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Online Education in Rural Sri Lanka: Experiences and Challenges Faced by the Advance Level Students and Teachers during Covid-19 Pandemic

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Abstract

According to UNESCO, more than 1.2 billion students worldwide have stopped having face-to-face classes because of the COVID-19 pandemic. Due to the closure of schools, online education was started as an alternative. Research conducted worldwide reveals that the sudden replacement of traditional teaching/learning methods with online mode created chaos in the education field. This research was conducted to explore the experience of the teachers and the students in rural Sri Lanka to identify unique issues they faced in adopting this new mode of education. Data were collected using a questionnaire from randomly selected 40 students from purposively selected two schools. In-depth interviews were held to gather information from five teachers. The quantitative data were analysed using Microsoft Excel, and the qualitative data were analysed using the constant comparative method. The findings reveal that the teachers and students could not successfully cover the syllabus through online classes due to the inability to cover practical sessions and technical errors such as poor signal coverage; both the students and teachers prefer physical education to online mode. Lack of technological knowledge, economic difficulties, and poor signal strength were the main challenges students and teachers faced while engaging in online education.

Keywords: Education, Covid-19, Sri Lanka, UNESCO

1. Introduction

The COVID-19 pandemic significantly impacted the education sector worldwide, pushing more than 190 countries to stop face-to-face classroom activities (UNESCO 2020). The UNESCO report also reveals that by mid-May 2020, more than 1.5 billion students had stopped having face-to-face classes. Protecting students from COVID-19 while continuing their education became extremely challenging during this period. Virtual teaching-learning methods were introduced to schools to face this challenge, commonly called online education. Online education is a flexible instructional delivery system encompassing online learning (Arkorful V, Abaidoo 2015) [4]. However, online education could have been more productive for school students worldwide. Especially children from the global south could not reap the outcome of online education as it was by children from developed nations (Sharma 2003) [25].

The difficulties Sri Lankan school students faced with online education during the COVID-19 pandemic had been one of the main discussions in the media and among educationists at the time. It was reported on the news that poor network coverages and lack of internet access are the biggest challenges for rural school students. Both urban and rural school children need help accessing online education facilities. However, during the pandemic, students had to adopt online education because they had no other options to continue their studies. COVID–19 compelled students to miss out on their school life and education. Thus, this research focused on finding out the problems Advanced Level students faced in engaging in online education during the pandemic. The GCE Advanced Level exam is a significant exam in Sri Lanka. It is the official examination from which the students are selected for a University.

This study adopted the Technology Acceptance Model (TAM). The Technology Acceptance Model (TAM) is used to understand the relationship between humans and technology through Perceived Usefulness (PU) and Perceived Ease of Use (PEU) (Durodolu 2016) [8]. This study used only the Perceived Usefulness variable to explore the challenges faced by students and teachers in online education and their opinion. Perceived Usefulness has four main sections: the intention to use (the likes and dislikes of using online education), User training (whether training has been received and ability to use the technology

such as zoom accessing and browsing), computer (device) experiences (experiences regarding using of devices), and system quality (signal strength, economic background). These four areas are looked for in this research.

Research has been conducted on the impact of the lack of student–student, and student–teachers interaction in online education (Dolenc *et al*., 2021) [7]; how internet activities affect students mentally and physically (Chaturvedi *et al*., 2021; Wickramanayake, 2022; Tennakoon *et al*., 2018; Tao *et al*., 2017) [6, 28, 27, 26]; the influence of family income on educational success during COVID 19 (Oktariani *et al*., 2022) [23]; students use and acceptance of online learning during COVID-19 (Aguilera-Hermida, 2021) [1]; Impact of online learning activities on student learning outcome (Nguyen, 2017; Keis *et al*. 2017; Gopal *et al*., 2021; Elfaki *et al*., 2019; Batdi *et al*., 2021) [22, 15, 10, 9, 5]; students and teachers attitudes and perception of online education (Herguner *et al*., 2020; Alzahrani and Seth, 2021; Kulal and Nayak, 2020; Almahasees *et al*., 2021; Kamal and Illiyan, 2021) [12, 3, 16, 2, 14]; and online education and its standards in Sri Lanka (Liyanagunawardena *et al*., 2014; Mozelius *et al*., 2011; Hayashi *et al*., 2020) [19, 20, 11]. In contrast, in this research, I explore the experiences and challenges Advance Level students in rural Sri Lanka face when engaging in online education during the COVID-19 Pandemic. This research fills the knowledge gap in online education in the Sri Lankan context. It reveals the unique issues faced by the rural school students who prepare for GCE Advance Level exams which is a milestone in their life.

2. Materials and Methods

Two national schools in the Medirigiriya divisional secretariat of Polonnaruwa district of North Central Province, Sri Lanka, were selected purposively based on the factor that these schools offer GCE Advance Level education in all five streams - Art, Commerce, Biology, Mathematics and Technology and the number of students. The two schools selected were Medirigiriya National School and Diulankadawala President College. Simple random sampling was used to select 40 students from both schools. Five teachers were selected purposively from each subject stream.

A questionnaire was distributed to gather data regarding the experiences of students, the problems they faced, and their opinions regarding online education. The questionnaire was arranged under three primary sections with 30 questions. The first section is Demographic data. The second part was formulated to collect data about internet facilities and connections. In the third part of the questionnaire, the participants were asked about their opinions on online education and their problems during online classes. In-depth interviews were conducted to gather information from five teachers belonging to the five subject streams. The questions were asked to collect information regarding teachers' experiences, online education, computer literacy knowledge, the method used to contact students for online classes, and teachers' opinions.

To analyse quantitative data, MS Excel was used. Findings were taken by matching variables. The variables used in the analysis are subject stream, family members' educational level, living location, Engagement in Online Education, used device, used apps and software, used internet connection, signal coverage level, monthly cost, covering the syllabus, difficulties, opinion of the Online education, preferred education mode. Qualitative data were analysed using the constant comparative method. In this method, data are constantly revisited after the initial coding to ensure no new themes emerge (Hewitt-Taylor, 2001) [13].

3. Results and Discussion

The data were collected from two schools that offer Advanced Level subjects in five different streams - Art, Commerce, Biology, Mathematics, and Technology. These schools are in Hingurakgoda Education Zone, Medirigiriya divisional secretariat of Polonnaruwa district in the North Central province of Sri Lanka. The number of students in advanced-level classes was also considered when selecting the sample. In the Medirigiriya DS division, these two schools owned the most significant number of students. The two schools selected were Medirigiriya National School and Diulankadawala President College. This study was conducted to find out the perceived usefulness of the students and teachers of Advanced Level classes in using online teaching/learning methods. Under the perceived usefulness, four areas were considered – the intention to use, user training, device experiences, and system quality.

3.1 The perceived usefulness of online education for students

Intention to use

Although some participants saw advantages of online education (good for conducting theory subjects, ability to conduct night classes, easy to manage time, good to conduct tuition classes, and freedom), most participants preferred the physical mode of education to the online mode.

According to them, disadvantages, such as inability to keep eye contact, inability to connect with friends, lack of Liveliness, inability to ask questions to clarify subject-related issues, and inability to engage in extracurricular activities and practical sessions, make them prefer physical education to online education. All the students who participated in online education said they could not cover the syllabus. Students expressed that learning through online mode is difficult. Online education cannot be used for practical subjects such as dance, music and drama, and laboratory sessions. Commerce and math students commented that they could not understand how to make accounts and math problems when taught online. Students commented that sometimes even the white/blackboard was not properly visible on the screen.

User training: Ability to use the apps

Zoom and WhatsApp can be identified as the apps used by most students. Mobile data connection is the most used connection among them. 100% of students said their internet handling and IT-related knowledge are average. No one was expertised in handling devices.

Device experience: The experience of using the devices

When asked about their knowledge level regarding handling the Internet and devices, all of them answered that they knew at an average level.

System quality: Availability of the necessary infrastructure and economic conditions

Of the students involved in online education, the majority (21/30) have said that the signal strength in their area is poor. Only 9/30 have noted that the signal strength is good.

The lack of a sound signal level to connect with online education has affected students.

Table 1 shows the number of students who joined online education from each *Grama Niladhari* Division (GND) and the status of signal coverage in their areas.

Table 1: Grama Niladhari Division and the signal coverage

Location	Engaging in Online Education	Signal Strength	
		Poor	Good
Bisobandara	11	9	2
Parakumpura	1	1	0
Nawanagaraya	2	2	0
800 Kolaniya	4	1	3
Wadigawewa	0	0	0
Thissapura	1	1	0
Wedhehapura	3	1	2
Amunugama	8	6	2
Meegasweawa	0	0	0
	30	21	9

According to Table 1, 21 participants from nine village areas stated that they experienced poor signal coverage, whereas only nine participants experienced strong signal coverage. The participants mentioned that even in the same village, some places have good signal strength while some other sites do not have strong signal coverage. Some stated that although with the existing signal strength, participants could use apps like WhatsApp and Facebook, they could not use the Zoom app, which is typically used for online education in Sri Lanka. They also said that despite good signal coverage in the Madirigiriya town area, the signal strength gradually becomes poor when travelling away from the town towards the villages. There are no students who participated online in Wadigawewa and Meegaswewa villages.

The second problem encountered by the participants is to study in disturbing surroundings. There is a suitable environment – a classroom – to learn in school. About a quarter of the participants who connected to online classes said that the noisy environment disturbed them. The main livelihood of people in the Medirigiriya sub town is paddy farming. The students were disturbed by the noise of the vehicles working in the fields and the noise of the rice mills. Some students also said that their homes do not have a suitable study environment.

Another major problem was economic difficulties. Of the respondents, 16 belonged to low-income families, between 10,000-30,000. There were 21 respondents from families with income between 30,000-60,000. Only three respondents were from families who get salaries between 60,000 – 90,000. No respondents were from families who earn more than 100,000. The findings show a significant impact of family income on engagement in online education. The details are given in Table 2.

Table 2: Family income and engagement in online education

Family income	Engagement in online education (%)
<30,000	16
30,000 – 60,000	21
60,000 <	3

According to the income status of the people living in these villages, most students (21) with a family's monthly income greater than Rs. 30,000 were engaged in online education. In contrast, no one with an income less than Rs. 30,000 is involved in online learning. This information shows that engagement in online education depends on the monthly income of the student's family. Hayashi *et al.* (2020) [20] have investigated the challenges of higher education students in Sri Lanka. According to their study, students have many economic problems due to losing their families' primary income during COVID-19.

Similarly, according to the data obtained in this research, A/Level students in the Medirigiriya area face financial difficulties when buying devices and data to continue online education. Lake and Dusseault (2020) [17] explain that many farmers had to face economic challenges due to the disruption of farming activities during the lockdown period. According to them, 42% of low-income families did not have enough ICT devices at home. As Mukhtar *et al*. (2020) [21] point out, students' limited access to electronic devices and the internet is frequently reported in studies on online learning in developing nations (Mukhtar *et al*., 2020) [21]. As Rahiem (2020) [24] point out, a lack of access to gadgets and a lack of consistent internet connectivity are other challenges low-income households face. Thus, Laksana (2020) [18] suggest that authorities must consider students' financial circumstances and the facilities and infrastructure that support online learning.

People in the low-income category have not spent more than Rs. 1700 to purchase data. A few participants (4) with income between 30000-60000 have spent more than Rs.1800 on data. Most participants (24) in all income categories spent less than Rs.1700 on data. The details are given in Table 3.

Table 3: Family income and monthly data cost

Family income	Monthly 1000 - 1300	Data Cost 1400 - 1700	1800 - 2100
< 30,000	2	3	
30,000 – 60,000	9	8	4
60,000		2	

Dolenc *et al.* (2021) [7] conclude that some students had to access online education through smartphones, using mobile data packages that many could not afford. They also pointed out that many students must access online education through smartphones using uncomfortable data packages. Similarly, in this study, some students stated that their data packages prevented them from logging into all required apps and browsers. Therefore, they had to purchase separate data packages for different apps and browsers, spending much money.

3.2 The perceived usefulness of online education for teachers

To find out the perceived usefulness of online education of teachers in Madirigiriya DS Division, five purposively selected teachers who teach five different subject streams were interviewed. The findings were categorised under four aspects of perceived usefulness: intention to use – opinion of students; user training – ability to use the apps, device experience – the experience of using the devices; and system quality – availability of the necessary infrastructure and economic conditions.

Intention to use

Similar to students, teachers also preferred physical

education to online education. According to them, physical education is compulsory for school education. Teachers commented that being unable to do the term test is the most significant disadvantage of the online mode of teaching and learning. According to the math teacher, this online teaching-learning system greatly impacted A/L students, so some students even tried to switch to another subject. The Art stream teacher thought it was impossible to provide 100% knowledge through online education. The biology teacher stated that microscope tests could not be done online and that there is much for students to understand by touching and experiencing. Students will remember the things they learned through practice. The math teacher thought students must do laboratory tests in physics and chemistry. Students did not understand how to solve math problems online.

All five teachers said they couldn't finish the syllabus within the stipulated time. Their reason was that practical tests could not be conducted online. Another reason the teachers mentioned was that the students were less active in online classes. The students do not give answers to the questions teachers ask. The teachers also said that they could not do much research on the student's problems through online classes. They claimed it was impossible to investigate the students personally as they are physically in distant areas.

User training

Before the pandemic, teachers had no experience in online teaching. Online teaching was first started during COVID-19. But the teacher who teaches under the technology stream said that sometimes the teaching work had been done through Google Meet. All the teachers stated that neither the Department of Education nor any other responsible institution has conducted a particular awareness program for them regarding technology and how to teach more effectively online. Findings show that teachers need proper training and development for conducting online classes. The statement given by a teacher regarding her experience in online education is given below.

"The government informed the schools to teach the students through online mode. The principal and teachers discussed and created WhatsApp groups for each grade. Links were shared with the students. A timetable was set to teach eight periods per day as we usually did in school."

All the teachers mentioned the same experience of engaging students in online education. Technical issues are the major problem for the effectiveness of online classes. The teachers also stated that no awareness program has successfully been conducted on teaching online education.

Device experience

Teachers were well aware of using the devices such as smartphones, tablets, laptops, and desktop computers.

System quality

Similar to students, teachers stated that in some cases, it was difficult for the teacher to continue teaching due to the absence of a signal. Teachers said that the biggest challenge faced by the teachers was the difficulty of continuing their classes online without good signal coverage to themselves and the students. The teacher's opinion regarding online education was that it is an excellent method if every area has good signal coverage.

4. Conclusions

Four aspects of the online education system were considered in this study. They are intention to use – opinion of students and teachers, user training – ability to use the apps, device experience – the experience of using the devices, and system quality – availability of the necessary infrastructure and economic conditions. According to the findings, the study concludes that the perceived usefulness of online education of students in the Medirigiriya DS Division is low since they lack interest in using online education. Still, in physical education, they have average knowledge and training in the devices and apps used for online education. The system's existing quality, such as economic conditions and signal strength, do not support the online education of these students. When the teachers' perceived usefulness is considered, like students, they also prefer the physical mode of education to the online mode of instruction. Although there are differences in the levels, like students, teachers struggle with user training, device experience and system quality. Therefore, the perceived usefulness of online education for the teachers and students in the Madirigiriya DS Division is low.

5. Recommendations

This research focuses only on the online education experience faced by the students and teachers in the Medirigiriya DS Division. With the new global trend, online education and technology in Sri Lanka should further develop. Thus, students and teachers can engage in digital education without fear. For that, problems should be identified, and solutions should be found and implemented. For that, we recommend the educational authorities and responsible service providers develop LMS in schools, train teachers and students to use online education modes effectively, provide facilities to students and teachers for online education and look into their problems, provide uninterrupted internet facilities by installing signal towers in remote areas, and provide accessible internet facilities for students and teachers to engage in online education.

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