Project Report

On

Unveiling The Virtual Classroom: An In-Depth Analysis of The Online Education System

Submitted

In fulfilment of the requirement of

Virtual Faculty Build-A-Thon 2023

Submitted by: Submitted to:
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1. Introduction

Now a days online learning education takes place over the internet. In the pandemic situation students started learning at online platform. An online education system, often referred to as an e-learning platform or learning management system (LMS), is a digital platform designed to facilitate the delivery of educational content and resources over the internet. It has revolutionized the way education is accessed, making learning more accessible, flexible, and convenient for a wide range of learners.

Online education systems encompass a variety of tools, technologies, and features that enable educational institutions, instructors, and learners to engage in remote teaching and learning experiences. These systems have gained immense popularity and significance, especially in recent years, due to their ability to overcome geographical barriers and adapt to the evolving needs of modern education.

1.1 Overview of Online Education System

During the pandemic condition, online education system started. With this helps schools where going on with the help of apps such as zoom, Google meet, YouTube and other. But this process of learning made some of the parents uncomfortable. Before these situations arrived it was always a big-time debate regarding which is better online classes or offline classes and now that almost all schools and colleges are using online modes for teaching, there are many points of view regarding the same, positive as well as negative.

With the help of science, we can get information about any place in one fell swoop, whether it is at home or not, with the help of internet only. The advances that science has made can now be used in a large way in the field of education as well. The same thing applies with e-learning. But the parents who paid their children's school fees by taking out a bank loan were facing a financial crisis. Bring electronic items like mobiles, tabs etc. to your children to attend online lectures. For many it was affordable, but for many it was unaffordable. But not wanting to stop their children's education, the parents also decided to change their minds and adopt this new method of education.

1.2 Purpose

The purpose of this study is to acquire knowledge from all around and to develop our best analysis out of it. Nothing else can be as useful as technology for this. Online education has taken the next step in development and opened up a wealth of knowledge for students and teachers. The impact of online education

on students' performance and the usage of electronics devices impacted very hard on the grades in exam. The internet connectivity issues also added additional burden on the students and parents. Social media usage by the students also created a challenge for teaching community to handle the student's interest. The sleep time and study time of student also played an important role in achieving the required performance. Finally, the satisfaction of student is also required to be analysed for the betterment of the online education system.

1.3 Key Characteristics and Benefits

- **Flexibility:** Online education allows learners to access course materials and engage in learning activities at their own pace and on their own schedule. This flexibility is particularly valuable for working professionals, parents, and individuals with busy lifestyles.
- **Accessibility:** It eliminates geographical constraints, making education accessible to individuals from diverse backgrounds and locations. Students can participate from anywhere in the world with an internet connection.
- **Multimedia Learning:** Online education systems support various types of content, including text, videos, interactive quizzes, and simulations. This multimedia approach enhances engagement and understanding.
- **Personalization:** Many online platforms offer personalized learning experiences through adaptive assessments and tailored content, addressing individual students' strengths and weaknesses.
- **Collaboration:** These systems often include communication and collaboration tools, such as discussion forums and video conferencing, fostering interaction between students and instructors.
- **Assessment and Analytics:** Online education systems provide tools for tracking student progress, conducting assessments, and generating analytics to help instructors make data-driven decisions.
- **Cost-Effective:** For both educational institutions and learners, online education can be more cost-effective compared to traditional classroom-based learning. It reduces expenses related to physical infrastructure and travel.
- **Continual Learning:** Online education encourages lifelong learning by enabling individuals to acquire new skills and knowledge at any stage of their lives.

1.4 Advantages & Disadvantages

Online education, like any form of learning, comes with its own set of advantages and disadvantages. Understanding these can help individuals make informed decisions about whether online education is the right choice for their specific needs and circumstances.

Advantages:

➢ **Accessibility:** Online education eliminates geographical barriers, allowing learners to access courses from anywhere in the world.

➢ **Flexibility:** Learners can study at their own pace and choose when and where to engage with course materials, making it suitable for those with busy schedules or other commitments.

➢ **Variety of Courses:** Online education offers a wide range of courses and programs, including niche and specialized subjects, that may not be available locally.

➢ **Cost-Efficiency:** Online courses often cost less than traditional in-person education, as there are no commuting or housing expenses.

➢ **Self-Paced Learning:** Learners can revisit and review materials as needed, allowing for a more personalized learning experience.

➢ **Skill Development:** Many online courses focus on practical skills and career-oriented training, making them valuable for professional development.

Disadvantages:

➢ **Lack of Face-to-Face Interaction: Online education can lack the social interaction and in-person support that traditional classrooms offer, potentially leading to feelings of isolation.**

➢ **Technical Issues: Technical problems such as internet connectivity issues or platform glitches can disrupt the learning process.**

➢ **Limited Hands-On Learning: Some subjects, particularly those that require hands-on practice or laboratory work, may be less suited for online education.**

➢ **Potential for Distractions: Learners may face distractions at home or in their chosen study environment, making it difficult to focus on coursework.**

➢ **Limited Networking Opportunities: Online education may provide fewer opportunities for networking and building personal connections compared to traditional education.**

1.4 Applications

The study of online education system helps the institutions and academician to focus on the online education challenges and improve the students' performance based on the analysis. There are some major applications of the online education system analysis and are listed below.

1. Provide motivation to students based upon their performance and study time.

2. Building connection with student then they will share their problems.

3. Help students to maintain focus.

4. Sharing of inspirational stories to give them real life examples.

5. Identification of weak students and providing support to struggling students.

2. LITERATURE SURVEY

Both teachers and students may like the work-from-home online education method, but can digital education be a permanent cure, as it is an alternative in today's difficult times? Along with academic development, physical and mental development is also very important for the overall development of the student.

Traditional learning holds the use of conventional learning tools comprising of blackboards, chalks, books and pens. Confined within the walls of classrooms, students acquire education from teachers present in the classroom and get direct assistance from them in the time of inconvenience or doubts regarding the subject. Enrolled to the institution for a specific term or period, the students attend classes every day. With advent of technology, those boring blackboards were replaced by white boards and markers, and projectors were used to make teaching interesting. Aligned With Audio Visual Display – As the learning was becoming complex, use of audio visuals, power point slides, digital boards was aligned with the other teaching pedagogies.

2.1 Existing problem

As with most teaching methods, online learning also has its own set of positives and negatives. Students were disciplined while in school. Listen carefully while teaching and write down what the teacher says. But now the children have become so smart that they attend school wearing uniforms and shorts. Practical experience and demonstrations are very important for education. There is a dearth of demonstrations in online education. At school students study by observing physical objects but in this online learning animated video is used.

Due to the online learning method, children have to spend a lot of time in front of this screen. If they are only learning six hours in school, then they have to spend more than six hours at home for this online learning. Children who live in rural areas have to deal with many problems such as video interruptions and deafness due to network problems. There are many challenges that come not only to students but also to parents. I have chosen this subject to understand the

problems of students as well as parents. So that I can understand that online learning methods are a curse or a blessing.

Now technology has become an important part of their lives. And with this technology, kids are spending more and more time in front of this screen. This has made the difference in their health a part of their parents' concern. If a student is completely dependent on technology while still a student, he will not be able to do anything on his own. But with this medium of e-learning, students have to constantly sit in front of the screen and make maximum use of it.

Students are not able to focus on teaching more. So this effect is reflected in their study. Students are falling short of assimilating what teachers are teaching. Which shows a lack in their confidence. This is a preliminary step and students should be encouraged to study with confidence by taking timely measures.

Not only mental health, but they are also facing some health problems like eye strain, headaches and fatigue from seeing the screen for such a long time. Besides, sports education and extracurricular classes have also stopped.

2.2 Proposed solution

The children of the present age are very modern. If something new comes up, they try to absorb it quickly. They are trying to assimilate the current e- learning. Today's generation is techno-savvy. So they assimilate all the types related to technology as soon as possible. They are actively using technology to learn on multiple devices, and appreciate high-value, engaging, interactive, on-demand course materials and support, anytime and anywhere. Every generation has something new. Every child has the hope of learning something new according to the generation. Analysis of online education system should be made to handle the impact of various factors such as sleep time, study time, social media, device type and many more.

3 THEORITICAL ANALYSIS

Surveys are conducted to gather information about a population. Sometimes the survey is conducted with the goal is to survey every unit in the population. However, it is frequently impractical or Impossible to survey an entire population, perhaps owing to either cost constraints or some other practical constraint, such as that it may not be possible to identify all the members of the population. An alternative to conducting a survey is to select a sample from the population and survey only those sampled units.

3.1 Block diagram

Given the current situation, online education is a need of the hour. But its impact on students is the next big problem facing the country. So can we contribute something in our own way. So that the problems faced by the students are known to all. And there will definitely be efforts to find a way out of this. The block diagram is shown in Fig. 1.
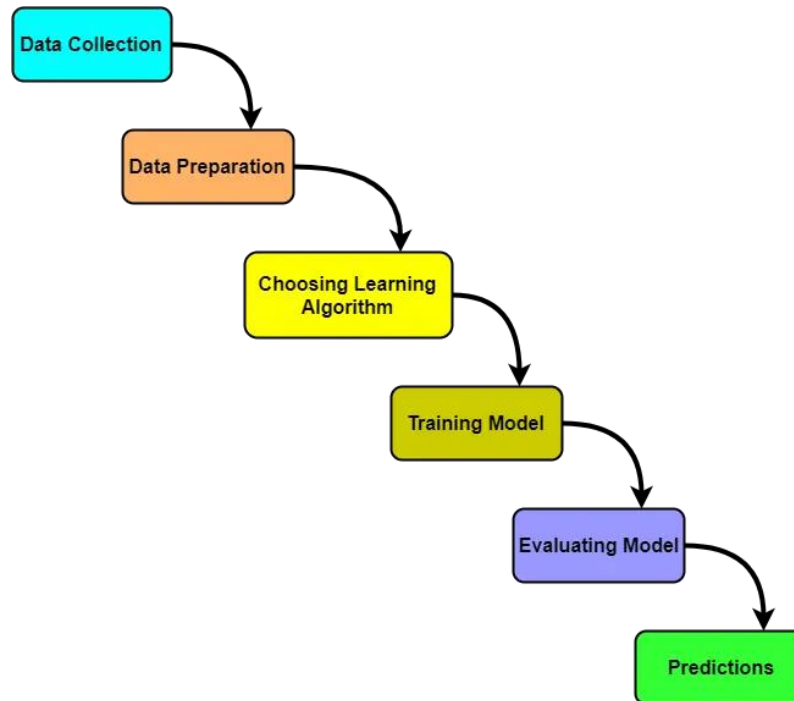
Fig. 1. Block diagram of Online education system analytics

3.2 Hardware / Software designing

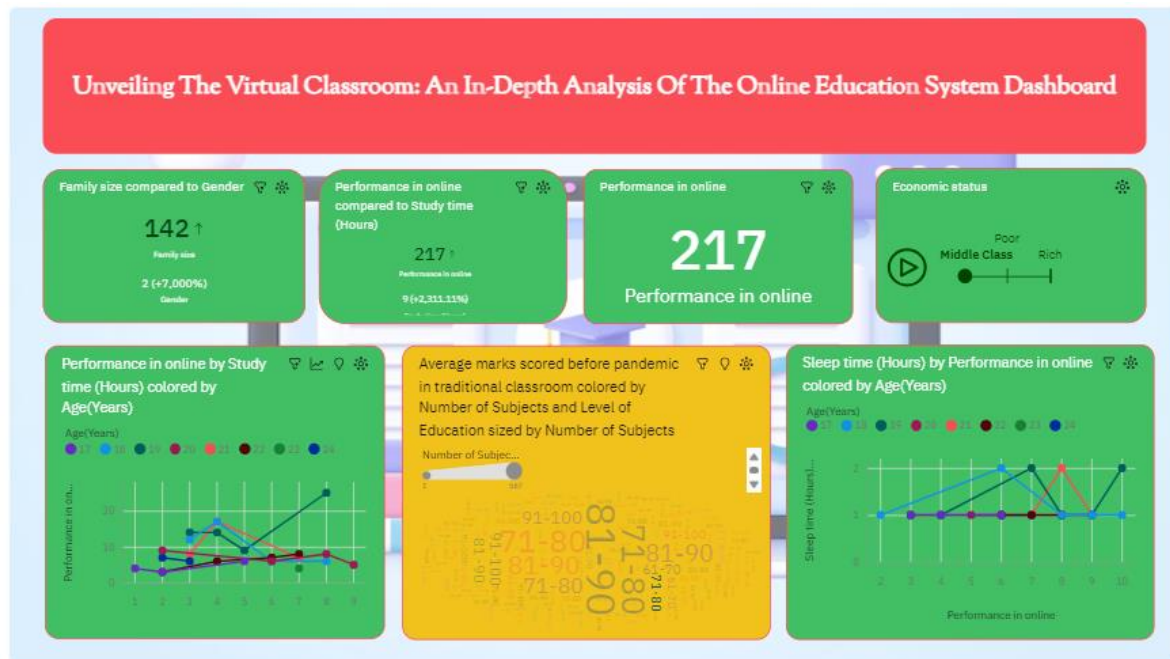| Requirement	Specification
Operating system	Microsoft Windows UNIX Linux®
Processing	Minimum: 4 CPU cores for one user. For each deployment, a sizing exercise is highly recommended.
RAM	Minimum 32 GB.
Operating system specifications	File descriptor limit set to 8192 on UNIX and Linux
Disk space	A minimum 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

Dashboard

Analysis or the investigation made while working on the solution.

Fig. 1. Dashboard representing visualizations

Fig. 2. Dashboard representing visualizations

Fig. 3. Dashboard representing visualizations

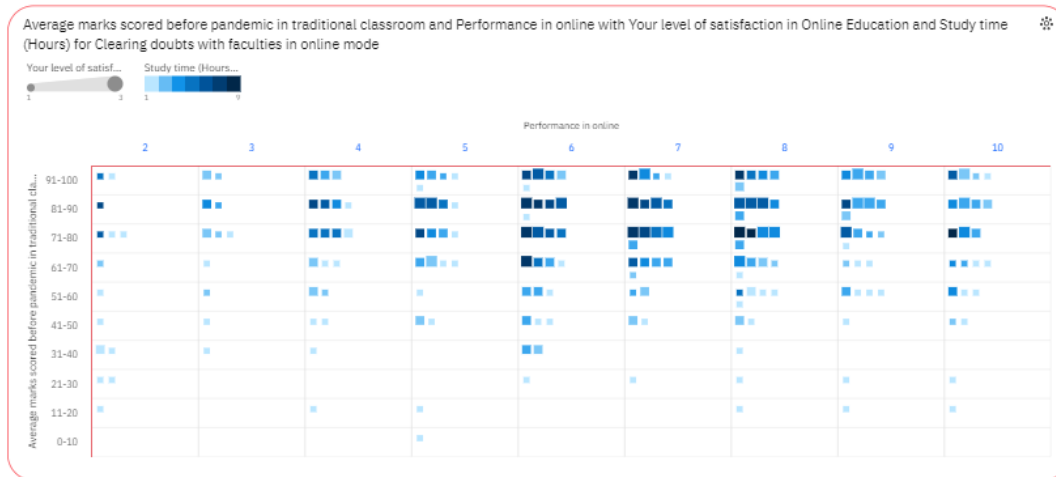Fig. 4. Dashboard representing visualizations

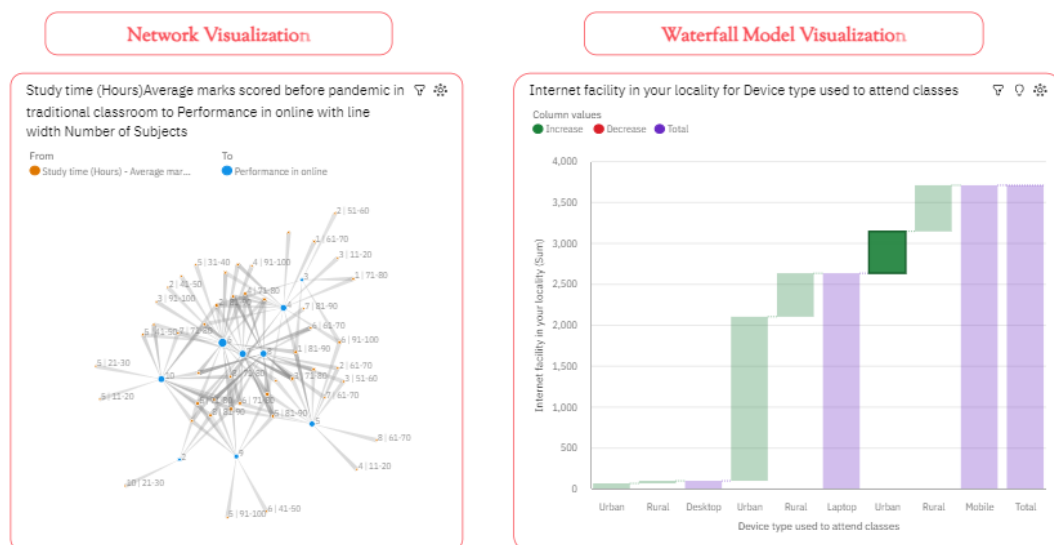Fig. 5. Dashboard representing visualizations

Fig. 6. Dashboard representing four visualizations

5. FLOWCHART

Diagram showing the control flow of the solution

Fig. 5. Flow chart of solution proposed

Students find it difficult to adapt to an online learning environment immediately after traditional classroom learning. Due to the sudden change, they are not able to adapt to the online learning. Students who have been always studying in the traditional classroom mindset are not able to focus on online platforms. It is important for them to accept the new learning environment with an open mind.

Many students are not well equipped with a high internet connection that is required for online learning. Due to this, they face problems in going live for virtual learning and other platforms that require internet connection. They face technical issues as they are not much aware of technology and computer applications. A slow and high internet connection can play an important role in how quickly you can attend the class and do not miss any live sessions. There is a possibility of poor connectivity if you find difficulty in downloading some information related to the subject.

Students lack effective communication skills during online learning. Teachers give assignments for improving reading and writing skills but there is a possibility that they might not be able to write so convincingly that educators understand the concept behind their assignments. There are some students who feel shy to communicate with their teachers and friends due to the new model of learning. It might happen due to lack of interest, poor technological skills with apps and video calls or unable to express themselves via live chats, emails or text messages.
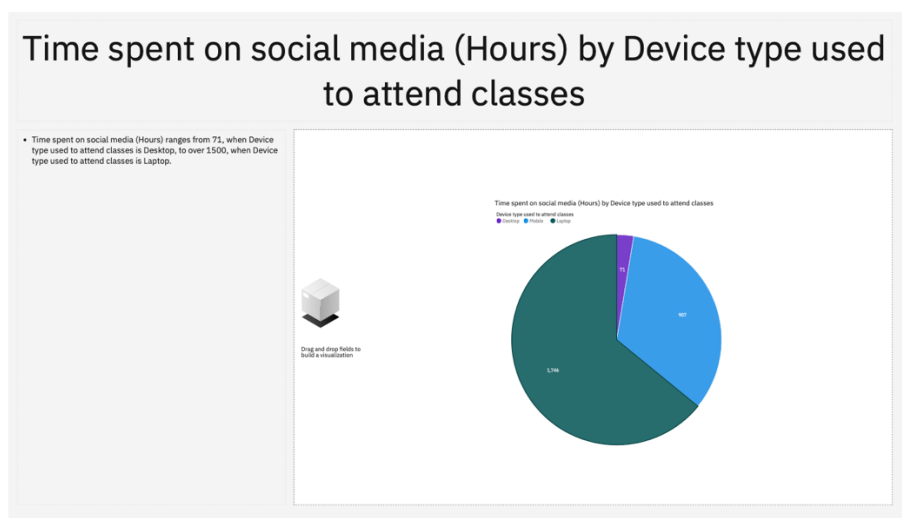
6 RESULT

Story Visualization

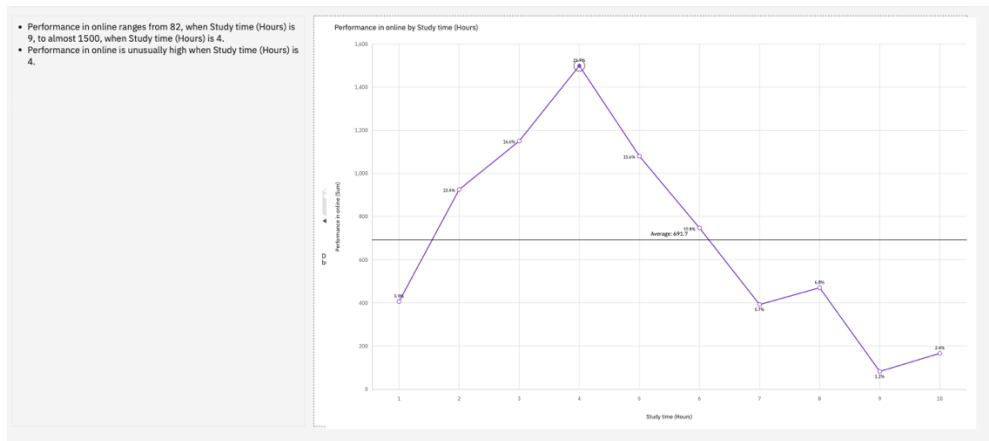Fig. 6. Story represent Time spent on social Media

- Performance in online ranges from 82, when Study time (Hours) is 9, to almost 1500, when Study time (Hours) is 4.
- Performance in online is unusually high when Study time (Hours) is 4.

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

Performance in online + by Sleep time (Hours)

- Performance in online + has a moderate upward trend.
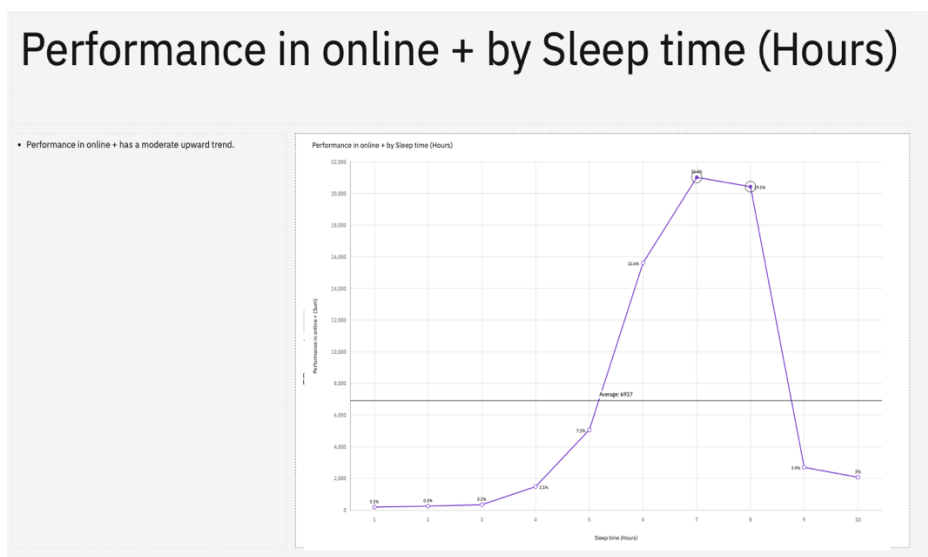
Fig. 8. Story represent impact on performance w.r.t sleep time

Age(Years) by Your level of satisfaction in Online Education

- Age(Years) ranges from over 4500, when Your level of satisfaction in Online Education is Bad, to nearly 11 thousand, when Your level of satisfaction in Online Education is Average.
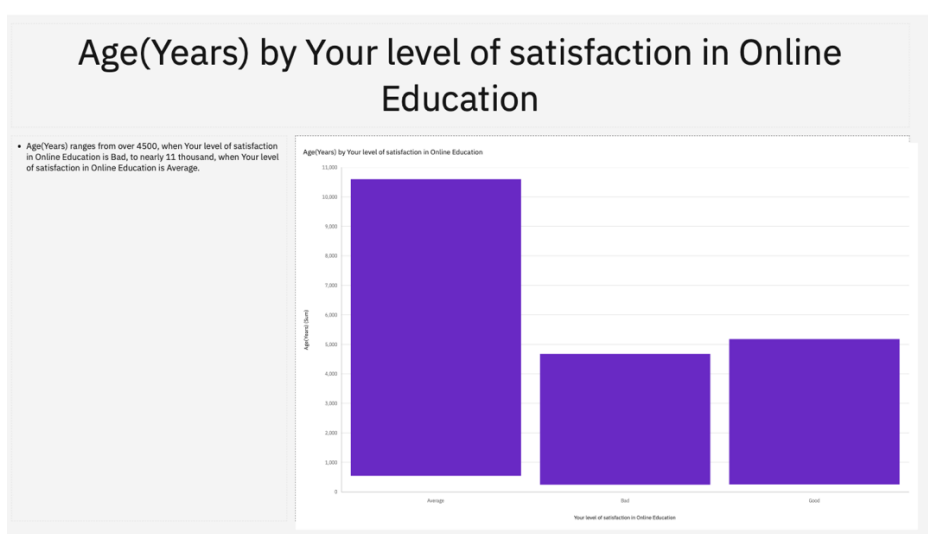

Fig. 9. Story represent an analysis of Satisfaction of student w.r.t age
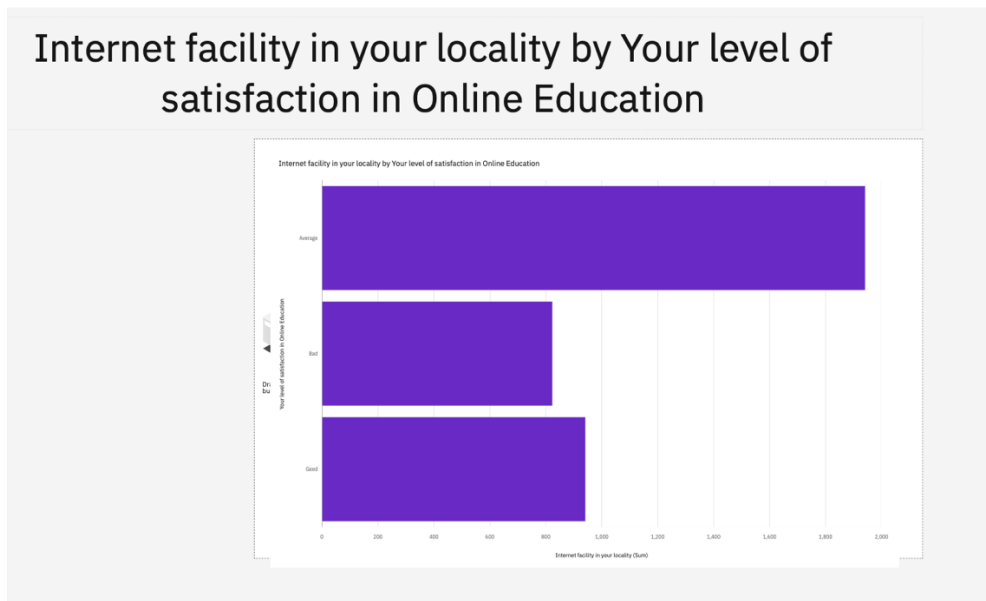
14

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

9 CONCLUSION

Education is the need of the hour. Education develops man. Man's learning is necessary for the progress of himself as well as the country. It all started when the person was in school. The methods of teaching and learning are changing day by day. And it is in our best interests to accept all these changes. Our technology has evolved. So now it is easy to get online education.

With the help of obtain results from the previous chapter "data analysis" the current chapter is being carried out as a summary of results which formed the basis of this project. Results of the analysis are supported by appropriate literatures to explain the summarised findings.

The aim of the study is to identify the factors affecting students' satisfaction, efficiency and performance regarding online classes during the pandemic period of COVID–19. The study is quantitative in nature, and the data were collected from 140 respondents through online survey who were studying in school.

10 FUTURE SCOPE

This online method often exposed the system to brass. The inadequacy of knowledge, the mere appearance of teaching, does not mean that online teaching methods will continue in the future. Even though a coin has two sides, but one side is always heavier. E-learning methods depend on many things. Such as education, students, technology, learning process, dynamic future and much more. It is important to have a joint effort. Although the teachers had difficulty in learning this online method, they endured it to make the future of the students happy. And today they are trying to teach the students through this medium, which is really very appreciated.

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