* (2019) articulated the harms on attentional capabilities, memory processes, and social cognition due to sudden functional changes.

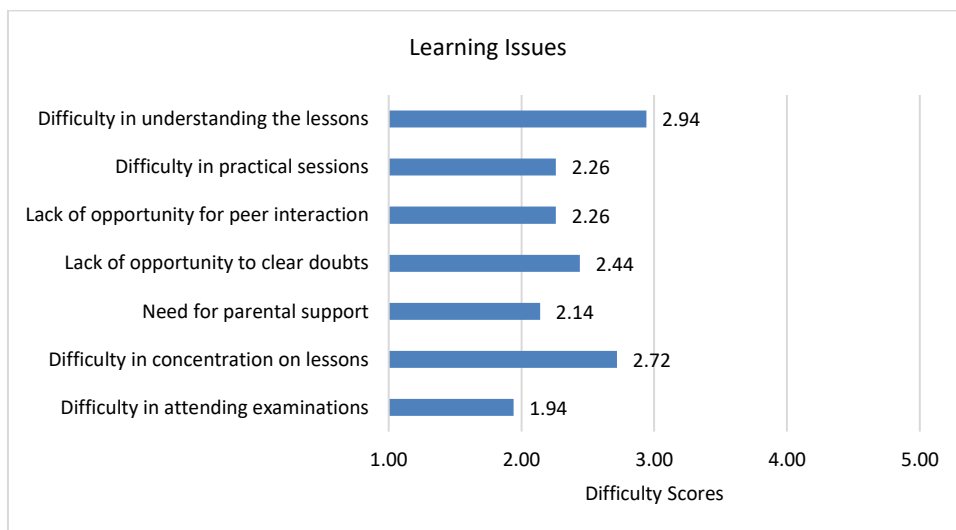


Figure 6 Mean Scores of Opinion on Learning Effectiveness through Online Classes

How well the students were able to understand and comprehend and the learning effectiveness of online teaching was explored. The students were asked to compare their ease of understanding of lessons in the in-person classroom and online classes. Overall, the children reported that compared to in-person classroom learning, online learning was less effective. The major concern was difficulty in understanding the lessons ($M = 2.94 \pm .812$) second most difficulty was inability to concentrate and focus on the lessons and follow the teaching ($M = 2.72 \pm 1.117$). Children felt that they did not have the ease or simplicity of clearing their doubts with the teacher ($M = 2.44 \pm 1.222$) and absence of opportunity to interact and consult their peers as in the in-person classroom ($M = 2.26 \pm 1.113$). Other challenges were ineffective practical sessions, need for their parental support, and difficulty in online examinations.

Results showed gender differences in online learning effectiveness. Overall, boys found online classes were more difficult [$t(198) = 4.315, p = .000 < .01$] than compared to girl students. Particularly, difficulty mean scores were greater for boys with regard to opportunity to clear doubts with the teacher (Mean Difference = .880) and difficulty in understanding without parents' support (MD = .840).

Screen time and issues

During the online class, the children have to continuously watch the small lighted screen of mobile phone or tablet, or laptop, which forcibly increase their average screen time per day. Watching the computer or tablet or mobile phone screens is associated with discomfort, such as headaches, eyestrain, sore eyes (Jaiswal *et al* 2018; Moon *et al* 2016; Maducdoc *et al* 2017; Park J.S. *et al* 2014). In consistent with the earlier research, the association between screen time and the children's physical, mental health, and learning issues were assessed in this study.

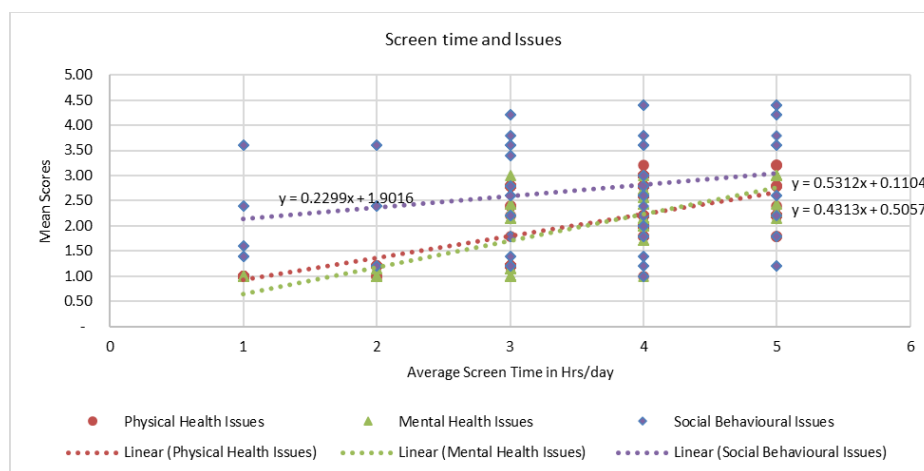


Figure 7 Relationship between Screen Time and Health Issues

Bivariate Pearson's 'r' correlation (table no.7) indicates very strong and direct correlation between the screen time and the three issues. Children's screen time significantly aggravates their physical health issues ($r = .683, p = .000 < .01$), mental health issues ($r = .804, p = .000 < .01$), and social behavioural issues ($r = .261, p = .000 < .01$). The strength of impact on the mental health was greater, about 64 per cent of variations in screen time was associated with the variations in mental health scores. Children who watch online classes for a longer time would likely to experience, mental, physical, social behavioural issues.

Types of Device Used and Issues

Not all the children had equal opportunity to have access to suitable digital devices. Forty-eight per cent of the children participated in this study used laptop or desktop for attending the online classes. Only 12.0 per cent were using mobile phones.

Table no. 2 Descriptives (n = 200)

Issues and Device Groups		N	Mean	Std. Deviation
Physical Health Issues	Laptop/Desktop	96	1.3417	.37379
	Tablet	80	2.4700	.31357
	Mobile Phone	24	3.0333	.07614
Mental Health Issues	Laptop/Desktop	96	1.2613	.42175
	Tablet	80	2.5210	.37903
	Mobile Phone	24	2.7583	.11040

Social Behavioural Issues	Laptop/Desktop	96	2.4917	.82483
	Tablet	80	2.7667	1.25062
	Mobile Phone	24	2.9200	1.10676
Learning Issues	Laptop/Desktop	96	1.5188	.52171
	Tablet	80	2.8300	.34207
	Mobile Phone	24	3.2915	.42042

Table no. 3 ANOVA (n = 200)

Issues and Device Groups		Sum of Squares	df	Mean Square	F	Sig.
Physical Health Issues	Between Groups	84.902	2	42.451	394.946	.000
	Within Groups	21.175	197	.107		
Mental Health Issues	Between Groups	87.300	2	43.650	301.427	.000
	Within Groups	28.528	197	.145		
Social Behavioural Issues	Between Groups	8.142	2	4.071	4.063	.019
	Within Groups	197.375	197	1.002		
Learning Issues	Between Groups	142.529	2	71.265	330.242	.000
	Within Groups	42.512	197	.216		

One-way analysis of variance test results show that physical health issues [F(2,197)= 394.946, $p = .000 < .01$], mental health issues [F(2,197) = 301.427, $p = .000 < .01$], social behavioural issues [F(2,197) = 4.063, $p = .019 < .05$], and learning issues [F(2,197) = 330.242, $p = .000 < .01$] significantly differed between the device groups. Mean square statistics also show the differences in the mean scores between the device groups. Mean scores indicates that physical health issues ($M = 3.0333 \pm .7614$), mental health issues ($M = 2.7583 \pm .11040$), social behavioural issues ($M = 2.9200 \pm 1.10676$), and learning issues ($M = 3.2915 \pm .42042$) were higher among the children who used mobile phones for attending the online classes compared to users of other devices. This implies that type of device was a predictor of health & other outcomes of participation in online classes, viz. children, who used mobile phones, would likely to be more affected, particularly with health and learning issues.

Impact of Health Issues on Online Learning

Theorists always have been interested to explore the connection between the various health issues, particularly mental health and children’s learning issues.

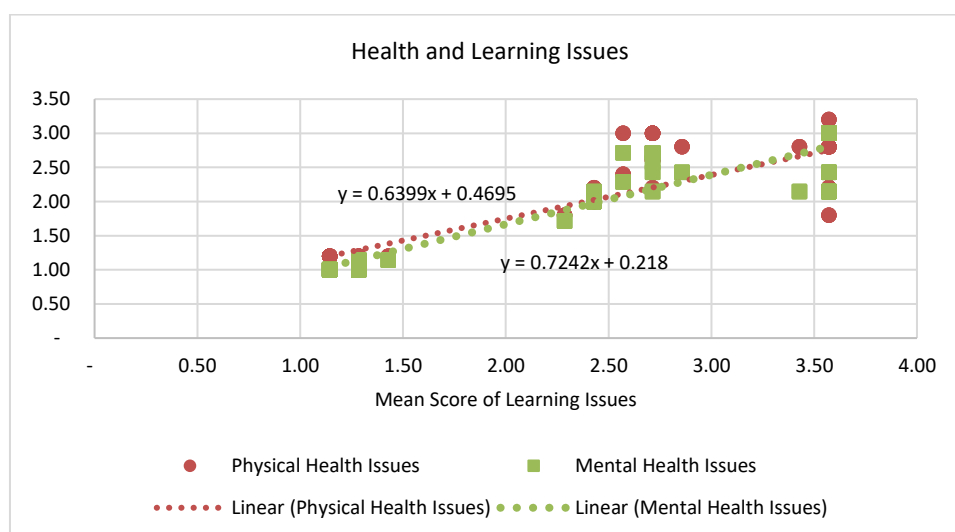


Figure 8 Health Issues vs. Online Learning

In consistent with the findings of previous studies (Durlak and DuPre, 2008; Greenberg *et al* 2005), results of this study revealed that physical and mental health issues had direct effect on the learning issues of the children. Health issues negatively affect the children’s educational performance (Richards *et al* 2009; Meltzer *et al* 2000) Children having greater levels of physical and mental health issues reported to have more online learning issues. For example, feeling of restlessness/agitated strongly affect the children’s understanding of lessons ($r = .930, p = .000 < .01$) and concentration on lessons ($r = .913, p = .000, p = .000 < .01$). Eye strain/screen fatigue ($r = .742, p = .000 < .01$) highly correlate with difficulty in concentrating the teachings

V. Discussion

Unlike conventional classroom, the children have to focus their eyes on the small screen constantly for a long time – this results in vision-related problems (Hale and Guan, 2015; Carter *et al.* 2016).

Online classes and the increased screen time deprived the children and youth of physical activity. The average screen time of the online students was much higher than (3 hours per day) the safety recommendation of the American Academy of Paediatrics. The screen time of the students increased with the grade they were studying, leading to the conclusion that higher grade students are at more risk of health issues. In general, not all the children had access to suitable device. Most of the rural children were using mobile phones. Rural and poor children were hardly able to have good internet connectivity.

Despite the availability of digital gadgets, lack of skills to use the device, poor internet connectivity, and frequent technical failures, were reported as barriers of participation in online class. Rural children experienced more participation issues compared to children of urban locations [$p = .000 < .01$]. Particularly for rural children, lack of proper internet connectivity was a major issue ($p = .000 < .01$). The second major challenge for the rural children was lack of access to suitable device. More than 88.0 per cent of the rural children had access only to mobile phones to participate. The home environment was also not conducive for learning for the rural children. Results endorse the rural-urban digital divide.

There is substantial evidence on the impact of screen time on various health and social issues for children. Absence of physical and social activity and staying inside most of the time, results in other physical health issues for children. Most widely reported physical health impacts were ‘child obesity’ (Robinson *et al.* 2017); disturbed sleep pattern or sleep disorder (LeBourgeois *et al.*, 2017); impact on food habit and consumption (Robinson *et al.*, 2017); musculoskeletal pain associated with discomfort (Berolo *et al.* 2011 Ning *et al.* 2015); increased neck and back pain (Kim and Koo, 2016); and eyestrain (Acharya *et al.* 2013). The results of this study was also in line with the previous researches. Eyestrain or screen fatigue and body pain were serious issues reported by the children. Eyestrain was greater among boys than girls, whereas back pain was severe among girl children. Further, significant level in headache and neck pain were also reported.

Busuttil and Farrugia (2020) showed that one of the impacts of virtual classroom is on the children’s academic and psychosocial development. Effect on reported mental health issues were difficulty to concentrate, lack of initiative to do things, restlessness/agitated, over reaction to issues, feeling of anger, depression, and sleeping disorder in the order of severity. More than 75.0 per cent of the children reported sleep disorder and depression. Restlessness, poor concentration, and anger were reported by more than 72.0 percent of the respondent children. Similar results were reported by Bruce (2020).

Five behavioural issue symptoms were examined in this study, viz. aggressive behaviour, preference to be lone, difficulty in calming down, upset over minor issues, and frequent mood changes. The parents reported considerable changes in their children’s social behaviour. Mostly, the children preferred to be alone and frequent mood swings were observed. The children were found to be very upset even over minor issues and a marginal increase in aggressive behaviour was also observed by the parents. Significant change in social behaviour was observed mostly among boys, particularly, boys exhibited difficulty in calming down [$p = .000 < .01$]. Compared to girls, boys mostly preferred to be alone [$p = .000 < .01$]. Other issues, like frequent mood swings, being upset over minor issues, aggressive behaviour were also significantly higher among boys than girls. Overall, behavioural changes were significantly observable among boys compared to girls. Further, change in social behaviour differed with age. Overall, social behaviour changes were very much noticeable among older age children [$p = .000 < .01$].

Since, the shift from in-person classroom learning to virtual online classroom learning, absence of curriculum suitable for online education, lack of skill and experience of teachers in online teaching, had serious repercussions on the learning effectiveness of the children. Particularly, in case of practical or lab classes, children cannot have the physical experience of real lab or practical work. The children had difficulty in understanding the lessons, as they had difficulty in clearing their doubts with the teachers and absence of opportunity to interact and consult their peers. Compared to girls, boys experienced the difficulties more [$p = .000 < .01$]. Boys had to seek the help of their parents in understanding the lessons. For the poor and the poorest of the poor households, the only motivation to send their children to school is midday-meal scheme. Now in the absence of at least one meal for their children, participation in online classes and continuation of education is hardly possible. These learning issues and the associated poor academic performance would likely to increase the school dropout rate, particularly in rural locations and economically poor households.

Until before 2020, when children were attending classroom education, parents were struggling to control the usage of mobile phones, tablets, laptops, etc. But during the online class, the children are forced to stare at the small screen for a long time. The length of screen time was found to be directly and significantly associated with physical, mental, and social behavioural issues. Negative issues of mental health was greater for children watching the screen for a longer time. As the screen time increases significant deterioration of physical, mental, and social behavioural issues were indicated ($p = .000 < .01$). Further, type of device used for

online classes was also crucial. Smaller the screen, greater were the issues. Significant decline in physical, mental, and social behavioural issues were more associated with children who were using mobile phones for attending online classes than those who were using tablet or laptop/desktop. Physical and mental health issues were also found to significantly aggravate the learning difficulties for the children. Children who experienced increased level of physical and mental health issues reported to have increased learning issues – the inverse was also true. Similar effects were also reported in other studies, e.g., Durlak and DuPre, 2008; Greenberg *et al* 2005,

VI. Conclusion

In India, the sudden shift of online learning without proper planning and creating the required infrastructure, not prepared with a curriculum suitable for online learning, teachers were not equipped or trained for online teaching and digital skills, has created the risk of students becoming passive learners, ended up with poor learning levels, and low levels of attention (Srivastava *et al.*, 2020). Teachers need to be trained professionally for online teaching and digital skills, as teaching method for online virtual classroom is entirely different from the conventional classroom approach.

The present classroom-based curriculum may not be appropriate and suitable for virtual classroom learning. Appropriate curriculum, which include adequate and regular screen time break, physical exercises, etc. should be developed to suit the virtual classroom teaching.

Not all the children have equal access to digital devices. The internet service in rural areas are almost absent or of very poor quality, which is not adequate to meet the quality standards for participating online classes (Phuyal, 2020), which will widen the educational gap. Since the International bodies and governments are working towards the SDG for equality and education to all, to make it meaningful, the governments should ensure proper access to digital devices and internet connectivity to the poor and rural children.

World Health Organization expounds that pursuing best health should begin from the beginning of people's lives. Parents should ensure proper and safe digital gadgets, proper infrastructure, but at the same time regulate their children's access to digital gadgets, screen time, and increase their physical activity, particularly outdoor physical activities.

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