

Exploring the Relationship Between Digital Literacy and Students' Preferences For E-Learning Platforms

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ABSTRACT

Education has a vital role in forming an individual's personality. The COVID-19 pandemic drove the Indian education sector to transition from physical to online learning. The purpose of this study is to identify students' digital literacy about online educational platforms in secondary education institutions, as well as their preferences for E-learning. It is based on primary data that has been collected from the Balasore district of Odisha by using a well-structured schedule, with a sample size of 128 respondents. For objective one, five characteristics are utilized to determine the level of digital literacy among students: availability, accessibility, affordability, usage and awareness and objective two was addressed using a logistic regression model to find out the preferences for E-learning in secondary education institutions. However, the majority of the students were using smartphones to attend online classes through various online educational platforms, indicating that they are digitally literate and have a strong preference towards e-learning.

Keywords: Covid-19 Pandemic, Digital Literacy, Government Initiatives, Online Educational Platforms, Preferences for E-learning, Secondary Educational Institutions.

JEL Classification: I21, I22, I28

INTRODUCTION

Digital literacy is identified as a core competency necessary for effective participation in online learning, encompassing technical skills, cognitive and social skills (Alanoglu et al., 2026). It serves as a significant predictor of e-learning success and directly impacts online learning readiness (Ahooie et al., 2026; Alanoglu et al., 2026). Student with higher digital literacy levels demonstrate superior self directed learning skills, allowing them to manage schedules and assignments more effectively (Alanoglu et al., 2026). Furthermore, digital literacy acts as a moderator, strengthening the impact of system use and computer self-efficacy on overall learning engagement (Seraj and Sundram, 2025). However, a lack of formal digital training often forces students into self-learning, leading to inconsistent skill levels (Ahammad and Islam, 2025).

Digital literacy defines the use of computers and other digital devices, the ability to understand and use online applications and information in multiple formats from a wide range of digital resources (Shopova, 2014; Gallardo-Echenique et al., 2015; Olszewski & Crompton, 2020). It is broadly defined as a range of competencies that enable individuals to effectively access, evaluate and utilize information from digital sources (Ahammad and Islam, 2025). It is the capacity to use information and communication technologies (ICT) to locate, assess, produce and share information, combining technical proficiency with cognitive understanding (Chigbundu and Oluwabiye, 2023; Ai et al., 2025). The study aims to determine how well students can effectively use, understand, and interact with online learning platforms used in schools. Specifically, students' digital skills such as ability to use computers, smartphones, and the internet and to navigate online learning platforms, students' knowledge of online educational platforms, students' competence in using digital tools for learning, and students' awareness of digital safety and responsible use. However, to know students' level of digital literacy so that schools can improve online learning, provide necessary training, and ensure that students can successfully use the modern educational technologies.

E-learning is a notion that has existed since the 1960s but became popular with the emergence of the internet and the web (Bezovski & Poorani, 2016). Observing the expansion of E-learning from the early 2000s, there has been an increase in research on internet technology, which serves as its base (Elango et al., 2008). Since then,

scholars around the world have been assessing and evaluating the E-learning systems and giving recommendations that will optimize the process (Singh et al., 2021). At the beginning of 2020, 1.6 billion children and teenagers in 190 nations were pulled out of school, which had various consequences on their academic advancement after that (UNICEF, 2020). Most Governments used Digital Education as a backup response to ensure learning continuity at all levels of education (Lennox et al., 2021). However, the existing digital divide revealed that digital education was underdeveloped, and individuals with fewer technical resources had a more difficult time learning because more than two-thirds of kids aged three to seventeen worldwide did not have access to the internet at home (UNICEF, 2020).

Education is one of the most important factors responsible for shaping an individual's personality and has manifold functions. It is a potent source for material and human development. Especially, "Secondary Education" is an indispensable passport to life upon which the quality of further education and life depends. Secondary education is considered the minimum level of attainment for the survival of the people. It leads to several jobs, pre-job training courses and self-employment. But the COVID-19 pandemic briefly disrupted the school education system in India. Due to the global spread of the deadly new corona virus, the most severe consequences have lately been observed. The COVID-19 outbreak put the learners, teachers and other stakeholders in danger since it forced the suspension of physical classes and shifted them to online learning platforms to continue the classes (Agarwal, 2021; Gopal et al., 2021; Muthuprasad et al., 2021; Singh et al., 2021). In these situations, electronic learning (E-learning), and the application of information and communication technology (ICT) tools were useful because they aided students in the communication of ideas, the delivery of online instruction, the creation of online discussion forums, and the taking of online tests (Sar & Misra, 2020; Agarwal, 2021; Singh et al., 2021).

The Digital Education System in India represents the future of studying and gaining information via the use of technology and digital gadgets. To overcome this situation, the Government of India, the Government of Odisha, and the Odisha School Education Programme Authority (OSEPA) have also taken some initiatives, which include; the Odisha Shiksha Sanjog WhatsApp Platform, Telecast of video lessons in Doordarshan (Odia), DIKSHA Portal, E-Pathshala, Madhu App, E-class through Microsoft Team/ ZOOM/ Google Meet Platforms, etc. (Samagra Shiksha Odisha, Annual Report- 2020-21). So these are the digital measures being used to ensure continuity in students' education in Odisha. However, online education gained prominence during the COVID-19 pandemic. Although in developed countries it was present earlier, in developing nations, the shift from a traditional mode of teaching and learning to an online platform has not been smooth yet. In the state of Odisha, the teachers as well as students faced a lot of problems in this regard at all educational levels. Furthermore the National Education Policy 2020 focuses on the use of technology for education in order to reap long-term benefits. So this motivated to evaluate online educational platforms, particularly in the case of secondary educational institutions in Odisha.

REVIEW OF LITERATURE

In March 2020, India issued a warning, which was followed by the immediate closure of schools and other educational institutions due to the spread of the new corona virus named COVID-19. So, the closure of the educational institutions and the confinement of the students to their homes made it necessary for schools to investigate the most opted alternative way of teaching and learning methods, such as online learning. However, this immediate change from traditional classroom-based learning to online learning gave neither teachers nor students much time to get ready (Bhaumik & Priyadarshini, 2020; Selvaraj et al., 2021). So, this emancipation is possible to be literate digitally when both teachers, as well as students, are digitally learned and aware of it.

Role of Technology and Digital Literacy in Online Education

As new technologies are used more frequently to support and deliver education, new concerns about the efficacy of conventional educational approaches in non-traditional learning environments are emerging (Ahern & Repman, 1994; Benta et al., 2014; Guri-Rosenblit, 2018). With a minuscule part of the budget devoted toward education, the technological divide is now even more apparent. States like Kerala and Tamil Nadu are better off since technological enhancements are significant, whereas Bihar and Odisha are the flip sides of the coin. The New Education Policy of 2020 in India has suggested for spending up to 6 per cent of the GDP on education. Some of the studies suggest that technology-supported courses have a positive relationship with students' performance (Harasim, 2000; Brown et al., 2009). So, technological support in education is needed the most and the idea of educational technology will be effective by not only having access to technology but rather, how one uses technology matters for providing an innovative educational experience with the availability of technology for students and teachers (Olszewski & Crompton, 2020) and most importantly one should be able to afford it (Joshi et al., 2020; Kapasia et al., 2020).

For e-learning to become a leading learning pattern, technology alone will not suffice (Ahoovie et al., 2026). The integration of “Internet and Education” models enhances educational experiences by providing various resources and fostering collaborative learning using technology (Ahammad and Islam, 2025). Furthermore, both teachers and students need to be digitally literate in academics. But the implementation of digital technologies in higher education settings focuses mainly on students’ learning rather than on professors’ teaching. So, teachers should get appropriate training and use technologies in the academic world that enhance their digital literacy (Harasim, 2000; Guri-Rosenblit, 2018; Joshi, 2020). The increasing digital literacy of students and their growing proficiency in using ICTs is a necessary condition for effective performance and improved learning outcomes (Shopova, 2014).

Perception and Preferences for Online Education

The Indian Government has always given preference to the use of ICT as a means of mass education, so the CLASS (Computer Literacy and Studies in Schools) project was launched as far back as 1984 by the INDIAN government to make computer literacy a compulsory project for class IX and XII (Singh et al., 2021). Most interestingly, both teachers and students prefer to use WhatsApp, Telegram, Email, Zoom, Google Meet, YouTube, Swayam Prava educational DTH channels, e-Pathshala, DIKSHA portal, etc., as tools and sources of online education (Kapasia et al., 2020; Mishra et al., 2020; Agarwal, 2021; Singh et al., 2021). There is a notable preference for student-centered methodologies, where learners increasingly gravitate towards informal, socially embedded spaces like WhatsApp and Telegram for engagement, finding traditional Learning Management Systems (LMS) rigid (Cardona-Acevedo et al., 2025; Zwane and Mudau, 2026).

Some studies were done on faculty, some on students, and some on both, but most of them found that regular classes were better in terms of efficiency, interaction and overall understanding (Ray, 2009; Bhaumik & Priyadarshini, 2020; Selvaraj et al., 2021). Some of the students agreed that online learning was helpful for them, even though it was their first time taking an online class during the Covid-19 pandemic (Agarwal & Kaushik, 2020; Mishra et al., 2020; Rajabalee & Santally, 2020; Gopal et al., 2021; Muthuprasad et al., 2021). The majority of contemporary learners displayed low or no positive contentment with the present e-learning systems in use, although most of them were comfortable using smartphones, the internet and the web for learning purposes (Ngampornchai & Adams, 2016; Sunkara & Kurra, 2017). Generally students hold a positive perception of online education due to its flexibility and accessibility (Ahoovie et al., 2026; Siregar & Bendo, 2026). In a study of German language students, 57.8 percent preferred online or hybrid formats, with 91 percent expressing high satisfaction with instructor communication (Ahoovie et al., 2026). Preferred platforms for regular interaction include ZOOM and Microsoft Teams, while institutional platforms like Blackboard often see lower daily usage (Aldosari, 2025). Students preferred well-structured content with recorded videos uploaded on university websites (Mishra et al., 2020; Muthuprasad et al., 2021). They also prefer to use the smartphone to attend online classes (Saxena et al., 2018), but they do not prefer it as a future replacement for online classes because of certain limitations and issues (Al-Amin et al., 2021; Singh et al., 2021). But students using broadband connections have a more positive perception towards online classes than students using mobile networks to attend online learning (Sarkar et al., 2021). Further, some students adopt e-learning because it will be beneficial for future job preparation (Park, 2009). However, there is a greater preference for face-to-face learning as compared to e-learning from the student's perspective, so one thing is certain, face-to-face interaction cannot be excluded from the educational process (Paechter & Maier, 2010; Gherhes et al., 2021).

The teachers or faculty members preferably use a laptop or desktop to conduct online classes through Google Meet, followed by Zoom, CISCO Webex, Classdojo, etc., and the success of online education depends on the digital proficiency of the participants (Kapasia et al., 2020; Agarwal, 2021; Singh et al., 2021). So, it is noted that teachers traditionally have extensive knowledge in the field of their subjects and much less knowledge in the field of information technology and electronic pedagogy, which is a major obstacle to effective online teaching (Almazova et al., 2020). Wherever a study found that teachers have a positive attitude towards the adoption of technologies and are ready to integrate ICTs into teaching and learning, but they lacked the requisite ICT skills (Chisango et al., 2019). So, most of the teachers desired prior training to develop their knowledge of technology and online learning at their institutions (Ray, 2009; Chisango et al., 2019; Mishra et al., 2020; Sar & Misra, 2020; Rahman, 2021).

Factors Affecting Online Learning and Teaching

Various factors affect positively or negatively on the online education, like the course content, the choice possibilities of the course, class size, the teacher’s support and performance are some of the factors that strongly influence students’ satisfaction with the course (Barbera et al., 2013; Gopal et al., 2021). But several factors influenced positively online classes such as time efficiency, convenience, flexibility and accessing courses anytime, while some factors influenced negatively, such as harder to learn, fewer explanations given during

classes, lack of practical implications, technical problems and lack of interaction (Agarwal, 2021; Gherhes et al., 2021; Muthuprasad et al., 2021;). Demand side factors like fluctuating internet and electricity connections, lack of attention, no separate reading room, technical skills, and understanding lessons through online platforms (Mishra et al., 2020; Al- Amin et al., 2021; Rahman, 2021; Sarkar et al., 2021) and lack of technological literacy and competencies are the major constraints of online learning in developing country (Barrot et al., 2021). Additional issues that affect teachers' participation in online teaching and assessment include their lack of digital literacy, technical challenges, academic staff preparedness, and students' readiness for online learning. Institutional barriers also exist, such as funding for technology purchases, inadequate training, and unavailability of technical support (Almazova et al., 2020; Joshi, 2020; Muthuprasad et al., 2021). But fluctuating network connectivity, slow speeds and high costs affect rural and low income students are the major challenges of online learning (Mishra et al., 2020; Chigbundu and Oluwabiye, 2023; Aldosari, 2025; Ahammad and Islam, 2025; Siregar & Bendo, 2026). Furthermore a study indicate that students' perceived usefulness, critical thinking in the 21st-century skills, and behavioral intention to utilize e-learning indicate a positive effect on their academic achievement in higher education institutions (Aldraiweesh and Alturki, 2023).

Students' Satisfaction and Experiences in an E-learning Environment

Online education, with its authentic qualities, has revolutionized the way students engage in learning processes. So, online education has been approached to focus on the teaching and learning processes to ensure children may obtain the abilities that are required for a future workforce (Kong et al., 2014; Martin & Ramos, 2022). Student satisfaction is heavily influenced by perceived usefulness that technology enhances learning efficiency (Ai et al., 2026). Interactive features, such as real-time feedback, online forums, and multimedia resources (videos and simulations), significantly enhances engagement and the clarification of difficult topics (Rafiq et al., 2024; Quraishi et al., 2024). While many students report high satisfaction with the flexibility of managing their own schedules, challenges such as social isolation, and reduced academic focus due to digital distractions remain prevalent (Ahammad and Islam, 2025; Aldosari, 2025). During the COVID-19 lockdown, this open-ended question provided valuable insights into the attitudes and perceptions of students regarding the caliber of their online education (Bhaumik & Priyadarshini, 2020; Kapasia et al., 2020; Barrot et al., 2021). However, several colleges employed online learning technologies such as Idea Web and Moodle as their e-learning platforms, which provided an excellent teaching and learning experience for both teachers and students. However, it is quite effective and enhances students' enthusiasm in laboratory tasks and assignments (Ahern & Repman, 1994; Benta et al., 2014). The Odisha government has taken steps to integrate technology into the teaching and learning process through ICT, creating an ICT-enabled environment that improves the learning experience for both students and teachers and allows them to make intensive use of the time spent in ICT labs for knowledge acquisition (Sar & Misra, 2020). Barbera et al. (2013) discovered that in a correlation analysis of students in higher education social sciences online courses, learner satisfaction was positively and highly connected with social presence, direct instructions, learning content, and course design. However, the characteristics identified as critical - notably, course design and learning content - remained opaque in this investigation.

RESEARCH GAP

Various studies have sought to analyze the problems and challenges that students face when taking online classes, as well as the tools and sources of online education. However, in the rural areas' there were few studies (only one in the case of Odisha). This study wanted to assess the level of digital literacy among rural students' in the district of Balasore regarding government provided online educational platforms.

OBJECTIVES OF THE STUDY

1. To study the level of digital literacy among students regarding the online educational platforms in secondary education institutions in the study area.
2. To find out the preferences for E-learning in secondary education institutions in the sample area.

MATERIALS AND METHODS

This study is based on primary data. Primary data has been collected from the Balasore district of Odisha by using a well-structured schedule which has been developed on the basis of a pilot survey. Here the sample consists of 128 respondents for the primary survey in the year 2022. Both quantitative and qualitative data have been collected for this study from the Government Secondary Schools. Quantitative data about the number of students, applications used for online classes, availability of digital devices, electricity connection, internet facility, hours of study, and number of classes will be collected from the concerned government secondary schools. Similarly, qualitative data will be collected about access, awareness about cyber privacy and safety issues, uses of digital devices, online educational platforms, etc. One district in Odisha has been chosen purposively to collect the primary data. So, Balasore has been chosen as our research region. Then, a simple

random sampling method is used to choose one block, i.e., Baliapal and Ratai GP (Gram Panchayat), which has been chosen for this study. There is only one government secondary schools in this GP and from this school, all students from class IX to class X are selected for this study.

For the data analysis, Descriptive statistics, percentages, averages, bar diagrams and charts have been used for both objectives. For objective one in this study, there are five parameters used to find out the level of digital literacy among the students about the online educational platforms in secondary education institutions, such as Availability, Accessibility, Affordability, Usage (Joshi et al., 2020; Kapasia et al., 2020; Olszewski & Crompton, 2020; Akintola & Bello, 2021; Dadhe & Kuthe, 2021; Oni, 2024) and Awareness (Zakariah et al., 2012; Nafrees et al., 2020), and a binary logistic regression model has been used for objective two because the dependent variable was binary in nature in this study.

The Logistic regression model is specified as follows

$$Li = \log (Pi / 1 - Pi) = \beta_0 + \beta_i X_i + u_i$$

Where,

Pi = Probability of an event occurring

1-Pi = Probability of an event not occurring

β_0 = Constant or intercept term

β_i = Beta coefficient in respect of variables X_i

X_i = Characteristics of the respondents (Discriminating variables)

u_i = Error term

The explicit Logistic regression model was expressed as;

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + u_i$$

Where,

Y_i = Preferences for e-learning (If Yes, 1, Otherwise, 0)

X_1 = Age of the students

X_2 = Parents' Annual Income

X_3 = Monthly expenditure on digital devices

X_4 = Having multiple digital devices (If Yes, 1, Otherwise, 0)

X_5 = Number of online classes per day

X_6 = Hours of online study per day

u_i = Error term

DATA ANALYSIS

Level of Digital Literacy Among Students Regarding the Online Educational Platforms

The ability to obtain information from the internet utilizing a variety of digital devices, technical know-how, and familiarity with numerous online platforms for online work, study, communication, etc., are all considered aspects of digital literacy. Digital literacy is crucial for both teachers and students in educational institutions. However, in the case of instructors, the government provides them with training on how to use various digital devices, technical skills, and online platforms for online instruction, internet access, recharges, etc. Teachers and students who possess digital literacy will feel more at ease and secure using the current online learning environments, while those who do not may find their progress hindered by a lack of confidence or an inability to use the relevant technology. The availability of digital infrastructure, accessibility, affordability, use of online learning platforms through various digital devices, and most importantly, awareness of cyber security and safety policies are the five factors that determine students' level of digital literacy.

Having digital devices such as a smartphone, tablet, laptop, desktop computer, etc. is defined as availability in this context. In order to participate in online learning, one must be able to access the internet or the data pack on digital devices. Then, affordability demonstrates the ability to purchase digital gadgets for online learning, as well as the reason(s) if they are unable to do so. The use of digital devices for online learning through online educational platforms is the most significant factor in determining the degree of digital literacy among educators and learners. Finally, an understanding that illustrates the security of online learning, worries about online safety and privacy, etc.

Availability

The availability of technology for students including the types of devices and connection of internet at home (Dadhe & Kuthe, 2021). Figure 1 shows that out of 128 students, 71.09 percent possess digital devices, while 28.90 percent lack any kind of device for online learning. Additionally, 67.97 percent of students have data packs or Wi-Fi connections in their devices, and 32.03 percent do not have any data packs in their devices. 100 percent of the pupils have an electricity connection at home in the study area (Table 1).

Table 1: Availability of digital infrastructure

Availability of digital infrastructure	Yes (% of the respondents)	No (% of the respondents)
Electricity connection	100	0
Data pack/ Wi-Fi connection	67.97	32.03

Source: Primary Survey

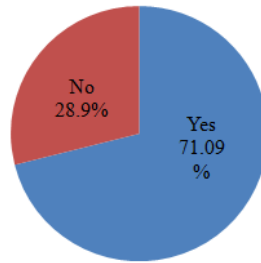


Figure 1: Availability
Source: Primary Survey

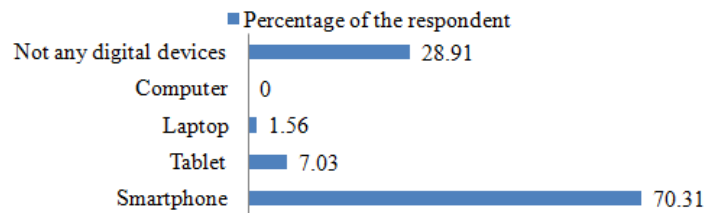


Figure 2: Having any form of electronic gadgets
Source: Primary Survey

The varieties of electronic devices that students utilized to continue their studies during lockdown are depicted in figure 2. Out of the 91 participants, 70.31 percent of pupils possess smartphones, 7.03 percent have tablets, and only 1.56 percent have laptops. Hence, none of the pupils are using computers here, and the majority of them have smartphones. Similar result were found by Dadhe & Kuthe (2021).

Accessibility

Figure 3 shows that accessibility of digital devices, there are 87 number of students (i.e. 67.97%) said that they have accessed and allowed to use digital devices at their homes but 41 (i.e. 32.03%) number of students are not accessing and allowed to use these devices for learning online at their homes due to unavailability of digital devices, data pack or Wi-Fi connection and also there are some parents feel that it is not the appropriate age for children to use digital devices (i.e., 7 out of 41 number of the respondents). However, majority of the students access the internet at home through their own device. Dadhe & Kuthe (2021), found the same.

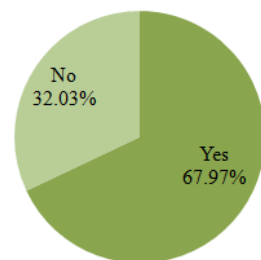


Fig: 3 Accessibility
Source: Primary Survey

Affordability

Figure 4 shows that out of 128 students, 64.84 percent of the students said that they can afford these digital devices, and 35.16 percent of students said that they cannot afford them. However, majority of the student can afford digital devices. This result was contradicting the study of M. B. Oni (2024). According to M. B. Oni (2024), affordability and stability of internet access have posed challenges for e-learning.

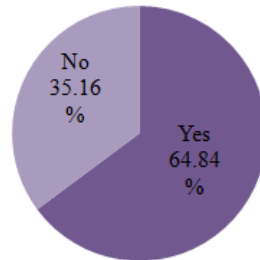


Figure 4: Affordability
Source: Primary Survey

Table 2: Reasons for not being able to afford digital devices

Reasons for not being able to afford digital devices	Percentage of the respondents
High price	24.44
High-price and Low-income	57.78
Low income of parents' annual income	17.78

Source: Primary Survey

Table 2 explains the reasons why students are not able to afford digital devices for learning. Out of 45 students (i.e. 35.16 %), 24.44percent of students are not able to afford it because of the high price of digital devices, while 57.78percent of students are unable to afford it because of the high price of the digital devices and the low income of their parents. 17.78percent of students said that due to the low income of their parents, they are not able to afford it.

Uses of digital devices

Figure 5 shows the uses of these digital devices for online learning through online educational platforms. So, out of 128 students, 67.97percent of students are using digital devices for learning through online educational platforms, while 32.03percent of students are not using these digital devices because of the unavailability of digital devices in their homes due to high prices and low income. Figure 6 shows that there are various types of online educational platforms that are used by students in the study area. Here, nobody is using the e-pathshala portal for learning. Most of the students are using YouTube and WhatsApp for online learning, i.e., 67.97 per cent, while 25percent of students are using the Madhu app, and 16.41percent of the students are using the Diksha app for online learning.

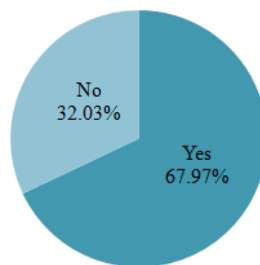


Fig: 5 Uses of digital devices
Source: Primary Survey

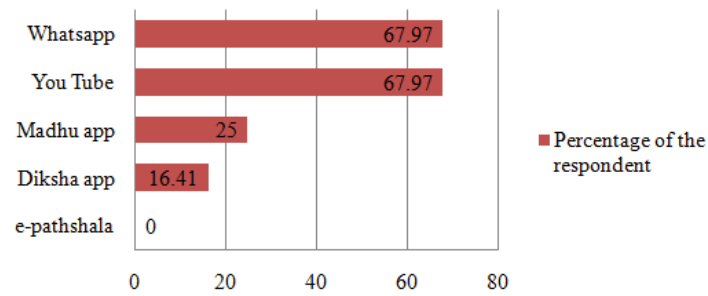


Figure 6: Name of the online educational platforms
Source: Primary Survey

Awareness

Figure 7 shows that the awareness among students regarding e-learning, out of 128 students, regarding cyber safety and privacy, 52.34percent of students raised their concerns, while 12.5percent of students didn't express any such concern towards their privacy and safety policies on the internet. 35.16percent of the students are neutral about privacy and safety policies on the internet.

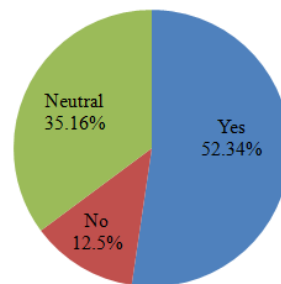


Fig: 7 Awareness
Source: Primary Survey

PREFERENCES FOR E-LEARNING IN THE SECONDARY EDUCATION INSTITUTIONS

E-learning promotes active and independent learning through the internet. It saves time, money and energy because, with online learning (e-learning), learners can access content anywhere and anytime, students can interact with their peers from all around the world through group discussions and charts using various online platforms, etc., so that students can explore their knowledge. In this study, the preferences for e-learning are based on their preferences to attend the classes through online mode, preferences for various digital devices and tools for online learning, issues during online classes and online learning experience.

Preferences to attend the class through online mode

Figure 8 represents the preferences to attend the classes through online mode. The majority of the students preferred to attend classes through online mode, i.e., 58.59percent (i.e., 75 number of respondents) and 41.4percent of the respondents did not prefer to deliver the classes through online mode.

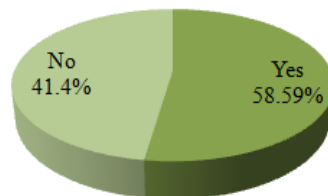


Figure 8: Preferences for online class
Source: Primary Survey

Table 3: Reasons for preferring online classes

Reasons for preferring online classes	Number of respondents	Percentage of the respondents
Comfortable	67	89.33
Easy to access the digital devices	67	89.33
Learning from anywhere at anytime	67	89.33

Online classes are more interesting than offline classes	56	74.67
Students are more attentive than in offline classes	35	46.67
Easy to share the study materials	64	85.33
Easy to understand the concept	41	54.67
It is more flexible than offline classes	63	84
Time efficiency	65	86.67

Source: Primary Survey

Table 3 shows the reasons for preferring online classes. Out of the 75 respondents, 89.33percent of the respondents said that online classes are better than offline classes because it is comfortable and easy to access digital devices and learn from anywhere at any time. 74.67percent of the respondents said that online classes are more interesting than offline classes, and 46.67percent of the respondents like online classes because students are more attentive in online classes than in offline classes. 85.33percentof the respondents said that online classes are better because, through the online educational platform, it is easy to share the study materials. 54.67percent of the respondents said that in online classes, it is very easy to understand the concepts through the use of technology, and we can see scientific experiments with the help of various online educational platforms like YouTube. 84percent of the respondents preferred online classes because online classes are more flexible than offline classes, and the most important thing is that these are time-efficient, preferred by 86.67percent of the respondents, because during online classes, we can do some other work simultaneously.

Table 4: Reasons for not preferring online classes

Reasons for not preferring online classes	Number of respondents	Percentage of respondents
Student and teacher interaction is less	53	100
Lack of knowledge of technology	40	75.47
Question-answer discussion is not easy	50	94.34
Not easy to understand the topic	53	100
Find many problems like network issues, electricity issues, data pack, etc.	44	83.02
It is not affordable for the school students	52	98.11
Compulsory to have digital devices	53	100
Not comfortable	40	75.47

Source: Primary Survey

Table 4 shows the reasons for not preferring online classes. So, out of 53 students, 100percent of the respondents have not preferred online classes because here both teacher and student interaction is less than in offline classes, while 75.47percent of the students lacked knowledge of technology. 94.34percent of the students said that here the question-answer discussion is not easy, and 100percent of the students said that it is not very easy to understand the topic in the online class. 83.02percent of the students said that in online classes, they found many types of problems like network issues, electricity fluctuations, limited data pack, etc. during e-learning, and the most important thing is that online learning is not affordable for the government secondary school students, said 98.11percent of the respondents. 100percent of the respondents do not prefer online classes because it is compulsory to have digital devices for online learning. 75.47percent of the respondents are not comfortable with online classes.

This study also uses the logistic regression approach. It's a mathematical modeling method for representing the relationship between a dichotomous or limited dependent variable and several independent factors. Here, the dependent variable is dichotomous (i.e., preferences for e-learning or not preferences for e-learning), and the suggested covariates are a combination of continuous and categorical random variables, which are discussed below Table 5.

Table 5: Binary Logistic Regression Model Output

Sl. No	Variables	Coefficient	P values (Significance)	Odds Ratio (Probability)
1	Age of the students	.278	.580	1.321
2	Parents' Annual Income	.000	.647	1.000
3	Monthly expenditure on digital devices	.004**	.027	1.005

4	Having multiple digital devices	-.225**	.032	.799
5	Number of online classes	.557*	.009	1.745
6	Hours of online study	.026*	.000	1.026
7	Constant	-9.176	.270	.000
-2 log-likelihood = 65.998 ^a Cox & Snell R ² = .571 Nagelkerke R ² = .768				

Note: * indicates significance at 1% level, ** significance at 5% level

Sources: Authors' Computation using SPSS

Table 5 shows the coefficients of the variables show the preferences for e-learning in secondary school students in the study area. It can be seen that the age of the students and parents' annual income are the explanatory variables which are statistically insignificant and positively related to the preferences for e-learning in secondary school students, while the monthly expenditure on digital devices, availability of digital devices, number of online classes per day, and hours of online study are significantly related.

Based on the odds ratio (i.e., 1.321), which implies the probability of falling into the target group, i.e., the preferences for e-learning, is greater than 1, meaning the probability of an event occurring increases, as opposed to not having the preferences for e-learning. It means the probability of the preference for e-learning is positively related to age. Similarly, based on the odds ratio (i.e., 1), which implies the probability of falling into the target group, i.e., the preferences for e-learning is exactly equal to 1, means the probability of an event occurring is equal to that against not having the preferences for e-learning. Also, the probability of the preference for e-learning is positively related to parents' annual income.

Here we can see that the monthly expenditure on digital devices for online learning was found to be statistically significant (at a 5per cent level) and positively related to the preferences for e-learning based on the odds ratio (i.e., 1.005) which implies the probability of falling into the target group i.e., the preferences for e-learning is greater than 1, means the probability of an event occurring increase as against not having the preferences for e-learning. So, this implies that the increase in the monthly expenditure on digital devices leads to an increase in the preferences for e-learning. Similarly, we can see that having multiple digital devices for online learning was found to have a statistically significant (at 5per cent level) but negatively related to the preferences for e-learning based on the odds ratio (i.e., .799). So, this implies that the increase in the availability of digital devices leads to a decrease in the preferences for e-learning, because they use it for many other purposes like social media, entertainment, playing video games, etc.

The probability of preferring e-learning was positively and significantly related to the number of online classes at a 1per cent level of significance. Hence, the number of online classes per day under online educational platforms increases the probability of students' preferences for e-learning by 1.745 times. As in the table, the hours of online study were significantly associated with the probability of students' preferences for e-learning at a 1per cent level of significance and based on the odds ratio (i.e., 1.026) which implies the probability of falling into the target group i.e., the preferences for e-learning is greater than 1, means the probability of an event occurring increases, as against not having the preferences for e-learning. It means the probability of the preference for e-learning is positively related to the hours of online study.

Lastly, from the above table, we found that the Nagelkerke R Square on this model is 0.768. The value of 0.768 means that the independent variable is able to explain the variability of the dependent variable by 76.8per cent while the rest is explained by other variables not included in the model.

Preference for various digital devices and tools for online learning

Table 6: Preference for digital devices to attend the classes

Preferred digital devices to attend the class	Number of respondents	Percentage of respondents
Smartphone	125	97.66
Tablet	7	5.47
Laptop	2	1.56
Computer	0	0
No answer	3	25.78

Source: Primary Survey

Table 6 shows the digital devices they preferred to attend the classes. Out of 128 respondents, 97.66% of the respondents preferred a Smartphone to attend classes through online mode, while only 5.47% of respondents preferred a tablet. There is a very small percentage of respondents who preferred the laptop to attend the classes through online mode, i.e., 1.56% while nobody preferred the computer.

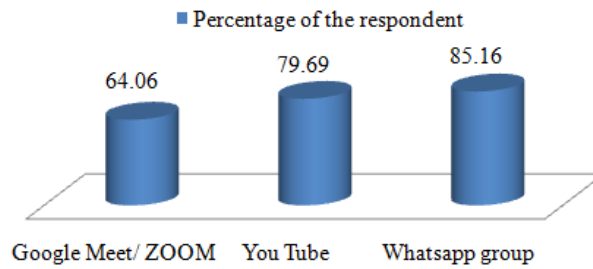


Figure 9: Preferred online tools for e-learning
Source: Primary Survey

Figure 9 shows, 64.06% of the respondents preferred to use Google Meet/ZOOM for e-learning, and 79.69% of the respondents preferred YouTube. The majority of the respondents preferred to use WhatsApp for e-learning, i.e., 85.16%.

Table 7: Causes to prefer Google Meet/Zoom

Causes to prefer Google Meet/Zoom	Number of respondents	Percentage of respondents
Audio-visual learning is possible	81	98.78
Asking doubts/questions easily	82	100
Face-to-face interaction with the teacher/students	82	100
Clearing concepts easily	77	93.90

Source: Primary Survey

Table 7 shows the reasons why they prefer Google Meet/ZOOM for e-learning. 98.78% of the respondents preferred Google Meet/ZOOM because through these applications, audio-visual learning is possible. 100% of the respondents preferred this because they can ask doubts/questions easily through these applications and also have face-to-face interaction with the teachers as well as students. 93.90% of the respondents preferred these applications for e-learning because, with the help of these applications, they can clear their concepts easily. WhatsApp is the most preferred platform, i.e., 100% because through WhatsApp they can easily share and get all the study materials, while 98.04% of the respondents prefer YouTube because it keeps all the recordings (Table 8).

Table 8: Causes to prefer YouTube and WhatsApp

Causes to prefer YouTube and WhatsApp	Number of respondents	Percentage of respondents
Because YouTube keeps all the recordings	100	98.04
Easily share and get all the study materials through the WhatsApp group	109	100

Source: Primary Survey

Figure (10) shows the preferred languages for online classes. Here, all of the respondents preferred English and Odia as the most preferred languages during the classes in the study area, i.e., 100%. But there are only 24.22% of the respondents who preferred Hindi, and 75% of the respondents preferred the Sanskrit language for online classes because they have optional subjects in Hindi and Sanskrit in the sample school. But all of the respondents preferred English and Odia as the most preferred languages during the classes in the study area, i.e., 100%.

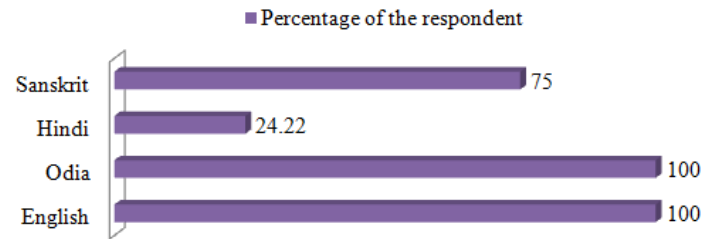


Figure 10: Preferred languages for e-learning
Source: Primary Survey

Issues during online classes

When the students were asked if online learning affected their health, the responses show that only 33.59% of the students said yes, 48.43% of the students said no, and that there were no health issues, and 17.97% of the respondents did not answer this question because they may have attended very few online classes during the lockdown (Table 9).

Table 9: Health issues during online class

Health issues during online class	Number of respondents	Percentage of respondents
Yes	43	33.59
No	62	48.44
No answer	23	17.97

Source: Primary Survey

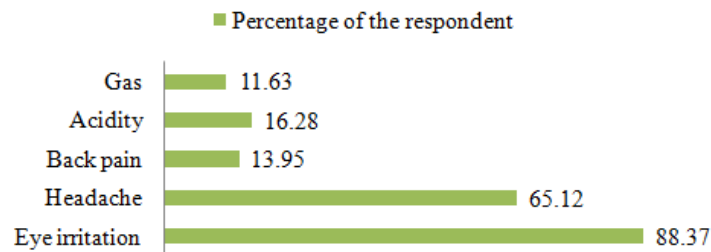


Figure 11: Health issues related to online class
Source: Primary Survey

Figure 11 shows that out of 43 students, 88.37% of the students had eye irritation, 65.12% of the students had a headache during the online classes, and only 13.95% of the students had back pain. 16.27% of the students said that they had severe acidity problems because of the classes, and 11.62% of the students had a gastric problem due to the online classes. The majority of the students had eye irritation during the classes, i.e., 88.37%.

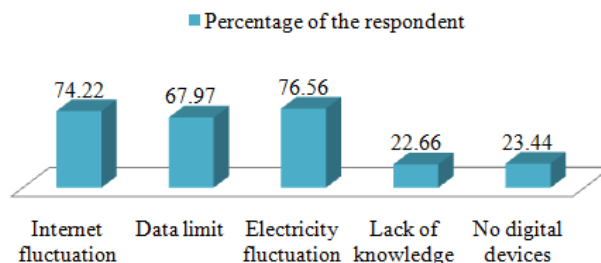


Figure 12: Other issues during online class
Source: Primary Survey

Figure 12, shows the challenges during online classes. Here, 74.22% of the students said that the most serious issues are internet fluctuation, and 67.97% of the students faced issues like limited data packs in their smartphones. 76.56% of the students said that electricity fluctuation is another issue during online classes. 22.66% of the students said that the lack of knowledge on the use of digital devices is also a challenge for

attending the online class, while 23.44% of the students said that they couldn't attend any classes due to the unavailability of digital devices for learning online. The major issues during online classes are internet fluctuation, data limit and electricity fluctuation, i.e., 74.22%, 67.97% and 76.56% respectively, which are similar to the teachers' side as well. But the issues like lack of knowledge and not having any digital learning devices are different from the teachers' side.

DISCUSSION

Out of the 128 students who responded, 71.09% had availability, 67.97% had accessibility, 64.84% had affordability, 67.97% had used digital devices for online learning, and 52.34% had worried about online privacy and safety policies, i.e., awareness. The fact that they were using these electronic devices to attend online courses via different online learning environments, however, was crucial since it proved that they were digitally literate. Additionally, it was shown that the vast majority of pupils utilized smartphones to access online learning resources like YouTube and WhatsApp, which is similar to the findings of Saxena et al. (2018).

The majority of students, or 58.59%, preferred to attend classes online. After all, they felt comfortable doing so, because it was convenient to access digital devices, because they could learn at any time and from any location, because it was time-efficient, etc. Similar result was found by Mohsin, et.al (2025). In contrast, 41.4% of students preferred to attend classes offline because they didn't have to deal with issues like internet problems, fluctuating electricity, limited data packs, etc. Other writers with similar reasons, such as Mishra et al. (2020), Agarwal (2021) and Muthuprasad et al. (2021), also discovered this. Nonetheless, regular classes are superior in terms of effectiveness, interaction, and general comprehension, according to Ray (2009), Bhaumik & Priyadarshini (2020) and Selvaraj et al. (2021). In order to participate in the online course, students preferred using numerous digital devices. In this survey, the majority of students preferred smartphones, as well as a variety of online learning resources and applications like Google Meet, Zoom, YouTube and WhatsApp. In addition to these, Kapasia et al. (2020), Mishra et al. (2020), Agarwal (2021), and Singh et al. (2021) discovered other online learning resources and tools, such as Telegram, Email, Swayam Prava educational DTH channels, e-Pathshala, and the DIKSHA portal. Figure 10 shows that 100% of the students preferred English and Odia languages during the online classes.

The logistic regression model (Table 5) revealed that while monthly spending on digital devices, the number of online classes taken each day, and the number of hours spent studying online were significant and positively correlated with the dependent variable, the annual income of the parents was statistically insignificant but positively correlated with the secondary school students' preferences for e-learning. Similarly, the age of the students was statistically insignificant but positively correlated with the dependent variable, which is contrary to the findings of the Glazier & Harris study in 2021. However, because students used their digital devices for a variety of other purposes, such as social networking, entertainment, and playing video games, having multiple digital devices was significant and negatively associated with their preferences for e-learning in this study.

Additionally, this study discovered that out of 43 students, some experienced a variety of health problems during online classes, such as headaches (65.12%), irritation of the eyes (88.37%), and acidity (16.28%) (Figure 11). Other significant problems with online learning included inconsistent internet, limited data pack, power outages, lack of knowledge on technology and the unavailability of electronic gadgets. In addition to these concerns, Mishra et al. (2020), Rahman (2021), and Sarkar et al. (2021) discovered other challenges, such as inattention during online classes, a lack of a dedicated reading area and comprehension of teachings delivered via online platforms. Similar to this, Barrot et al. (2021) discovered that the main obstacle to online learning in developing nations is a lack of technological literacy and competencies. Nevertheless, most respondents said that they liked and enjoyed the online courses, but they would like to see some changes made to a few things, such as network problems, data limitations, electricity fluctuations, the issue of digital device unavailability, student training programs on online education, etc.

CONCLUSION

A survey was conducted to get students' insights about online learning. Some outcomes were satisfactory and some were not, where most of the respondents favoured online learning and found these initiatives to be a major step in maintaining the continuity of the study in the era of COVID-19, but some of the respondents were not in favour of online learning due to some limitations and issues. Issues like network/internet connectivity, electricity fluctuation, lack of knowledge of technology, limited data pack, and health-related issues were highlighted by the conducted study. Hence, this study provided insights into the learners' perspective towards the government's initiatives and online learning, and the students studied with the government initiatives such as the Diksha app, Madhu app, Shiksha Sanjog WhatsApp group and OSEPA YouTube channel. A mixed set of

opinions (positive, negative, and neutral) was seen in the responses of the students, and the majority of the students had a positive preference for e-learning.

This paper makes two primary recommendations: to help students become more proficient with technology, there should be a variety of awareness and training initiatives that enable them to participate in online courses in the field of study, and according to the student responders, the study area's institutions ought to offer a minimum of two online courses every week. There were some of the study's limitations, like the study's conclusions were restricted to the local schools that were polled, and only secondary school students enrolled in government schools were considered in the study.

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