Project Report

On

Unveiling The Virtual Classroom:

An In-Depth Analysis of The Online Education System

Submitted
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Faculty Project Build-A-Thon 2023

Session: **Cohort 1**
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1. INTRODUCTION

Online learning is how education is delivered these days. Students began taking classes online throughout the pandemic. The pandemic scenario caused many educational systems to alter, and this had an impact on how students learned. In the past, students in the school studied on blackboards, but nowadays they are used to whiteboarding on a white screen. among other terms, is frequently referred to as "e-learning". However, "distance learning" comes in a variety of forms, including online learning. These days, everyone is dealing with health and financial issues. In the midst of the pandemic, some people lost their jobs. The financial situation was also not excellent at the time.

1.1. Overview

Online education began during the time of the pandemic. By using apps like Zoom, Google Meet, YouTube, and others, schools were able to function. However, several of the parents found this learning process to be uncomfortable. Since practically all schools and universities today use online means of instruction, there are numerous points of view regarding the same, both positive and negative. Before these scenarios, there was always a heated argument surrounding whether online classes or offline classes were superior.

Science has made it possible for us to quickly learn about any location, whether at home or not, using the internet alone. The sector of education can now make extensive use of the scientific advancements. E-learning follows the same rules. However, the parents who borrowed money from a bank to pay for their kids' tuition were in debt. Bring technological devices for your kids to use to access online courses, such as mobile phones and tablets. Many people could afford it, but many others could not. The parents, however, changed their thoughts and opted to use this new approach to schooling because they did not want to interrupt their children's education.

1.2. Purpose

The goal of this study is to gather information from many sources and use it to provide the best analysis possible. Technology is the only thing that can be as helpful in this. Online learning has advanced and made a lot of information available to both students and teachers. Exam grades were severely impacted by the use of electronic devices and the effect of online education on students' performance. The learners and parents' burdens increased as a result of the internet connectivity challenges. Students' use of social media presented a problem for the teaching community in managing the students' interests. The amount of sleep and study time the student got was crucial in reaching the desired result. Lastly, in order to improve the online education system, student satisfaction must also be evaluated.

The purpose of this project is to comprehensively analyze and understand the dynamics of the online education system in India, assessing its impact, challenges, and potential for improvement, with the ultimate goal of informing policy decisions and enhancing the quality and accessibility of virtual learning experiences in the country.

2. LITERATURE SURVEY

The work-from-home online education model may be popular with both teachers and students, but can digital education provide a long-term solution as an alternative in these trying times? The student's total development includes not only academic progress but also physical and mental development.

Blackboards, chalk, books, and pens are some of the common learning aids used in traditional education. Within the four walls of the classroom, students learn from the teachers who are present and receive immediate help from them when they are having problems or questions about a particular subject. The students attend courses every day since they are registered at the institution for a specified term or time period. Since technology has advanced, white boards and markers have taken the role of boring blackboards, and projectors are now employed to liven up lessons. Aligned with Audio Visual Display - The usage of audio visuals, power point presentations, and digital boards was aligned with the other instructional pedagogies as learning became more complicated.

2.1. Existing problem

Online learning, like any educational modalities, offers advantages and disadvantages of its own. While attending school, students received discipline. While the teacher is speaking, pay close attention and take notes. But nowadays, kids are so intelligent that they go to school in shorts and a uniform. Demonstrations and hands-on learning are crucial components of education. Online instruction is lacking in demonstrations. While in school, kids learn by viewing tangible items, animated videos are used in this online learning environment.

Children are required to spend a lot of time in front of screens because of the online learning approach. They need to spend more than six hours at home for this online learning if they only learn for six hours in school. Children who live in remote locations must deal with a variety of issues, including network issues that cause hearing and visual disruptions. There are numerous difficulties that parents as well as pupils must face. I chose this topic in order to comprehend both the issues facing parents and pupils. Thus I can determine whether using online learning methods is a blessing or a curse.

Today, technology plays a significant role in their lives. Kids are spending an increasing amount of time in front of screens thanks to technology. This has caused their parents to be concerned about the disparity in their health. A pupil won't be able to achieve anything on his own if he is totally reliant on technology while still in school. However, with this form of e-learning, pupils must spend a lot of time in front of the screen.

Students are unable to concentrate on learning any more. Thus, their study captures this effect. The lessons that teachers are teaching are not being fully assimilated by the students. It demonstrates their lack of confidence. Students should be urged to study with confidence by taking prompt action as this is just the first step.

Along with mental health issues, people also experience physical health issues including eye strain, headaches, and weariness from spending too much time in front of a screen. Additionally, extracurricular activities and sports education have been discontinued.

2.2. Proposed solution

Modern technology is quite prevalent among today's youth. They try to swiftly assimilate new information if it is presented. They are attempting to integrate the modern e-learning. The generation of today is tech-savvy. As a result, they quickly assimilate all technological sorts. They actively use technology to study across various platforms, and they desire high-quality, interactive, engaging, on-demand course materials and support that is available whenever and wherever they need it. There are new things in every generation. According to the current generation, every child has the desire to learn something new. The impact of several elements, including sleep and study habits, social media use, the type of device being used, and many others, should be taken into account while analyzing the online education system.

3. THEORITICAL ANALYSIS

Surveys are carried out to learn more about a population. Sometimes the purpose of the survey is to collect data on every component of the population. However, it is frequently impractical or impossible to survey the entire population. This may be due to financial limitations or another type of practical limitation, including the inability to identify every member of the community. A survey can be replaced by choosing a sample from the population and interviewing just those units in the sample.

3.1. Block diagram

The time has come for online schooling given the current circumstances. But the country's next major issue is how it affects kids. So, can we each make a small contribution? so that everyone is aware of the issues the students are facing. And efforts to find a solution to this problem will undoubtedly be made. In Fig. 1, the block diagram is displayed.
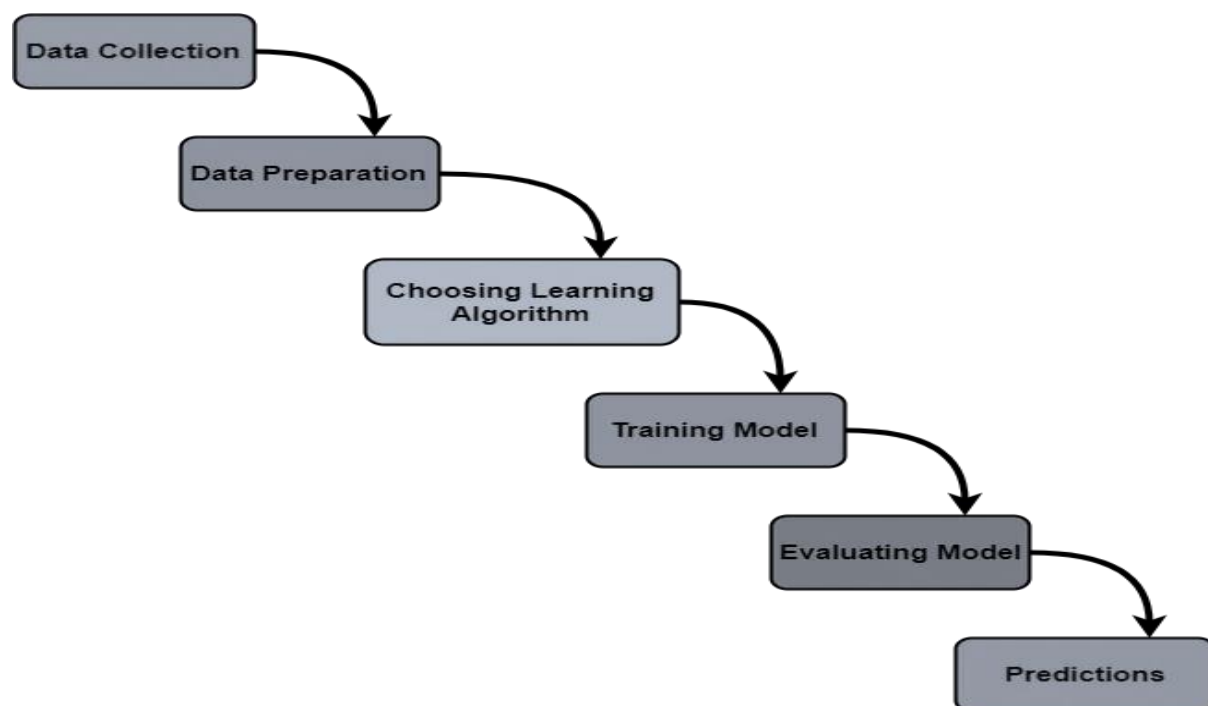

Fig. 1. Block diagram of Online education system analytics

3.2. Hardware / Software designing

Requirement	Specification
Operating system	Microsoft Windows UNIX Linux®
Processing	Minimum: 4 CPU cores for one user. For each deployment, a sizing exercise is highly recommended.
RAM	Minimum 32 GB. For more information, see Memory settings.
Operating system specifications	File descriptor limit set to 8192 on UNIX and Linux
Disk space	A minimum of 7 GB of free space is required to install the software and 5 GB of free space on the drive that contains the temporary directory used by IBM Cognos components. An environment variable points to the temporary directory. On Windows this variable is TMP. On UNIX and Linux, this variable is IATEMPDIR For all databases, the size will increase over time. Ensure that you have sufficient disk space for future requirements.
Printer	To ensure that reports print properly on Windows, Adobe Reader requires that you configure at least one printer on the computer where you install the Application Tier Components. All reports, regardless of the print format that you choose, are sent as temporary PDF files to Adobe Reader for printing.
Email server	To email reports, the system requires the ability to use and access an email server.

Requirement	Specification
Java™ Runtime Environment (JRE)	An IBM JRE is provided as part of the install with IBM Cognos Analytics on all operating systems.
Database	You must have one of the following databases available to store IBM Cognos data: • Oracle • IBM Db2 • Microsoft SQL Server • Informix® The Easy (previously Ready to Run!) option installs and configures an Informix database as the content store. TCP/IP connectivity is required for all database types.

Web browser	For all Web browsers, the following must be enabled:
	• cookies • JavaScript

4. EXPERIMENTAL INVESTIGATIONS

Analysis or the investigation made while working on the solution with help of dashboards. A dashboard is a graphical user interface (GUI) or a visual representation of key information and data, typically designed to provide users with a quick and easy way to access and understand complex information at a glance. Dashboards are commonly used in various fields, including business, technology, and data analysis, to present data in a visual and organized manner.

Adaptive Technology Integration: Through our analysis, we observed a growing trend of adaptive technology integration in the Indian online education system. This technology is personalized to cater to individual learning styles and has the potential to enhance student engagement and comprehension.

Challenges of Digital Divide: Our research highlighted a concerning issue of the digital divide, particularly in rural and underserved areas of India. Despite the growth of online education, access to technology and the internet remains a significant challenge, underscoring the importance of equitable solutions to ensure inclusive online learning opportunities.
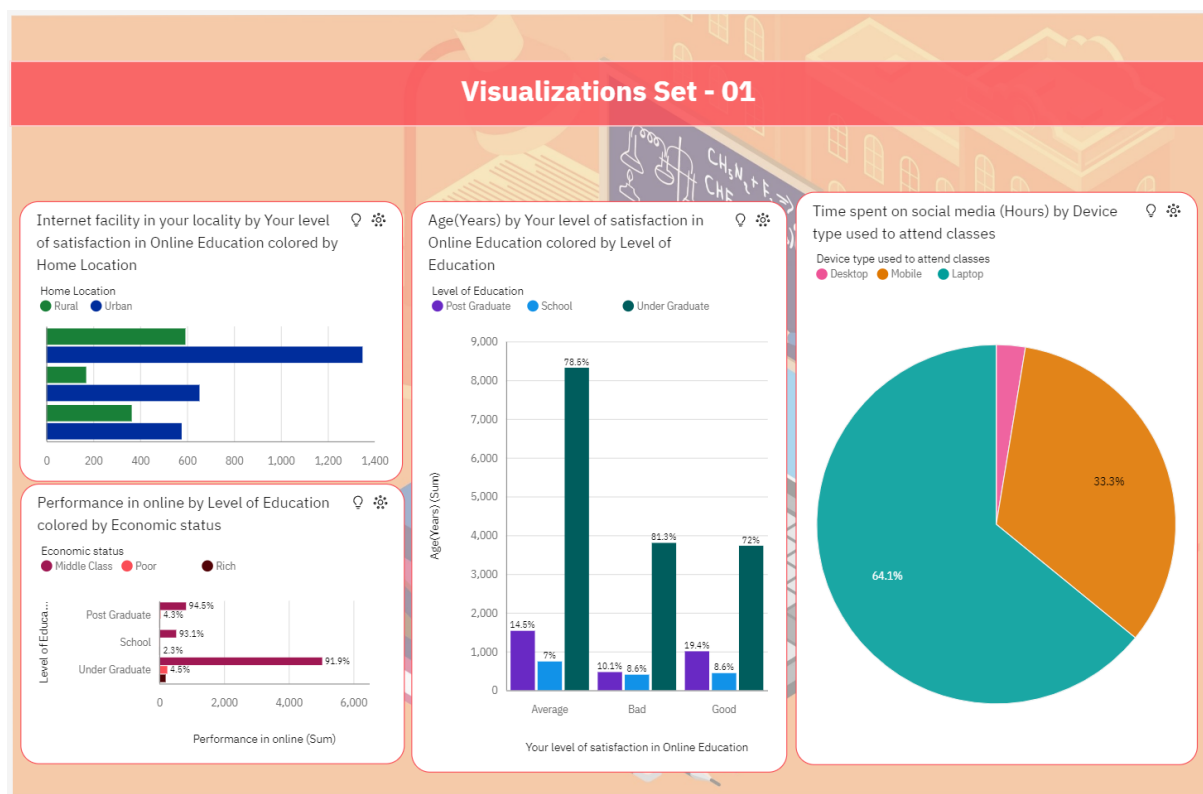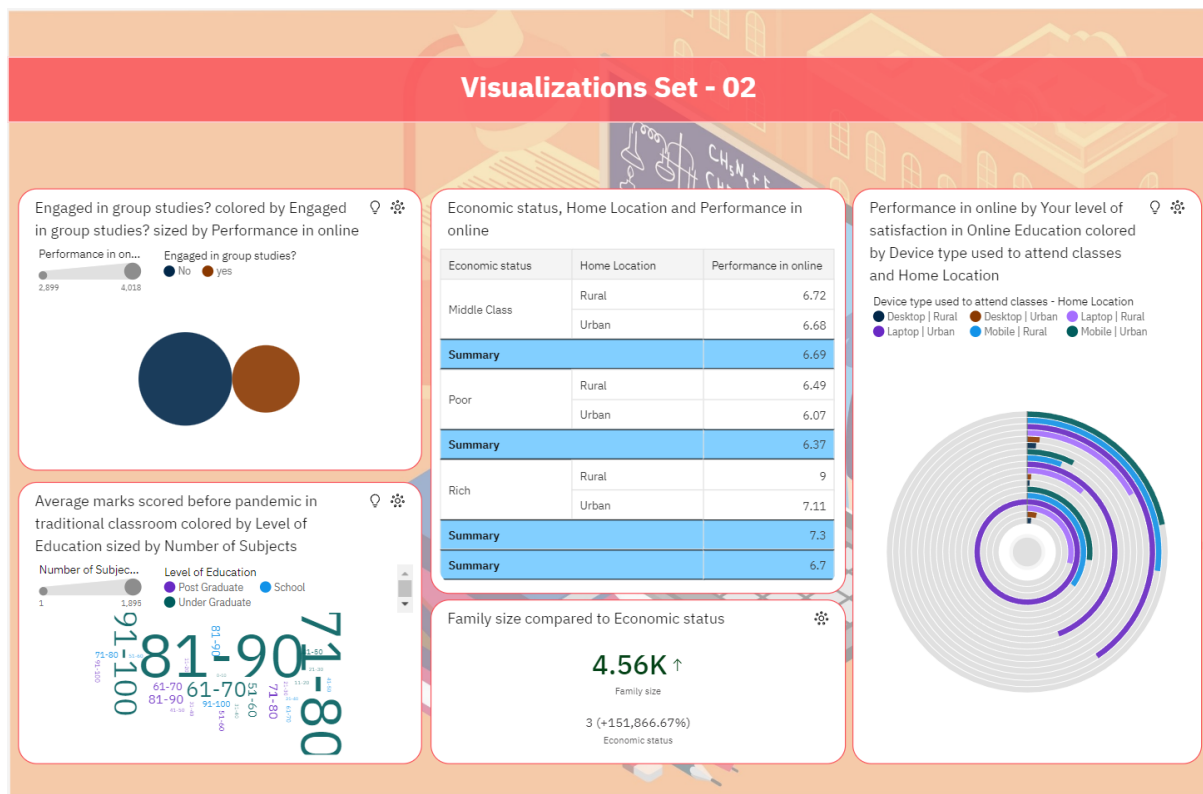

Fig. 2. Dashboard representing visualizations

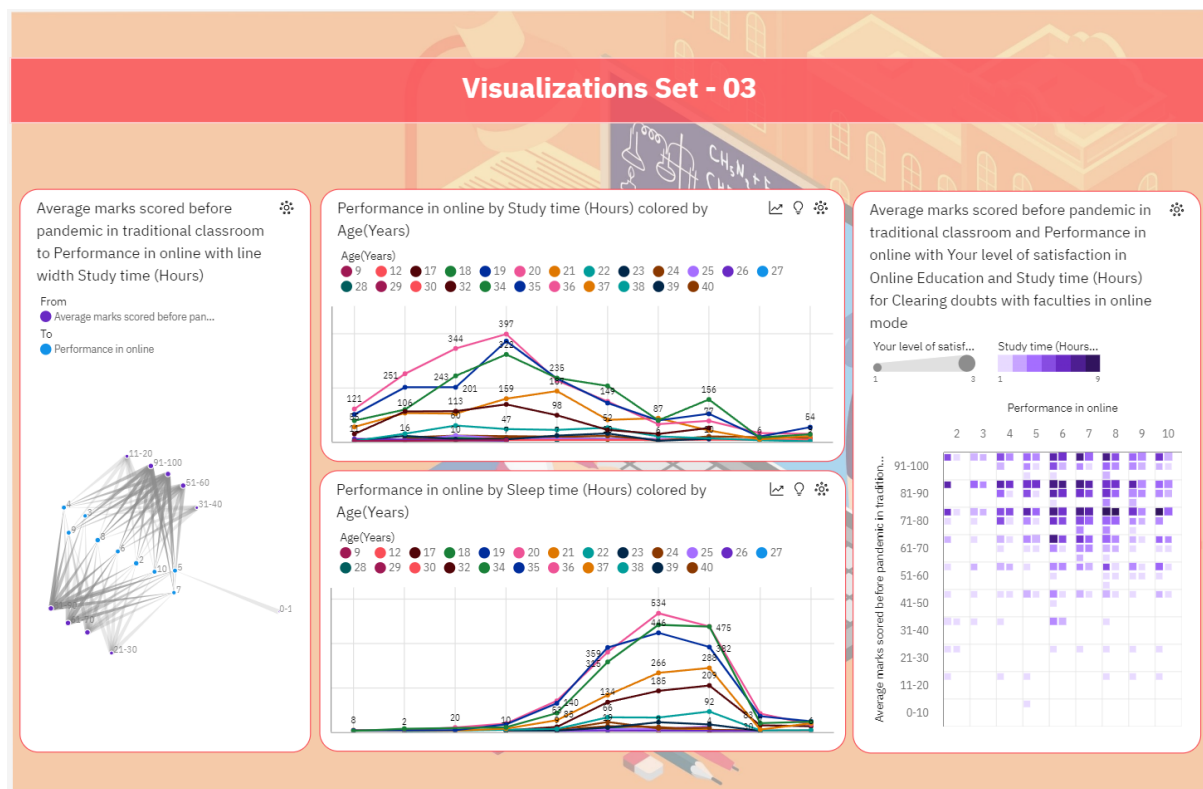Fig. 3. Dashboard representing visualizations

Fig. 4. Dashboard representing visualizations

5. FLOWCHART

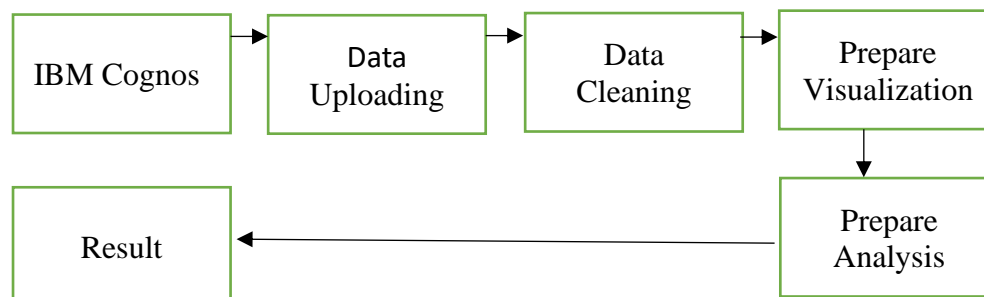Diagram showing the control flow of the solution

Fig. 5. Flow chart of solution proposed

Immediately following traditional classroom instruction, students find it challenging to transition to an online learning environment. They are unable to adapt to the online learning because of the abrupt change. Students who have only ever studied in a traditional classroom setting find it difficult to concentrate on online learning environments. They must accept the new learning environment with an open mind, it is crucial.

Many learners lack the high-speed internet connections necessary for online learning. They struggle to launch virtual learning systems and other platforms that need an internet connection as a result. They have technical problems because they don't know much about computers and technology. The amount of time it takes you to complete the course and participate in all live sessions might be significantly impacted by your internet connection speed. If you are having trouble downloading certain relevant information, there may be a problem with your connectivity.

When learning online, students lack appropriate communication skills. Teachers give students homework to help them with their reading and writing, but it's possible that they may not be able to write clearly enough for teachers to comprehend the purpose of their assignments. Due to the new educational approach, some children find it difficult to talk to their professors and peers. It could be brought on by a lack of interest, inadequate technological aptitude with regard to applications and video calls, or an inability to communicate oneself well in live chats, emails, or text messages.

6. RESULT

6.1. Story Visualizations

The story of the online education system is a tale of transformation and adaptation driven by technological advancements, changing educational needs, and external factors such as the COVID-19 pandemic.
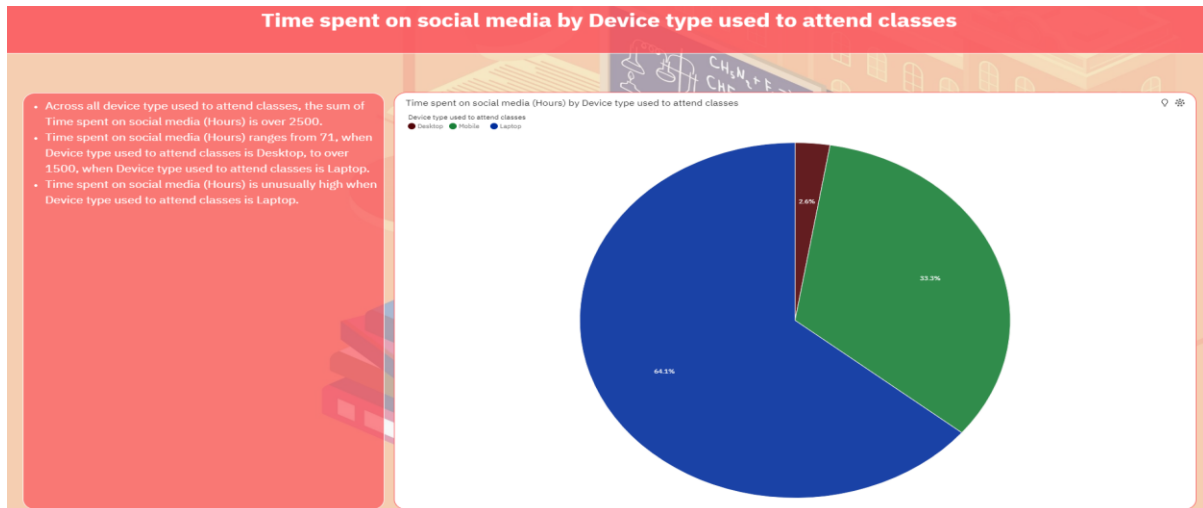
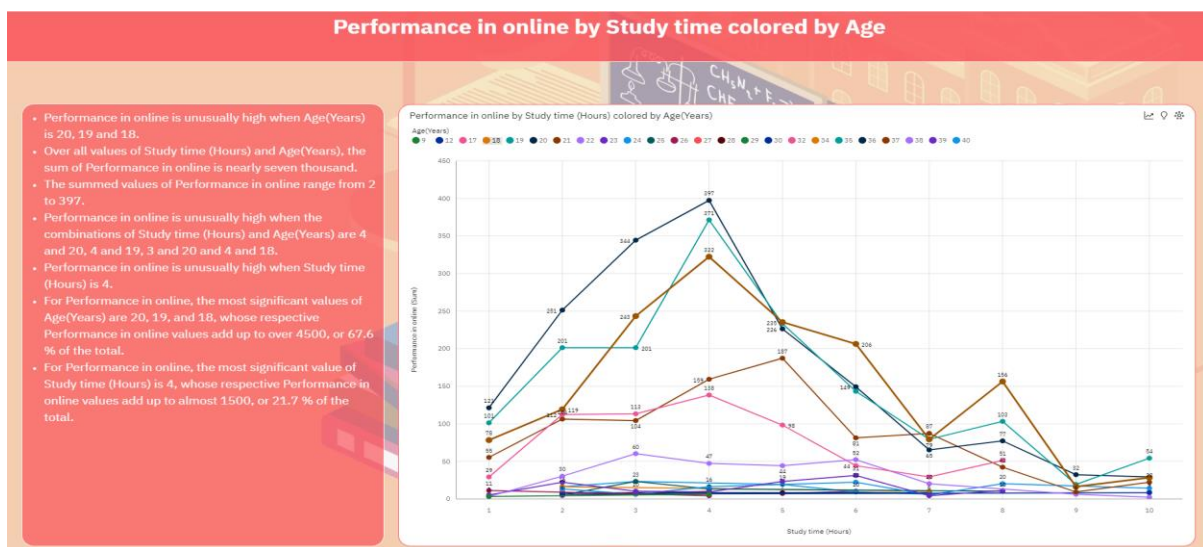Fig. 6. Story represents Time spent on social media

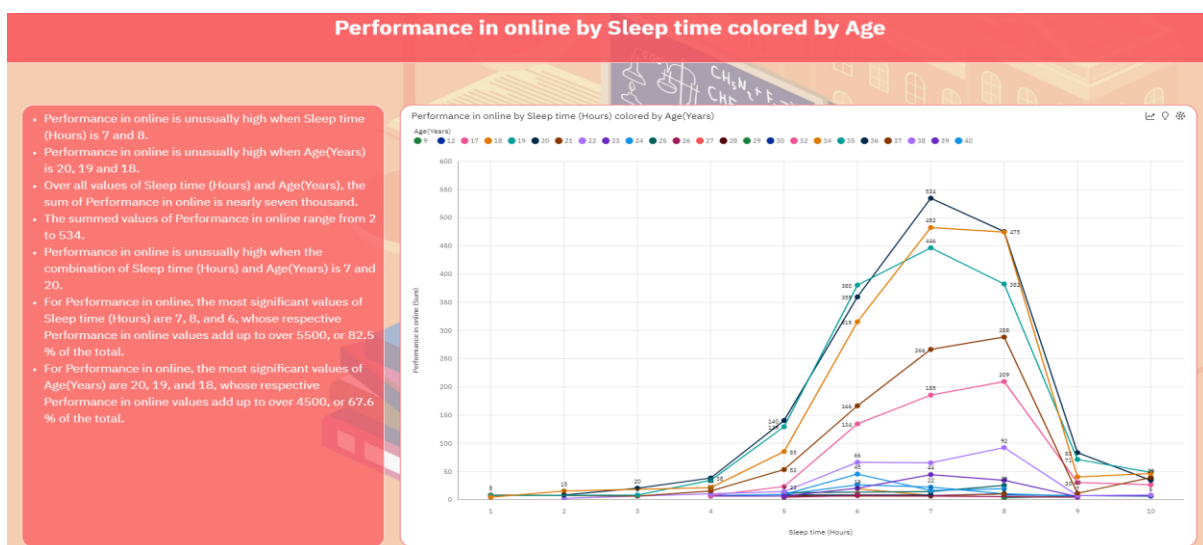Fig. 7. Story represents impact on performance w.r.t study time

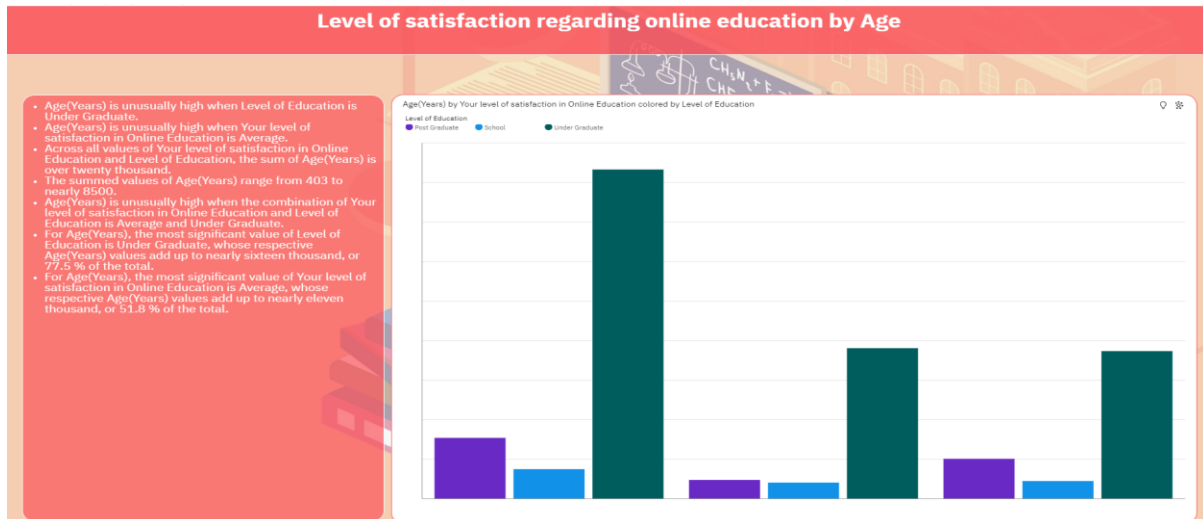Fig. 8. Story represents impact on performance w.r.t sleep time

Fig. 9. Story represents an analysis of Satisfaction of student w.r.t age
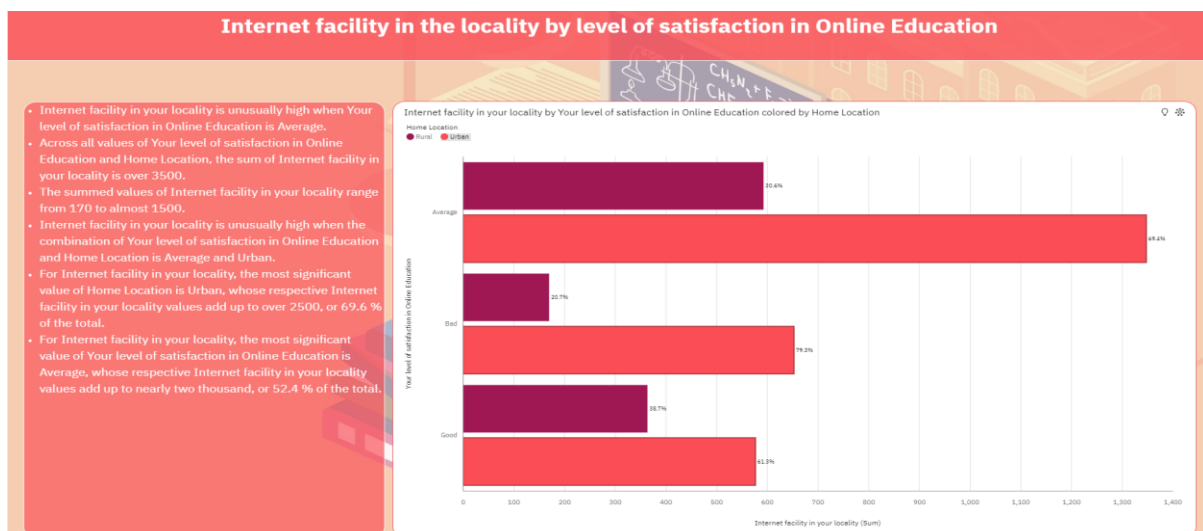

Fig. 10. Story represents an analysis of Internet facility w.r.t satisfaction in online education
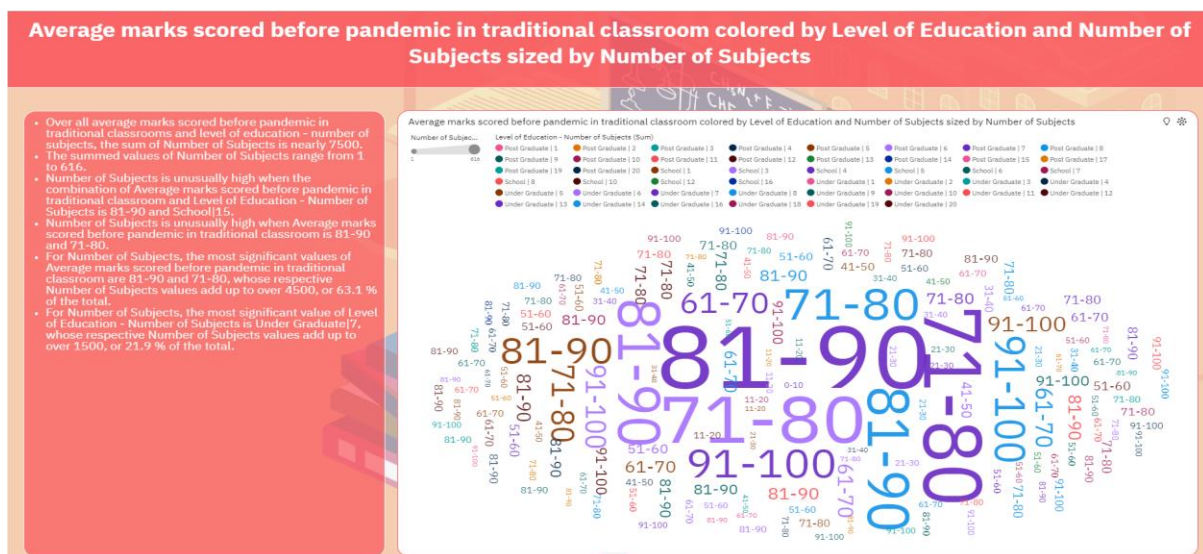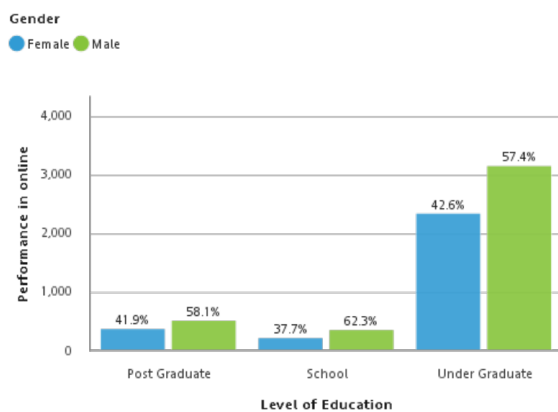

Fig. 11. Story represents an analysis of Average marks scored w.r.t number of subjects
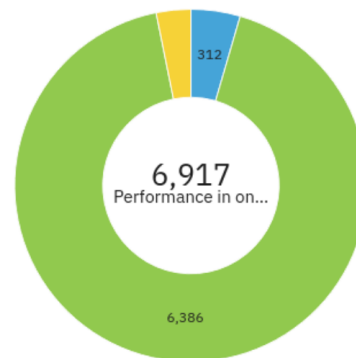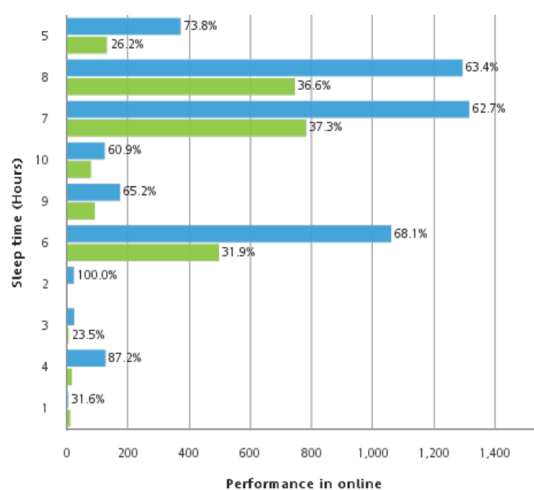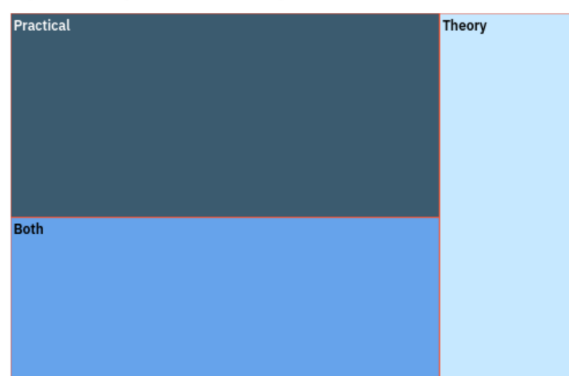
Fig. 12. Report represents an analysis of Performance in Online w.r.t number of criteria

7. ADVANTAGES & DISADVANTAGES

Above all, although having a significant impact on encouraging study, e-learning is still not a flawless instructional tool; there are still many unsolvable issues. No matter how sophisticated the technology used in e-learning is, it cannot replace direct interaction between a teacher and student as well as hands-on experience or even the education that has existed for thousands of years in human history.

The use of online learning has both benefits and drawbacks. Online education should be viewed as an enhancement and continuation of traditional learning methods. The interpersonal bonds that form within a group cannot be totally replaced by any online course, no matter how excellent. Overall, online courses shouldn't take the place of traditional ones.

8. APPLICATIONS

The examination of the online education system aids academics and institutions in focusing on the problems with the system and enhancing student performance. The examination of the online education system has a number of significant applications, some of which are described below.

1. Give students encouragement based on their performance and study habits.
2. Establishing a rapport with the students so they will open out about their concerns.
3. Assist students in staying focused.
4. The sharing of motivational tales to provide students with examples from real life.
5. Recognizing weak students and helping kids who are having trouble.

9. CONCLUSION

Education is a must right now. Education advances a person. Learning is essential for a person's development, both personally and nationally. When the guy was in school, it all began. Every day, new teaching and learning techniques are developed. And accepting all of these changes is in our best interests. Technologies have advanced. So, getting an online education is very simple.

The current chapter serves as a summary of the findings that served as the foundation for this project, using the data from the prior chapter's "data analysis" as a guide. The analysis's findings are supported by pertinent literatures that explain the findings in summary.

The study's goal is to pinpoint the elements that influence students' performance in online classrooms during the COVID-19 epidemic as well as their happiness with them. The study is quantitative in nature, and 140 respondents who were enrolled in school who completed an online survey provided the data.

10. FUTURE SCOPE

When using this online method, the system was frequently brassed. The insufficiency of knowledge and the superficiality of instruction do not guarantee the future viability of online teaching techniques. A coin has two sides, yet there is always a heavier side. E-learning techniques rely on a variety of factors. such as instruction, learners, technology, the educational process, a dynamic future, and many other things. It is critical to work together. Although it was challenging for the teachers to adopt this online approach, they persevered for the benefit of the students' future. And currently, they're attempting to teach the pupils via this medium, which is extremely admirable.

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