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Measuring the Benefits and Challenges of E-Learning in Secondary Schools

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ABSTRACT

Through classroom observation and student interviews, this study examines the benefits and drawbacks of online secondary school education. Using a descriptive cross-sectional technique, 126 students were polled, with an equal distribution across public and private schools. Gathering information about students' experiences with online classes was the main objective of the research. such as the devices they use, the frequency with which they access them, and their opinions on the benefits and drawbacks of these platforms.

The quantitative data was examined in Microsoft Excel using descriptive statistics after being gathered using structured questionnaires. We used frequency and percentage distributions to show any trends or patterns we found in the data. The findings demonstrate that online education is not without its pros and cons. Students, on the one hand, have greater freedom in scheduling their studies and access to a wealth of information. However, there are a few big issues, such sluggish internet and an absence of personalised attention. In addition to expanding our understanding of how to use e-learning to enhance educational outcomes in secondary school, this research provides recommendations for removing barriers to effective e-learning adoption.

Keywords: E-Learning, Digital Divide, Academic Achievement, Online Learning Challenges, Educational Technology.

INTRODUCTION

Because of the proliferation of online learning platforms, the character of education has changed dramatically in recent years. Online learning environments and digital resources have grown in significance, particularly in secondary schools when students are going through a period of formative intellectual and personal development. The term "electronic learning" encompasses a broad variety of approaches that make use of various types of digital media and resources to supplement classroom training. Among these mediums, you may find LMSs, instructional apps, virtual classrooms, online quizzes, and interactive course materials.

Collaborative learning, remote access to resources, and personalised learning are just a few examples of the ways in which modern technologies are transforming the way we educate our students. The rapid shift from traditional, in-person education to online delivery techniques has been expedited by global calamities like as the COVID-19 pandemic, which has contributed to the acceleration of e-learning. Online secondary school education has a lot of promising future benefits.

Through online education, students have the freedom to study at their own pace, access a wealth of resources that would be inaccessible to them in a traditional classroom setting, and take an active role in their own learning. Students may personalise their learning experience using multimedia instructional tools, recorded lectures, and discussion forums. Students may achieve the digital literacy necessary for college and the workforce via e-learning platforms. To improve students' academic performance, educators may use data analytics to monitor their progress, identify problem areas, and create individualised plans of action. These technological developments provide the promise of a more flexible and inclusive educational system in classes with students from diverse backgrounds and with varying levels of ability.

While bringing online learning to secondary schools has many potential advantages, it also presents certain challenges. Infrastructure constraints, such as intermittent power, poor device availability, and sluggish internet connections, continue to be major problems in many places, particularly developing countries. The digital divide is making it harder for students from low-income backgrounds to close the achievement gap by limiting their access to online learning materials. Some educators may be hesitant to embrace new ideas or may not have the proper training to incorporate technology into the classroom in a meaningful way, and students may struggle to maintain their motivation and focus while studying online.

Among the many educational difficulties brought forth by this tendency, these are just two examples. Data privacy, cybersecurity, and screen fatigue are some of the problems that raise doubts about the long-term viability and security of online education. Another essential component in assessing the success of e-learning is integrating it into the present curriculum and giving educators the tools they need to correctly deliver material via digital platforms. Unfortunately, many secondary schools, particularly those in rural or underprivileged regions, have had an uneven transition to online learning, which has had an impact on student interest and performance. While some schools have discovered ways to combine online resources with traditional teaching methods, others have faced difficulties with logistics and pedagogy that hinder the effectiveness of digital learning.

The main objective of this study is to analyse the benefits and drawbacks of online education in secondary schools. Evaluating teacher and student viewpoints, usage frequency, accessibility, and the overall effect on teaching and learning results, this research aims to give a comprehensive understanding of how e-learning operates at the secondary level. The outcomes will reveal the areas that have been successful and those that still need attention to ensure a fair and efficient implementation. Understanding these aspects is crucial for stakeholders, educators, and politicians who want to make the most of technology in education.

As more and more schools throughout the world embrace technology-based methods of instruction, it is equally important to make sure that online courses are affordable, accessible, and sustainable long-term. By focussing on secondary school—the first and most formative stage of a student's academic journey—this research contributes to the broader discussion around digital revolution in education.

It emphasises the need of creating adaptable e-learning solutions based on research in order to fulfil the needs of students in ever-changing classrooms. Furthermore, the paper encourages dialogue on how to bridge the digital divide, enhance programs that prepare teachers, and construct e-learning platforms that can withstand educational disruptions. Evaluating the pros and cons of online education can help shape policies and practices that shape secondary education in the modern digital age.

LITERATURE REVIEW

Serin, Hamdi. (2022). The significance of online education has increased in recent years, thanks to advancements in ICT. Although E-Learning has been successfully deployed, many programs still fail to meet their objectives. The program's success or failure has prompted researchers and practitioners in the area

of online education to examine its components. The main objective of this research is to determine the most effective structure for secondary schools in Iraq to include and enhance E-Learning.

This study seeks to address the lack of theoretical and empirical research in the field by investigating the effectiveness of online learning within the educational systems of Iraq and the Arab world. A conceptual framework that incorporates the essential features and demographic information is proposed by the study. Educational institutions and governments may improve E-Learning program design, execution, and assessment by using the offered conceptual framework.

Jacksi, Karwanet al., (2021) This study aims to examine the possible advantages of online education for educators working in secondary schools. It is both necessary and relevant for secondary schools to consider how to effectively integrate various types of ICT into their curricula. Students will now find it much simpler to use contemporary tools. It is the school's duty to encourage the use of instructional modules available for download from the service's website and to give instructors with professional development opportunities to enhance their technological competence. The software does have certain restrictions, though: To begin, the educational programs provided via E-learning have a serious problem with their content. In public, non-mandatory institutions, the second problem is that E-learning does not have a strong technological foundation.

Thirdly, when teachers have problems embracing this sort of instruction, there isn't enough support from leaders and instructors, and no one pays enough attention to the worries of teachers and students about the value of online education. Examining the many academic accounts of e-learning, this research examines the positive and negative aspects of this method, as well as its effects on the pedagogy and student outcomes of secondary schools.

Nassar Hassen, Mohammed. (2020). This study aims to uncover the challenges faced by E-learning system users at the University of Bisha in their pursuit of second language proficiency. Also, it wants to know whether E-learning actually helps EFL students learn English as they thought it would. Educators and students both face challenges while using E-learning. These challenges include academic, technological, and administrative ones. The study sample included 261 English as a Foreign Language (EFL) students and 36 faculty members from the University of Bisha's English department.

The researcher collected data by having both students and teachers fill out three-part questionnaires. When comparing male and female EFL students' use of E-learning activities, the researchers did not find any statistically significant differences. Hence, it argued that not all areas of teacher and student challenges may predict academic achievement. Academics, administration, and technology were determined to be the most major barriers to E-learning at University of Bisha. According to the results, students understand the benefits of online education.

To them, it seems like the future of online English classes is bright and sunny. The biggest advantage of the E-learning system is its adaptability; it can be accessible anytime, anywhere, and it helps students achieve their objectives of improved communication and more interesting learning experiences.

Charan, Shiv. (2019). Examining the pros and cons of online education at Indian colleges is the focus of this study. Intuitive knowledge of online education and its uses in schools is the goal of this research. It also investigates why e-learning has been moving at a snail's pace. The article continues by discussing the role of librarians in facilitating an effective online learning environment for university students.

Bari, moncefet al., (2018) In this essay, we will discuss the current and future challenges of using eLearning technology in educational institutions. The way we learn has been transformed by ELearning, which makes

use of newly developed technologies and applications. The current status of eLearning is explored in this research. The brief history of eLearning begins with PLATO, the first generalised computer-assisted teaching system, in the early 1960s and continues through the rise of social media for learning and MOOCs (Massive Open Online Courses) in the 2010s.

The research then moves on to a concise overview of the evolution of online education before diving into a detailed analysis of the many current platforms, applications, and technologies used in the field, such as CD-ROMs, virtual worlds, and tools for making video games. Finally, we tackle the following new challenges: establishing software quality standards and frameworks; ensuring that all teachers have adequate ICT skills; obtaining full buy-in from upper management for the eLearning system's operationalisation and sustainability; and, finally, finding the right strategies and understanding how technology and pedagogy work together for effective eLearning implementations in terms of cognitive and pedagogical aspects.

Arkorful, Valentina. (2014). This study aims to examine the effectiveness of online education in higher education. A major issue in today's colleges is how to incorporate modern forms of information and communication technology into the teaching and learning process.

This study serves as a scholarly basis for future research on e-learning and its applications in higher education by reviewing the work of other researchers and organisations on the issue. It shows some viewpoints that people and organisations all around the globe have had on the use and integration of e-learning technology into education via surveys and other observations. The article takes a look at the many academics' ideas on online education, how it works in relation to the classroom, and the benefits and drawbacks of using it.

Boulton, Helen. (2008). This research mostly examines online education in secondary schools. Research with students in Key Stage 4 (those between the ages of fourteen and sixteen) over the last two years provides the basis for this. This article summarises current research in the topic and focusses on the challenges faced by students, the changing role of the learner, and the possible consequences of online education. The author argues that schools should prepare before integrating online learning into the Key Stage 4 curriculum. Finally, it discusses the study's findings, which bring attention to a number of considerations that schools should make prior to introducing e-learning.

RESEARCH METHODOLOGY

Research Design

The advantages and disadvantages of online education in secondary schools were assessed using a descriptive cross-sectional survey methodology. For a comprehensive evaluation of e-learning-related student experiences, attitudes, and results, this methodology was selected as it permits the gathering of quantitative data at a singular juncture.

Population and Sample

Students attending secondary schools who make use of online learning environments were the intended subjects of this research. Using stratified random selection, 126 kids were chosen to represent a range of grade levels and school types (public and private). To account for any differences in e-learning access and results, stratification was performed according to school type.

Data Analysis

Once data collection was finished, the information was analysed using descriptive statistics in Microsoft Excel. Percentages and distributions of all category variables were calculated. The data was presented in a

tabular format to highlight the distribution patterns of access, benefits, challenges, and academic consequences associated with e-learning..

DATA ANALYSIS AND INTERPRETATION

Table 1: Frequency of Access to E-learning Platforms

Frequency of Access	Number of Students	Percentage (%)
Daily	40	31.7%
2–3 times a week	36	28.6%
Once a week	20	15.9%
Occasionally (rarely)	18	14.3%
Never	12	9.5%
Total	**126**	**100%**

As seen in Table 1, a significant number of secondary school students regularly use online learning platforms. A significant number of students seem to be highly engaged with and dependent on digital resources for their education, as 13% of them (40 out of 126) reported using an online learning platform daily.

In addition, thirty-six students (or 28.6% of the total) utilise these platforms at least twice a week, suggesting regular usage that likely enhances their ordinary learning activities. Another 15.9% (20 students) utilise e-learning platforms once weekly, however this is mostly due to supplementary or occasional usage for specific assignments or review purposes.

Conversely, 13.3% of students reported using e-learning platforms sometimes, and 9.5% of students never use them (12 students). According to this distribution, the majority of students are making use of e-learning resources, while a sizeable minority either doesn't use them often or doesn't interact with them in any way.

This can be due to a lack of motivation, poor infrastructure, or inadequate digital literacy. Based on our findings, individualised programs to improve accessibility and encourage regular use are crucial for ensuring that all students can benefit from educational opportunities.

Table 2: Types of Devices Used for E-learning

Device Type	Number of Students	Percentage (%)
Smartphone	60	47.6%
Laptop/Computer	40	31.7%
Tablet	15	11.9%
Shared school devices	11	8.8%
Total	**126**	**100%**

You can see all the many devices that students use for online learning in Table 2. Nearly half of all students (46.6%) use their mobile phones to access digital learning materials. The need of having accessible platforms and apps that are compatible with mobile devices is highlighted once again. A third of students use computers and laptops, which gives them a more versatile and, maybe, more effective tool for more in-depth academic engagement. Since 8.8% of students use shared school gadgets and 11.9% use tablets, there is digital inequality and institutions must help students with limited personal access to technology.

Table 3: Perceived Benefits of E-learning

Perceived Benefit	Number of Students	Percentage (%)
Flexibility in learning schedule	45	35.7%
Access to diverse educational content	30	23.8%
Improved technology skills	20	15.9%
Enhanced motivation/self-paced learning	19	15.1%
No noticeable benefit	12	9.5%
Total	**126**	**100%**

Table 3 displays the perspectives of students on the benefits of online education. The most common benefit of online education is the increased schedule flexibility it provides students, which allows them to study whenever and wherever is most convenient for them (35.7%). The wealth of materials accessible online is reflected in the fact that a large proportion of students (23.8%) had access to a varied array of instructional content. People also see the benefits of improving their technical abilities (15.9%) and having increased study motivation (15.1%). There may be an unfulfilled need for improved design and assistance in terms of

engagement or effectiveness, since a small number of students (9.5%) thought that e-learning offered no noticeable benefit.

Table 4: Key Challenges Faced in E-learning

Challenge Encountered	Number of Students	Percentage (%)
Poor internet connectivity	38	30.2%
Lack of concentration at home	32	25.4%
Unfamiliarity with platforms	20	15.9%
Limited access to devices	18	14.3%
Lack of interaction with teachers	18	14.3%
Total	**126**	**100%**

Table 4 details the challenges that students face while attempting to learn online. With 30.2% of the total, sluggish internet is still a major issue, especially in areas without sufficient infrastructure. Problems with staying focused when studying at home also appeared, affecting 25.4% of students. This is likely due to the lack of a regular study schedule and designated study space. The fact that 15.9% of students said they had problems accessing some websites is another proof that students need more thorough digital literacy teaching. The fact that only 14.3% of students have access to devices and 14.2% of students connect with their teachers online further highlights the importance of digital infrastructure and the role of teacher-student communication.

Table 5: Impact of E-learning on Academic Achievement

Impact Level	Number of Students	Percentage (%)
Significant improvement	30	23.8%
Moderate improvement	42	33.3%
No change	30	23.8%
Decline in performance	24	19.1%
Total	**126**	**100%**

Figure 5 shows how students' grades changed as a result of taking classes online. Among the pupils surveyed, 23.8% reported a significant improvement in their performance, 19.1% reported no change, and 33.3% reported a moderate improvement.

Despite the potential advantages of online education for many students, these conflicting findings demonstrate that it is not a silver bullet and may even have the opposite effect for certain individuals. Many variables, such as individual differences in learning styles, accessibility to support, and the quality of the e-learning content, likely contribute to these varying results.

Table 6: Independent Samples t-test Comparing Academic Performance Based on E-learning Frequency

Group Comparison	N (Group A)	N (Group B)	Mean (A)	Mean (B)	t-value	df	p-value
Daily vs. Rarely/Never Access	40	30	78.5	70.3	2.94	68	0.004**

Table 6 shows the results of the independent samples t-test, which showed that students' academic performance varied considerably based on the frequency with which they utilised e-learning platforms, as opposed to students who used them less often or never. On average, students in Group A who had access daily outperformed their counterparts in Group B who had access less often or never (70.3 vs. 78.5). The p-value of 0.004, with 68 degrees of freedom in the t-test, is lower than the generally accepted 0.05 significant level.

The t-value came out as 2.94. The findings demonstrate that the gap in means is very unlikely to have occurred by chance and is statistically significant. As a consequence, the findings suggest that students' academic performance improves when they consistently use online learning platforms. This further proves that online courses may be a valuable supplement to more traditional forms of instruction and emphasises the need of regularly using digital learning resources to enhance academic outcomes.

CONCLUSION

When it comes to secondary schools, implementing online education presents a complex web of opportunities and obstacles. Although digital platforms provide superior learning experiences, availability of infrastructure, digital literacy, and pedagogical adaptability are critical to their effectiveness.

Higher participation rates, more tailored learning strategies, and easier access to a variety of resources are just a few of the many benefits of online education that the report outlines. Problems that often stand in the way of these advantages include technological roadblocks, unequal access, teacher unreadiness, and student motivation.

Solving these difficulties and making online education accessible, durable, and effective for kids would need a collaborative effort from communities, educators, and policymakers. Investment in infrastructure, ongoing professional development for educators, and the development of context-aware e-learning models are all necessary for digital education to fulfil its potential.

As schools continue to integrate technology, it is essential to consistently assess and enhance e-learning procedures to ensure equitable and effective learning environments. This study contributes to the ongoing conversation about how to make online education more effective by providing a comprehensive analysis of the current state of online education in secondary schools.

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