

# **Project Title : Unveiling The Virtual Classroom: An In-Depth**

## **Analysis Of The Online Education System**

### **Submitted By**

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## **Introduction**

### **1.1 Overview**

Online classes and technology have emerged as a superhero during the lockdown days. We have all been under house arrest but are still connected with the world of education. Due to the lockdown, students have not been able to stay connected with the outer world and the lack of exposure is evident. To respond to Covid-19 and to manage its spread, the countries' authorities implemented the Covid-19 protocol or regulations. This includes the decision to implement restrictive measures to reduce social gatherings and to promote social distancing under national lockdown (Pham & Ho, 2020). In addition, most social and economic activities were closed including closure of gyms, museums, movie theatres, swimming pools, and places with large gatherings, inclusive of educational institutions, all this in attempt to fight this invisible enemy (Sahu, 2020). According to Liguori and Winkler (2020), the gradual outbreak of Covid-19 posed a major challenge to education landscape as education institutions, both primary, secondary and tertiary were forced to close down and to look for alternative teaching and learning approaches.

Correspondingly, higher education institutions worldwide have been pushed to experiment e-learning as the traditional class-based learning is impossible under Covid19 regulations (Demuyakor, 2020; Ratten, 2020). It is therefore clear that Covid-19 has resulted in a major disruption in the education system, much of which is still being understood due to the severity of its effects (Bryson & Andres, 2020; Crawford et al., 2020). A number of affected stakeholders, including government authorities, academic staff, students, and parents are concerned if the shift from class-based learning to online learning will produce the desired results. While it was anticipated that the wider implementation of online learning will pose new challenges, possible innovation opportunities within higher education sector during these testing times should never be overlooked.

This project aims to search deep into the various aspects of online education, examining its strengths, weaknesses, opportunities, and challenges. The outcomes of this project will provide valuable insights for educational institutions, policymakers, and online learning platforms to enhance the effectiveness and accessibility of online education. This analysis of the online education system aims to contribute to the ongoing dialogue on the future of education and help shape a more inclusive, engaging, and effective learning environment in the digital age.

### **1.2 Purpose:**

To empirically evaluate the impact of online learning during the pandemic on students' actual course performance by comparing it with that of a pre-pandemic performance. The purpose of this project is to provide solutions to all the educational institutions or companies to enhance their skill sets and features in communicating with the learners and thereby get benefited mutually.

## **2. Literature Survey**

Online learning environments can be categorized into three central groups, fully web based, blended or hybrid format, and traditional courses using web based supplements. Fully web based courses are conducted entirely on the Internet with no face to face interaction, all aspects of the course being conducted in an online learning environment. Hybrid courses consist of both web based and classroom sessions, with a varying degree of time allotted to the online and in class sessions, depending upon the nature of the class and discretion of the instructor. It is critical to the understanding of online learning that there is not a single description that would encompass all assets of online learning environments.

In the “2013 Survey of Online Learning,” conducted by Babson Survey Research Group, revealed that the number of higher education students enrolled in at least one online course was above 7.1 million, approximately 33 percent of higher education students (Babson Study, 2014). The number of online course enrollments increased by roughly 411,000 students from the fall 2012 term to the fall 2013 term (Babson, 2014). Responses from 2,800 academic leaders were recorded and ninety percent of the participants “believe that it is likely or very likely that a majority of all higher education students will be taking at least one online course in five years’ time” (Babson, 2014, p. 1). The expansion of online courses and enrollment in elementary, high school and higher education continues to rapidly expand with no signs of slowing. Online learning appeals to diverse populations of students with ranging academic needs that traditional education classes are deficient or incapable of meeting. The demand for online courses is derived from a push “to provide quality education to all students, regardless of location and time” (Chaney, 2010, p.21). Online learning has the potential to create educational opportunities for individuals who may have faced unsurpassable barriers prior to the expansion of online educational programs.

## **2.1 Existing Problem**

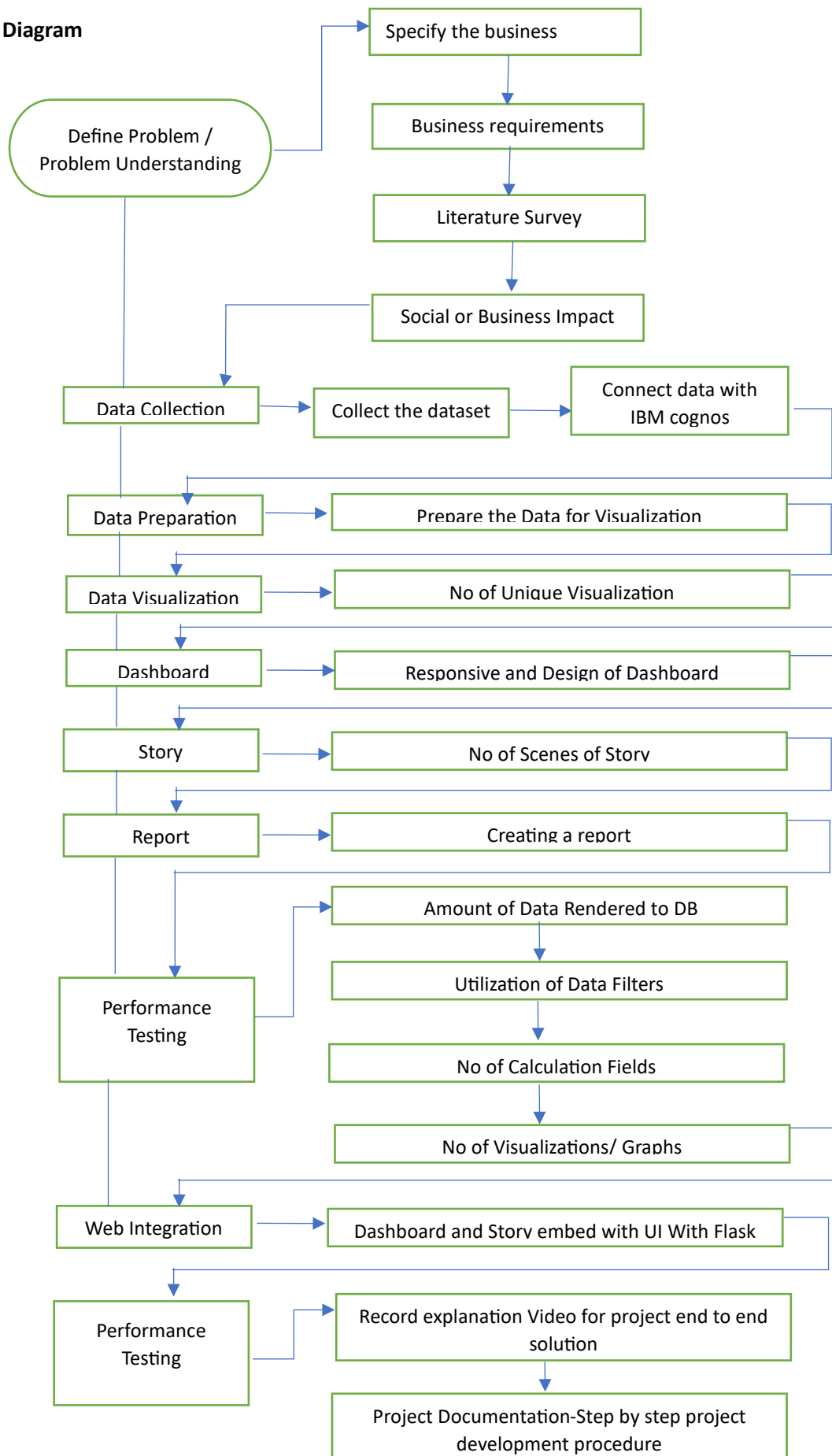
- i. Day et al. (2021) examined the impact of Covid – 19 on student learning experience and found the challenges are lack of appropriate devices, poor learning space at home, stress among students, and lack of fieldwork and access to laboratories.
- ii. Problems associated with modern technology come from downloading errors, issues with installation, login problems, problems with audio and video, etc.
- iii. Features like file sharing, whiteboards, and annotation are not easy to use, resulting in the underutilization of conferencing functions (Ming et al., 2021).
- iv. Students found online teaching boring and unappealing because online teaching videos were too long, reducing learners’ enthusiasm and interests in learning (Li and Wang, 2019).
- v. Students faced with unstable Internet connections, which makes it impossible to ensure equity between students through online learning (la Velle et al., 2020).

## **2.2 Proposed Solution**

- i. Technical skills training should be given to both faculty and students of the institutions/companies in order to improve students’ proficiency in applied skills and eliminate communication barriers based on poor skills.
- ii. Teachers should improve their pedagogical skills and applications to increase the frequency of interaction with students by regularly checking their production and providing feedback on students’ academic performance as well as responding to psychological problems.
- iii. Students need to develop a positive attitude toward group work, increase their own sense of team responsibility, and actively participate in group discussions and task completion during this difficult time.

### 3. Theoretical Analysis

#### 3.1 Block Diagram



### 3.2 Hardware/Software Designing

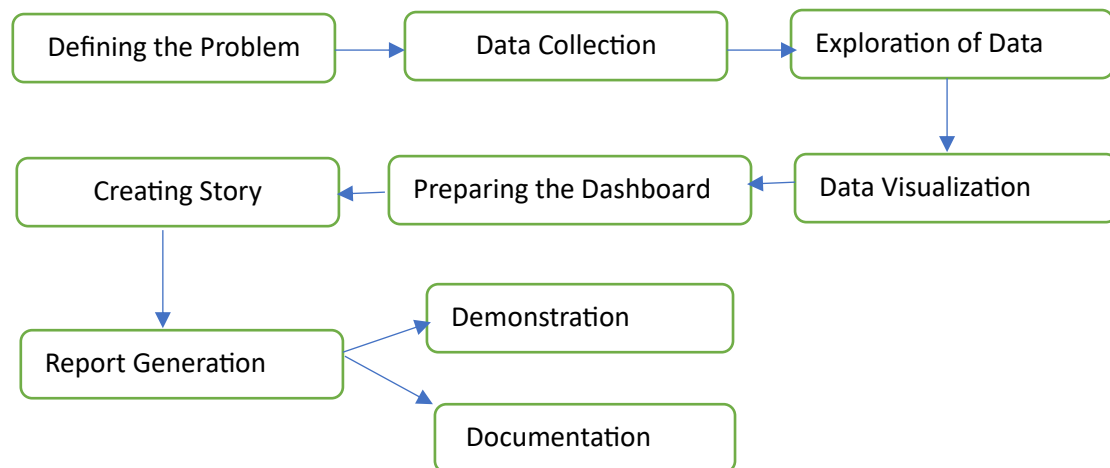
Hardware: Desktop/Laptop with internet connectivity

Software: IBM Cognos Analytics, MS office

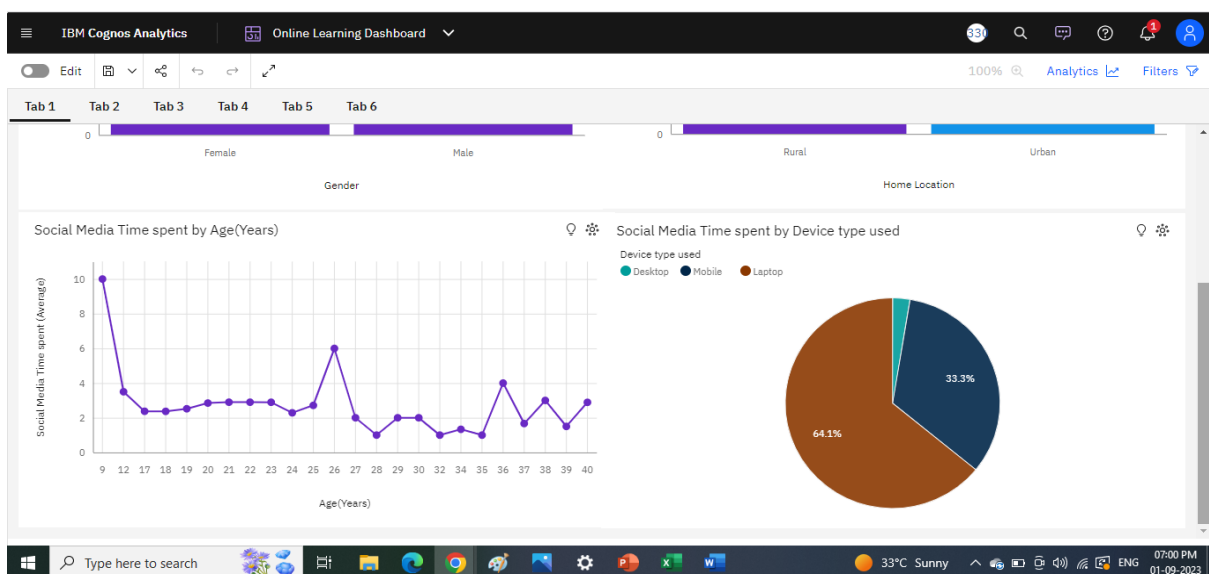
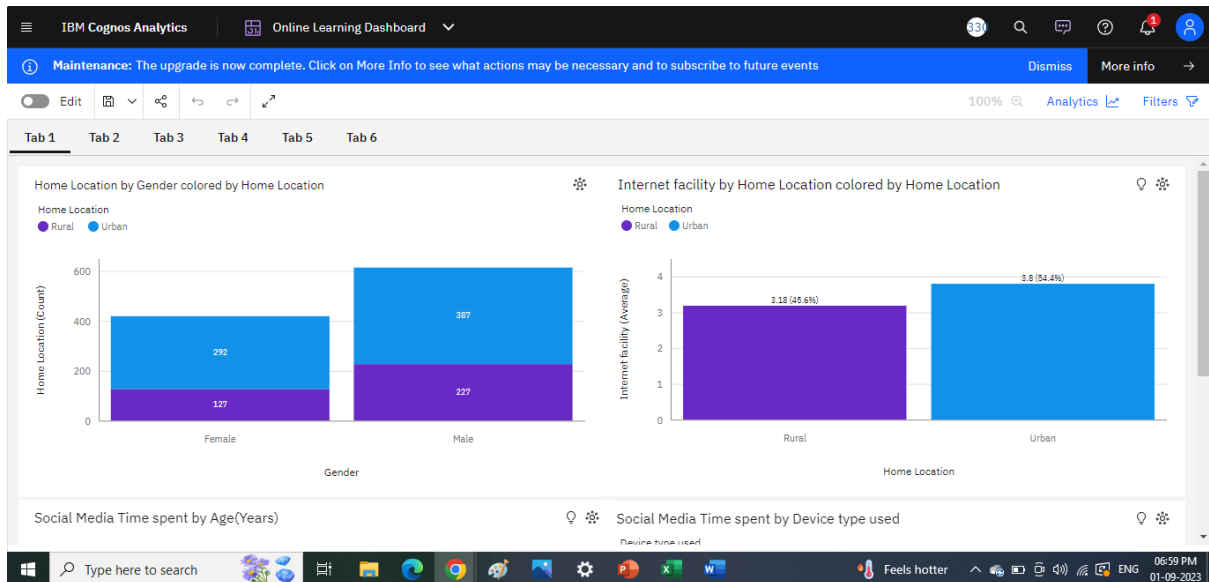
### 4 Experimental Investigations

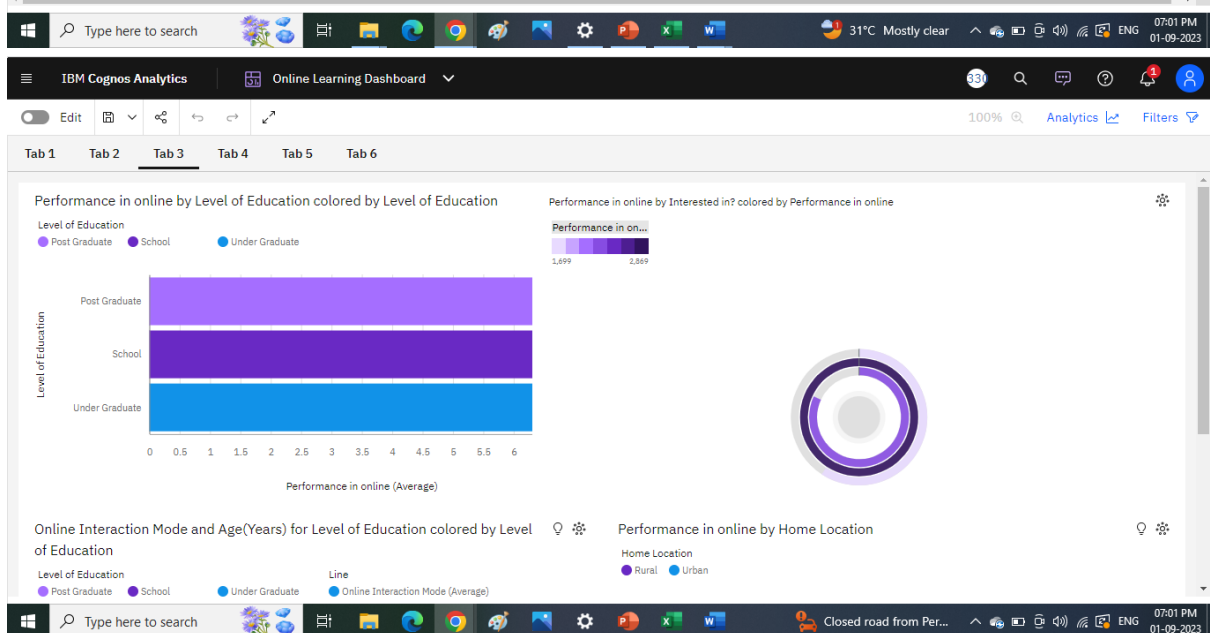
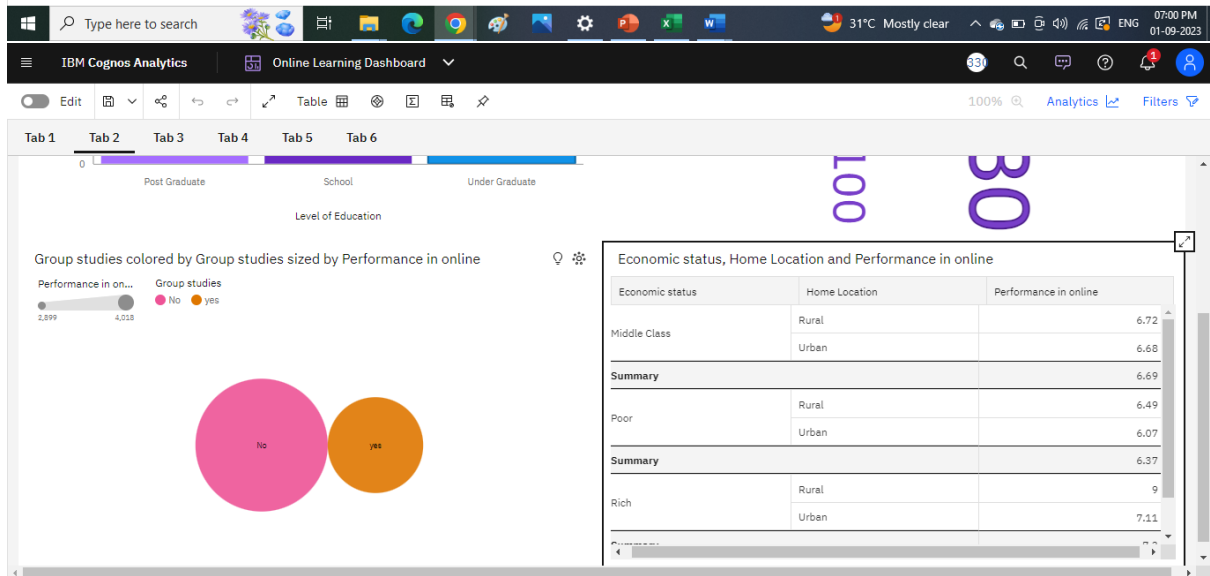
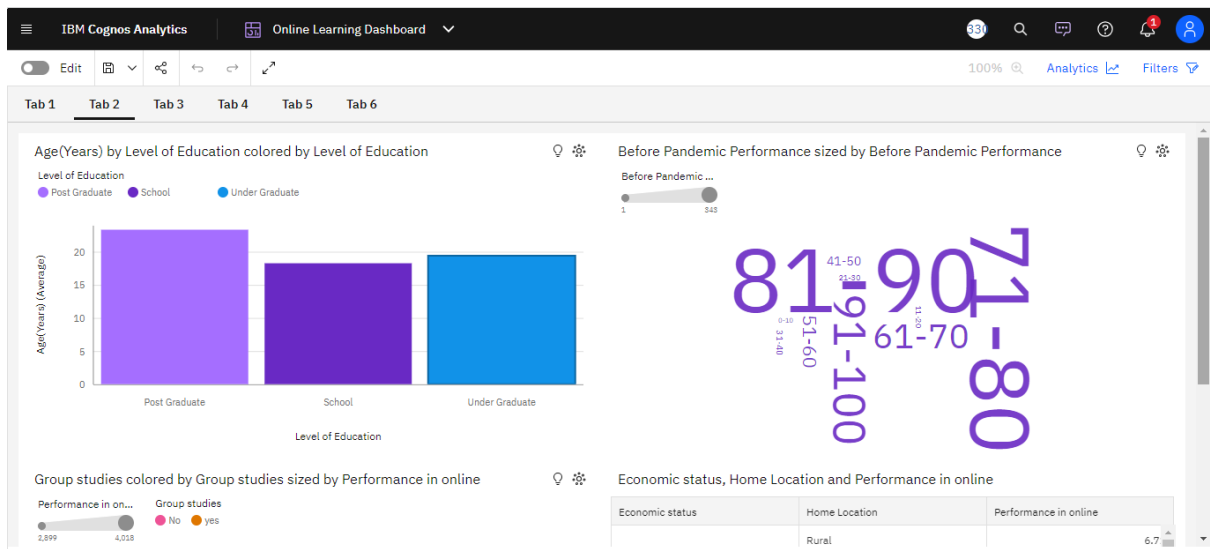
- i. **Urban** exceeds **Rural** in **Internet facility** by **0.6131**.
- ii. **Home Location Urban** has the highest values of both **Internet facility** and **Age(Years)**.
- iii. **Internet facility** is unusually low when the combination of **Home Location** and **Home Location** is **Rural and Rural**.
- iv. **Social Media Time spent** is unusually high when **Age(Years)** is **9** and **26**.
- v. **20 (24.1 %)**, **19 (21.9 %)**, and **18 (21.3 %)** are the most frequently occurring categories of **Age(Years)** with a combined count of **695** items with **Social Media Time spent** values (**67.3 %** of the total).
- vi. **Device type used Laptop** has the highest total **Social Media Time spent** due to **Gender Male**.
- vii. **Gender Male** has the highest **Social Media Time spent** at **over 1500**, out of which **Device type used Laptop** contributed the most at **over a thousand**.
- viii. **Level of Education** weakly affects **Age(Years)** (**18%**).
- ix. **Under Graduate** is the most frequently occurring category of **Level of Education** with a count of **817** items with **Age(Years)** values (**79.1 %** of the total).
- x. **81-90 (33.2 %)** and **71-80 (30.3 %)** are the most frequently occurring categories of **Before Pandemic Performance** with a combined count of **656** items with **Before Pandemic Performance** values (**63.5 %** of the total).
- xi. **Group studies No** has the highest values of both **Performance in online** and **Age(Years)**.
- xii. **Level of Education Post Graduate** has the highest **Average Performance in online** but is ranked **#2** in **Total Age(Years)**
- xiii. **Under Graduate** is the most frequently occurring category of **Level of Education** with a count of **817** items with **Performance in online** values (**79.1 %** of the total).
- xiv. **Interested in Practical** has the highest total **Performance in online** due to **Home Location Urban**.
- xv. **Online Interaction Mode** is unusually high when **Level of Education** is **Post Graduate**.
- xvi. The average values of **Online Interaction Mode** range from **2.69**, occurring when **Level of Education** is **School**, to **3.186**, when **Level of Education** is **Post Graduate**.
- xvii. **65.6%** of students are having high performance in online from **Urban home location**.
- xviii. **Economic status Middle Class** has the highest values of both **Performance in online** and **Social Media Time spent**.
- xix. **Performance in online** has a moderate upward trend.
- xx. **7 (30.6 %)**, **8 (28.7 %)**, and **6 (22.7 %)** are the most frequently occurring categories of **Sleep time (Hours)** with a combined count of **847** items with **Performance in online** values (**82 %** of the total).
- xxi. **4** is the most frequently occurring category of **Study time (Hours)** with a count of **213** items with **Performance in online** values (**20.6 %** of the total).
- xxii. **19 to < 22** is the most frequently occurring category of **Age(Years) (Group)** with a count of **602** items with **Your level of satisfaction in Online Education** values (**58.3 %** of the total).
- xxiii. **Average** is the most frequently occurring category of **Your level of satisfaction in Online Education** with a count of **541** items with **Your level of satisfaction in Online Education** values (**52.4 %** of the total).

## 5. Flow Chart – Process Flow

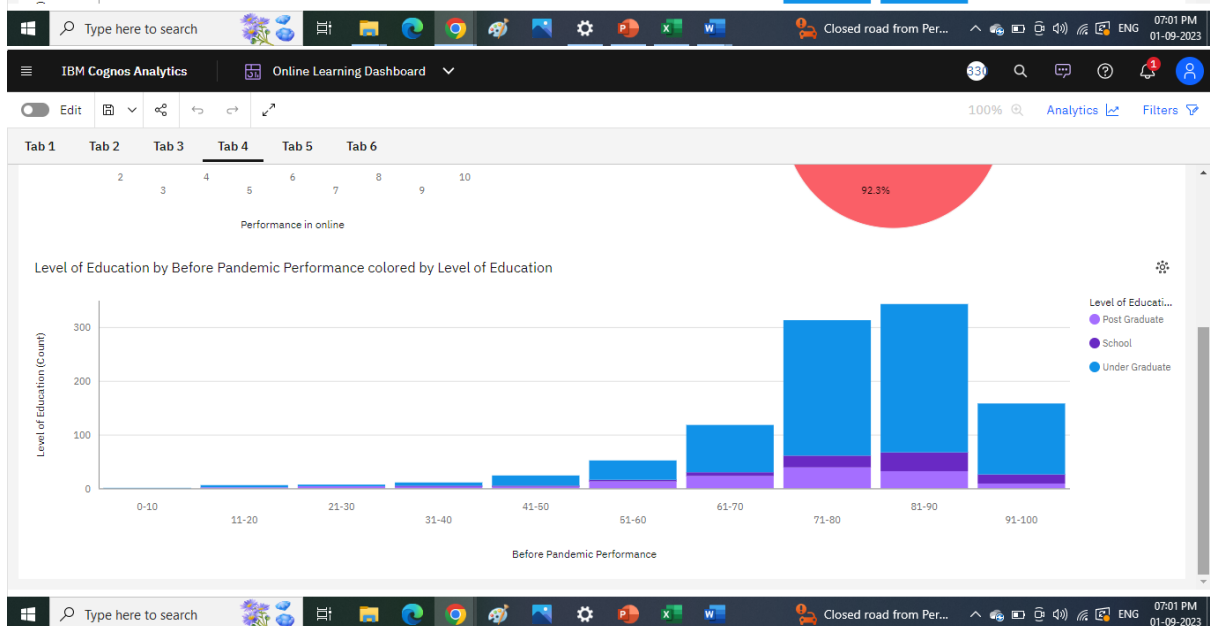
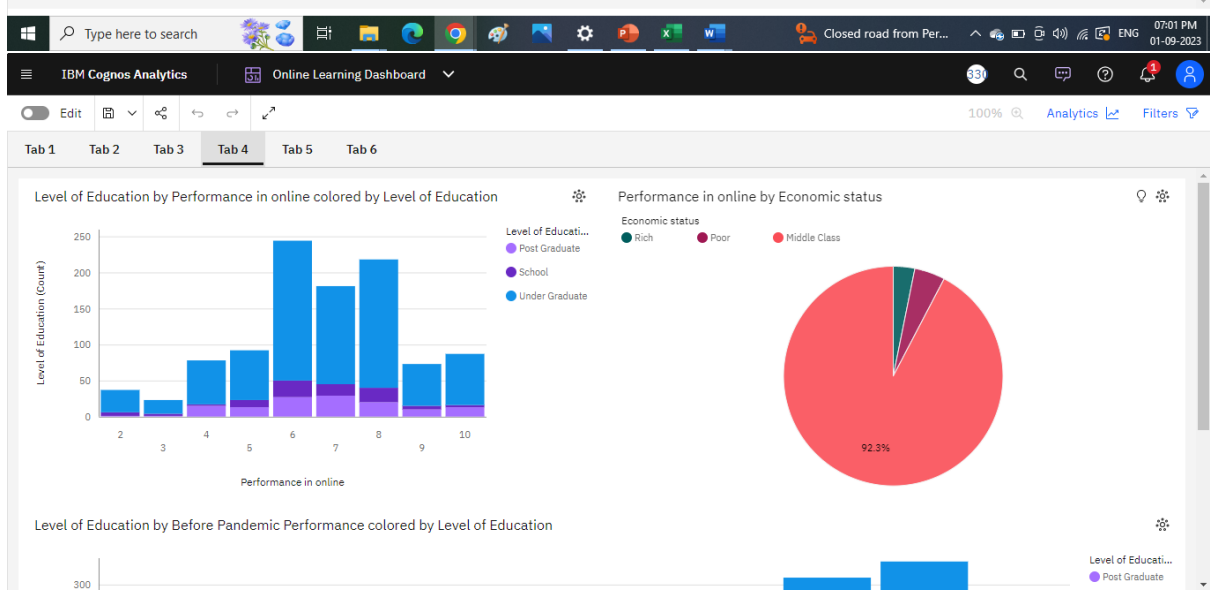
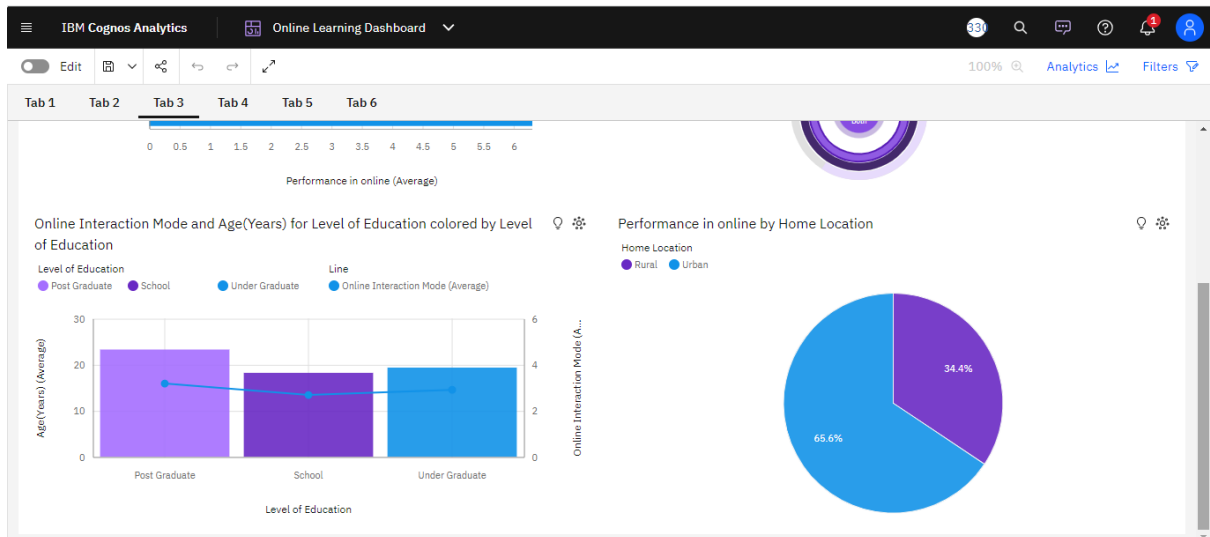


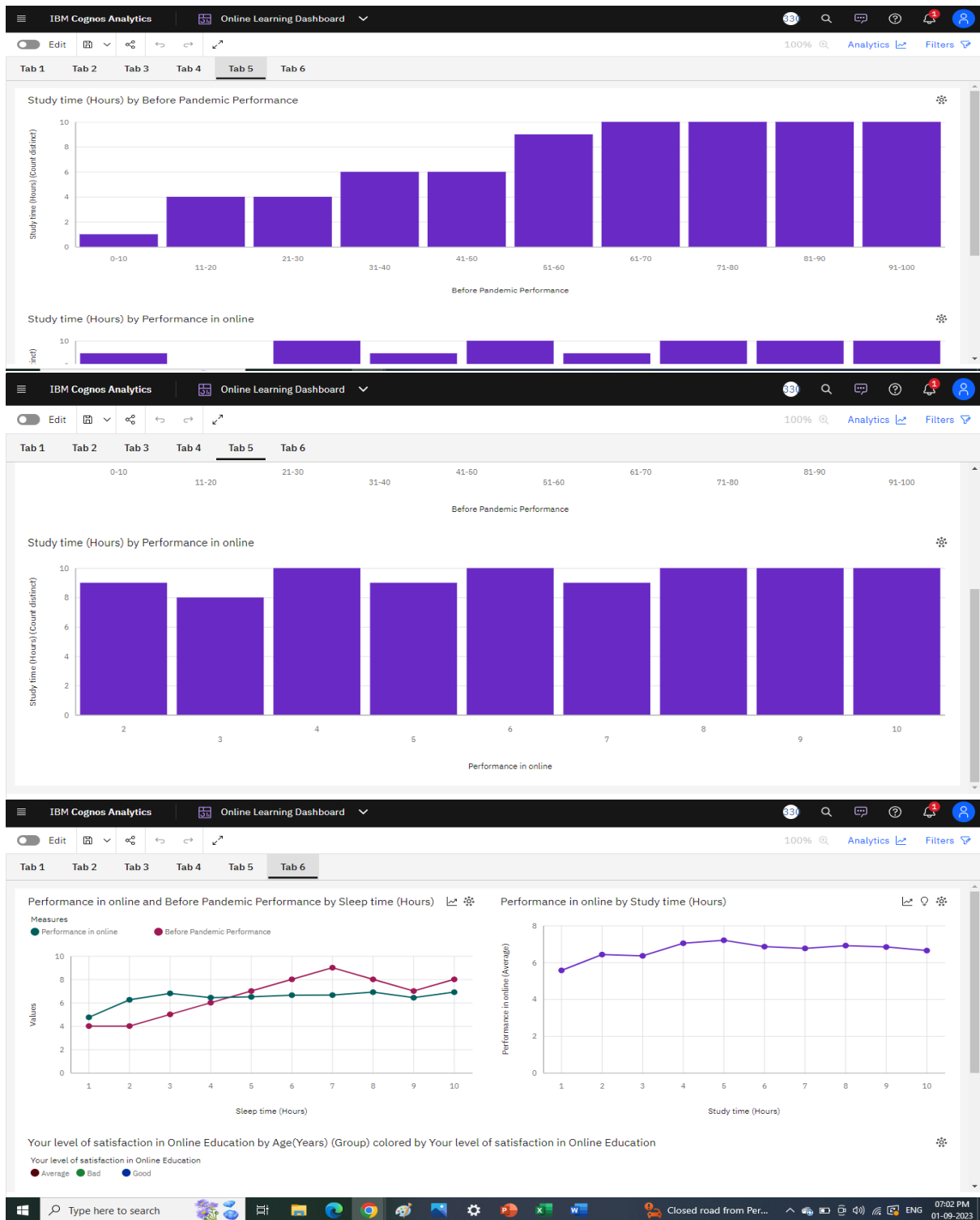
## 6. Result

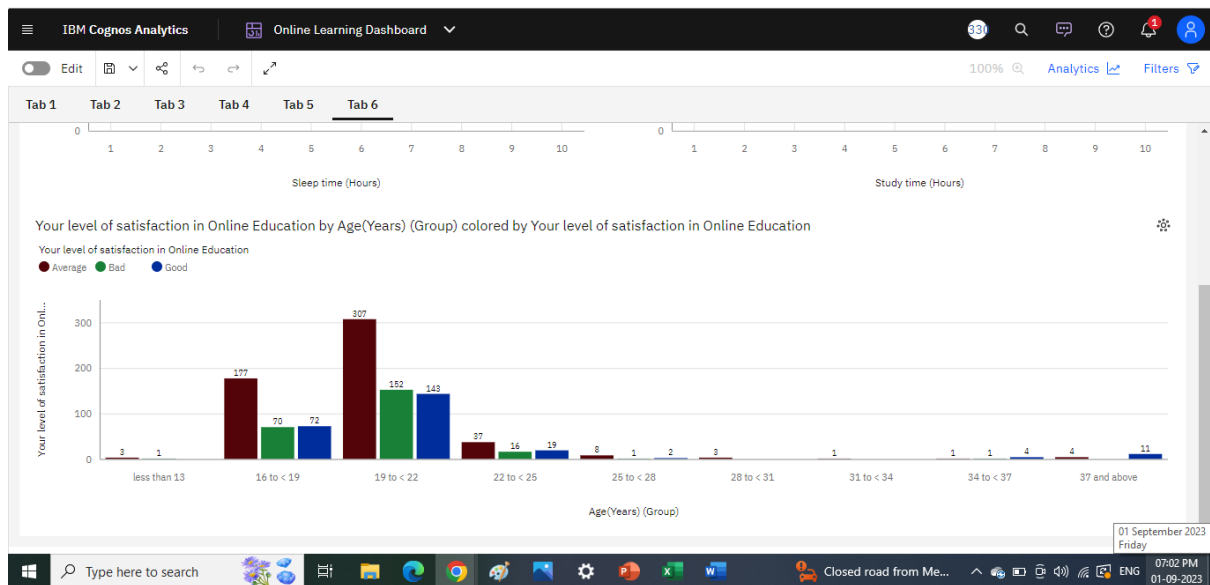












## 7. Advantages and Disadvantages

There are certain advantages and disadvantages of implementing the online education system.

### Advantages:

1. It proves to be less costly than taking the traditional offline classroom learning
2. Having a comfortable environment to learn, in most cases, helps students to be more motivated and achieve better results.
3. Flexibility is also be beneficial to those who prefer to digest smaller portions of a lecture over time.
4. Self-paced learning helps to develop time management skills
5. Students will work with up-to-date learning materials than in traditional physical classes

### Disadvantages:

1. Lack of physical interaction, which makes it more challenging between the students and faculty
2. Difficulty in maintaining focus when you study on your own .
3. Technical difficulties such as internet connectivity issues, software compatibility issues, or issues with the laptop, can hinder the ability to access classes.

## 8. Applications.

Based on the performance in online education systems, the results obtained from the data analysis can be applied in the following areas

- Developing more online libraries
- Learning Management system (LMS) have promoted virtual classrooms where a teacher can interact with students in real-time, share his resources, deliver his lecture, assess students' learning, collect feedback, and reply to their queries
- Digital technology will be employed to make math education through practice more accessible to all students, regardless of ability or learning environment.

## 9. Conclusion

This project focuses on in depth analysis of online education during the covid-19 pandemic. The collection of data is obtained from the students from rural and urban home location who have taken their online learning during the pandemic period. Due to the sudden shift of traditional education to online education during the pandemic, teachers and students found out the benefits of online education. Even with the technical and communicational challenges, the opportunities put forward by these advantages were unparalleled. It transcends the shackles of traditional learning and helps students scale up at their own pace. This study in online education to demonstrate that online courses during the pandemic could achieve equivalent or better student course performance than the same pre-pandemic in-person courses. The findings fill in gaps in literature and may inform online learning design moving forward.

## 10. Future Scope

In the upcoming future, online education is going to be a part of every person's life and we need to be prepared for the changes. It's not just an option anymore but a need. With the help of new technologies, the government needs to reach out to every village and provide them with the necessities of water, shelter, and education.

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