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## Impact of E-Learning on Students

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### ABSTRACT

*Education refers to the teaching or training of people. It is generally carried out in educational institutes such as schools, colleges, universities, etc. With time, the modes of teaching have changed with innovations and changes in technology, new and better understanding of concepts, etc. However, in the last two to three years, the education sector was shocked worldwide. Due to the emergence of the Covid-19 pandemic caused by the Corona virus, schools, colleges and all other educational institutes were forced to shut physical classes.*

*Institutes across the globe had to adapt to the environment and shift to online methods of teaching. The change was notably difficult for most institutes. It was not only difficult for the teachers to teach but students also found it difficult to concentrate in online lectures and retain the same information they could easily retain in offline classes.*

*With a little time and better understanding of the resources at hand, the world has adjusted to online learning. However, with the pandemic dying down and things opening up physically worldwide, one question remains: What is the impact of offline classes and online classes on students? With the virus almost gone, is it better to resume offline classes or do online lectures provide the students with better educational knowledge. This is an important question as these impacts not only the students but also decides what will make our future generations more capable and ready to take on the world in their future.*

**Keywords:** *E-Learning, Student, Learning, Education, COVID-19, School, Colleges, University, Online, Pandemic, Face-To-Face, Laptop*

### INTRODUCTION

#### Offline Learning

Offline learning has been the way education has been imparted for years. It consists of physical classrooms where students sit face-to-face with the teacher who explains the concepts to them. It is easy for teachers to monitor the students and make sure that the learning is happening in the most efficient way possible. Students utilize textbooks and notebooks to help them understand the topic better.

### **Online Learning**

In online learning, students log into an online application such as Zoom, Google Meet, Microsoft Teams, etc. where the teacher can hold an online meeting with them. Cameras can be switched on through the devices and interaction can continue through the online medium. Notebooks and textbooks are replaced with online documents or e-versions of the same.

### **Online vs Offline Learning**

There are many advantages as well as disadvantages of both online as well as offline learning. Teachers are able to better monitor the students and ensure that they are studying properly in the offline format. Moreover, students get to interact with their peers and mentors and it helps them better develop their personalities. It not only helps student learn better but also helps shape them into better individuals. However, offline learning can be tiresome and more hectic as compared to online learning. Along with that, there is the time and cost required to travel to the institution, etc. In online learning, teachers have a difficult time ensuring that students are studying properly as students could be doing other work, shut their cameras and be relaxing instead of paying attention to the class. However, it is more relaxed and can be conducted at the comfort and convenience of one's own home. Moreover, students have very little interaction with their peers and may not be able to develop good social skills.

Since there are pros and cons to both the methods of imparting education, we have tried to analyse the impact of both methods on students. Along with that, we have also tried to find out what kind of an impact the gender of a person may have on their learning.

## **LITERATURE REVIEW**

### **Title: E-Learning vs. Face-To-Face Learning: Analyzing Students' Preferences & Behaviors**

Date of Publishing: 14 April, 2021.

This research was conducted by Vasile Gherhes, Claudia E. Stoian, Marcela Alina Fărcasiu and Miroslav Stanici. The authors have started the research paper by mentioning how the world of education has been shaken worldwide due to closure of educational institutes because of the outbreak of the Corona virus. The study focuses on educational process beneficiaries and aims to identify their perceptions of face-to-face and e-learning, as well as whether or not they wish to return to regular school. The authors have concluded the research paper by saying that Blended learning will be the future of education, or a hybrid mode where both e-learning as well as the traditional method of learning will continue. This is because it is unavoidable that face-to-face learning be included in the process, while the benefits of e-learning cannot be overlooked.

### **Title: Online Learning: A Panacea in the Time of COVID-19 Crisis**

Date of Publishing: 2020

This research paper was penned down by Shivangi Dhawan. The study begins by stating that the majority of educational institutes in India rely solely on traditional means of learning, such as face-to-face lectures in a classroom. The Covid-19 pandemic caused a shock in the education system of not only the country but the entire world. Many institutes that were reluctant to incorporate e-learning had no option but to shift the online mode of education. The research

paper also sheds light on the rise of EdTech start-ups during the epidemic, as well as recommendations for educational institutions dealing with the problems posed by online learning. The paper concludes with the statement that pandemics and disasters have the potential of creating great havoc. As a result, we must thoroughly investigate the technology in order to alleviate the worries and tensions that have arisen as a result of the crisis. Online teaching encourages learning activities, but there is always a pressing need to weigh the advantages and disadvantages of technology in order to fully fulfill its potential.

**Title: E-learning, resilience & change in higher education: Helping a university cope after a natural disaster**

Date of Publishing: 25 December, 2017

This research paper, written by Kofi Ayebe presents a case study of the University of Canterbury from 2013 which was impacted by earthquakes in New Zealand, 2011. The author did an analysis based on interviews with nine college staff members, and the papers were utilized to depict the process of improving resilience with e-learning in the face of the worst seismic disasters. The research looks at how learning technology can assist academic institutions in the aftermath of natural disasters. The study mentions IT infrastructure, e-learning technology availability, e-learning technology support, strategic e-learning planning, and so on. The author has concluded the paper by talking about how academic staff need to be motivated to use e-learning to engage with students and students need to be familiar with technology for e-learning to be successful.

**4. Title: How to Optimize Online Learning in the Age of Coronavirus (Covid-19): A 5-Point Guide for Educators.**

Date of Publishing: March, 2020.

This study has been penned down by Andrew Martin and talks about the 5 key considerations for educators to take into account when supporting students' online learning from the authors' perspective as an educational psychologist. The author starts by talking about the importance for online instruction to be as explicit, orderly and well-organised as possible. In offline teaching, it is easy to monitor the students. However, this becomes extremely difficult in the case of online education. This leads to many risks in the educational development of students and the author has identified ways to reduce such risks. The author did an analysis based on interviews with nine college staff members, and the papers were utilized to depict the process of improving resilience with e-learning in the face of the worst seismic disasters. It states how there are barriers to the same which reduce the quality of education and how the five considerations suggested in the paper can help optimise the students' learning online.

**5. Title: Students' Experiences, Learning Outcomes & Satisfaction in e-Learning**

Date of Publishing: 29 May, 2017

C. Goh, Choi-Meng Leong, Kalsum Kasmin, P. Hii, and O. Tan conducted this study to investigate if students' experiences in e-learning are related to learning results and satisfaction. The authors adopted a self-administered questionnaire for the study and identified three learning experiences as predictors of learning outcomes and satisfaction. The authors used exploratory factor analysis, regression analysis, etc. to conduct the study. The study was concluded by confirming that students' experiences are salient predictors on learning outcomes and satisfaction in e-learning. The paper ends with a mention of the importance of quality e-courses, interactive teaching styles, learning material, etc.

**RESEARCH METHODOLOGY**

## **OBJECTIVES**

The objectives of this research project are as below:

1. To identify which mode of studying is more preferable: online or offline.
2. To understand if gender plays a role in determining how impactful is online studying as compared to offline studies.
3. To understand how various attributes like motivation, concentration, mental health, discipline and class participation are affected in shifting from offline to online learning.

## **SCOPE OF STUDY**

The study will provide an insight at how students react to the transition from offline to online learning environments, and how this affects their levels of motivation, concentration, mental health, discipline, and class participation. With changing times, it is critical that students become more aware of their surroundings and adapt to them. The purpose of this research is to explore the obstacles that the students are encountering, their responses to these challenges, and how they might overcome these challenges in the future.

## **SOURCES OF DATA COLLECTION**

There are two methods of data collection: -

**Primary Source:** A primary data source is an original data source, which means it was obtained personally by the researcher for a specific study objective or project. There are numerous methods for gathering primary data. However, the most prevalent procedures include self-administered surveys, interviews, field observation, and experiments. Secondary data collection is less expensive and takes less time than primary data collection. However, for some sorts of research, collecting original data may be the only viable option. The data utilised in this study came from a primary source. Questionnaires were distributed to students in order to get information regarding their attitudes toward online learning and its influence on them.

**Secondary Source:** Secondary data refers to information that has already been collected and is accessible from other sources. This type of data is less costly and more easily obtainable compared to primary data. In situations where primary data cannot be obtained at all, secondary data may be provided. During this study, various secondary information sources such as journals, blogs, articles, newspapers, research papers, and debates by students were obtained.

## **SAMPLING TECHNIQUE AND SAMPLING SIZE**

**Research Design:** The research work is centred on the exploratory study of students from varied backgrounds notably science, commerce and arts. The research method is a combination of quantitative and qualitative methodologies. To evaluate the influence of online learning on students (Questionnaire technique), a survey method was utilised, and the research design was a mix of comparing frequency data and its percentage with numerous other elements of questions. When utilizing a questionnaire to collect data, it is critical to determine whether the questions and directions are clear to subjects and if they understand what is expected of them. The questionnaire design is based on background, demographics, and several traits such as motivation, concentration, mental health, discipline, and class participation that were impacted by the move from offline to online learning. The tools are based on key aspects to comprehend students' mindsets and what they think. The questionnaire was distributed among students.

**Sampling Technique:** The sampling strategy's purpose was to generate a varied enough sample to understand students' mindsets as well as to analyse how various factors played distinct roles in the outcome. The most difficult issue is obtaining an adequate and accurate response rate.

We adopted non-probability and stratified sampling in response to these issues.

A non-probability sampling approach is one in which samples are chosen based on the researchers' subjective judgement, and the researchers are also competent enough to ensure that

there are no biases among the respondents chosen. Non-probability sampling is suitable for experimental research like pilot surveys. Non-probability sampling is used in studies where random probability sampling is not feasible due to time or financial restrictions. It is a less strict approach that is carried out using observational methods and is extensively utilised in qualitative research. We also employed stratified sampling. The population is separated into subgroups based on age, gender, educational level, course, and so on. When a researcher seeks to understand the existing relationship between two groups, stratified sampling is helpful.

*Sample Size:* Sample size, which is an important topic in statistics, refers to the number of individual pieces of data acquired in a survey. The sample size of a survey or statistic is crucial in evaluating the accuracy and reliability of the survey's conclusions. This study surveyed students who study online and have transitioned from traditional classroom settings. There were a total of 86 responses.

### **TOOLS OF DATA ANALYSIS**

The acquired data was analysed using tools such as Excel. Pie charts and bar graphs are used to summarise the data that has been analysed. The questionnaire also included rating scale questions.

Many different sorts of rating systems have been developed to directly evaluate attitudes. The Likert Scale is the most popular. It is a psychometric scale that is frequently used in survey research. It is the most commonly used approach for scaling responses in survey research. It also presumes that experience strength/intensity is linear, i.e., on a scale from strongly agree to strongly disagree, and that attitudes can be quantified. The Likert scale is a five-point scale used in this research project to allow participants to express how strongly they agree or disagree with a certain topic. The notion of assessing attitudes through the use of Likert scales was introduced by Likert. This method involves individuals rating a series of statements related to a particular issue, indicating the extent to which they agree with each statement. By employing this approach, Likert scales effectively capture both the cognitive and emotional aspects of attitudes.

To analyse the data, tests such as the Shapiro-Wilk test and the Wilcoxon Signed-Rank Test for Paired Samples are utilised. The Shapiro–Wilk test is often used for small samples to determine whether or not a sample matches a normal distribution. On the other hand, the paired samples Wilcoxon test, also referred to as the Wilcoxon signed-rank test, serves as a non-parametric substitute to the paired t-test for analyzing paired data. This method is utilized in cases where the distribution of information does not follow a conventional pattern.

### **LIMITATIONS OF STUDY**

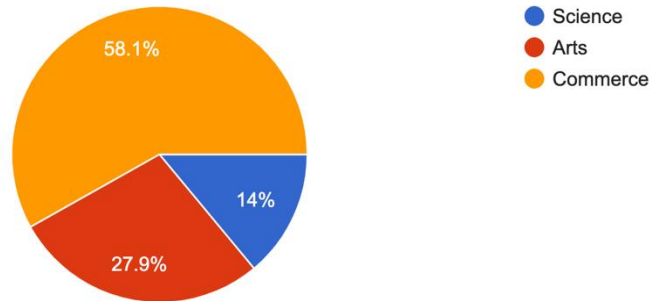
Unfortunately, the use of non-probability sampling restricts the generalizability of the results. However, the necessity for a suitably high sample size was deemed more crucial than overall generalization. Because the number of respondents was restricted, there was also a lack of representation of the overall population. Another challenge that arose during stratified sampling was the identification of appropriate strata.

### **Data analysis & Findings**

Demographic analysis

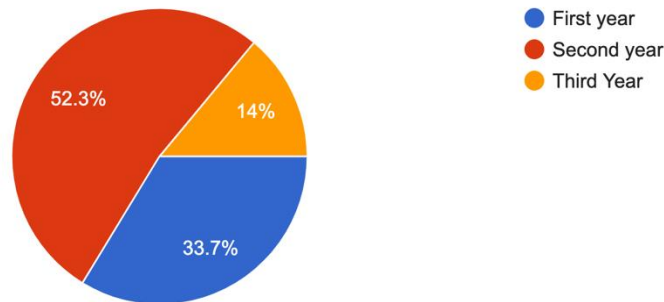
Which stream are you pursuing?

86 responses



Which year are you studying in?

86 responses



Stream	Frequency	Percent	Valid percent	Cumulative percent
Commerce	53	58.10%	58.10%	58.10%
Arts	24	27.90%	27.90%	86.00%
Science	12	14%	14.00%	100.00%

Year	Frequency	Percent	Valid percent	Cumulative percent
First	29	33.72%	33.72%	33.72%
Second	45	52.33%	52.33%	86.05%
Third	12	13.95%	13.95%	100.00%

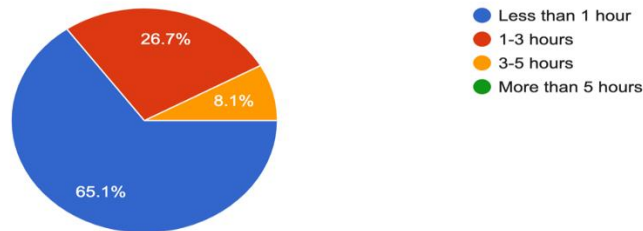
Gender	Frequency	Percent	Valid percent	Cumulative percent
Female	55	63.95%	63.95%	63.95%
Male	31	36.05%	36.05%	100.00%
Other	0	0.00%	0.00%	100.00%



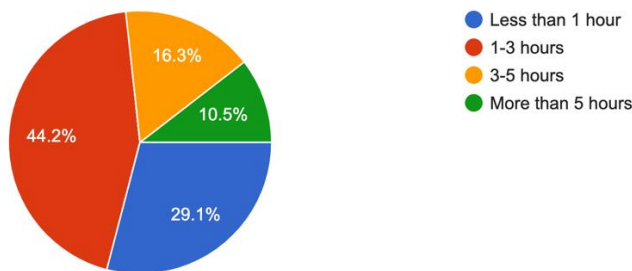
Out of the 86 respondents 53 of them are pursuing commerce and only 12 are pursuing science. This phenomenon can be ascribed to the utilization of convenience sampling as the sample technique by commerce students. All our respondents are college students. since we used convenience sampling as our sampling method, we see that 45 of our respondents, or 52.33% of the total is in their second year of education. None of our respondents identified as other. 55 out of a total of 86 identified as female and only 31 as male.

**Objective 1: Comparing the duration of studying during online and offline lectures**

How many hours did you self-study in a day during online classes?  
86 responses



How many hours did you self-study in a day during offline classes?  
86 responses

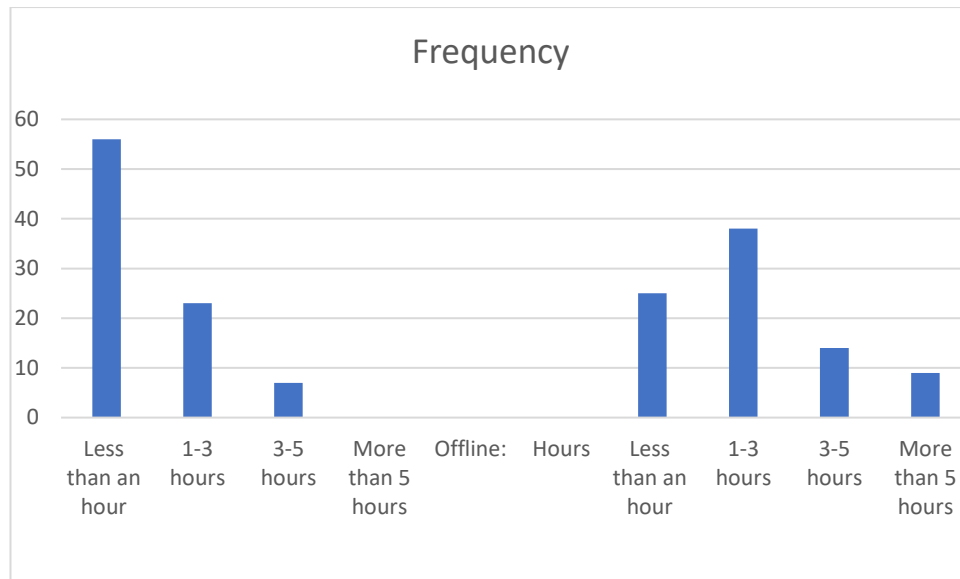


**Online:**

Hours	Frequency	Percent	Valid percent	Cumulative percent
Less than an hour	56	65.12%	65.12%	65.12%
1-3 hours	23	26.74%	26.74%	91.86%
3-5 hours	7	8.14%	8.14%	100.00%
More than 5 hours	0	0.00%	0.00%	100.00%

**Offline:**

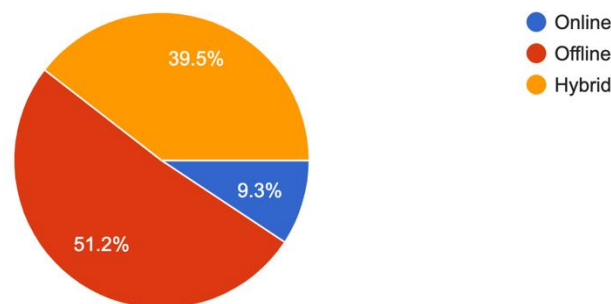
Hours	Frequency	Percent	Valid percent	Cumulative percent
Less than an hour	25	29.07%	29.07%	29.07%
1-3 hours	38	44.19%	44.19%	73.26%
3-5 hours	14	16.28%	16.28%	89.53%
More than 5 hours	9	10.47%	10.47%	100.00%



The switch in education from offline to online has seen a major change in hours spent studying outside the classroom. While studying offline, 44.19% of the respondents spent 1-3 hours on self-studying. when online, this percentage not only dropped to 26.74%, but the percentage of students studying less than 1 hour a day increased from 29.07% to 65.12%. These drastic changes can be attributed to factors such as change in levels of motivation, effect on mental health, and change in methods of testing. Some of these attributes are further explored in our paper

**Objective 2: Analysing the overall preference of mode of learning for students**

What do you prefer?  
86 responses



Mode	Frequency	Percent	Valid percent	Cumulative percent
Online	8	9.30%	9.30%	9.30%
Offline	44	51.16%	51.16%	60.47%
Hybrid	34	39.53%	39.53%	100.00%



We see that 51.16% of respondents are in favour of offline classes and only 9.3% are in favour of online. There are multiple reasons for this, such as the experience of being in physical classes, feeling of productivity, interacting with peers and teachers and getting a better understanding of subject matter. 39.53% of students are in favour of the hybrid model that combines the benefits of both online and offline education.

We further analysed the impact of offline learning in comparison to online learning on the basis of various attributes to understand if the effects differ for males and females. The attributes we focused on were, motivation, Concentration and learning, Discipline, Class participation, and Mental health. The graphs of the results can be found in Annexure 1.

### **FINDINGS**

Through our study we found that the switch from offline to online education impacted students across different streams, education levels and most importantly gender. We also found that there was a difference in the impact on male and female students across different parameters. The largest gap was seen in the impact on discipline between both genders, and the smallest was in the impact on class participation.

Through our correlation analysis we found that the highest correlation existed between concentration and class participation and the lowest between mental health and class participation.

We also found that students prefer the offline mode of education to online.

### **CONCLUSION**

Both offline and online learning have had their own challenges and benefits for students from different streams and different years of education. Also, males and females both have different views on the same attributes even though the conditions they all studied in were the same. Attributes like motivation, Class participation, Concentration, etc are all higher in offline learning because more interaction, higher retention and lesser confusion. Online learning caused lesser stress at times and students took academics more lightly, however discipline and productivity also took a step back in such times due to their careless or lenient attitude. In conclusion, Offline learning proved to be more beneficial and is preferred overall. Also, both genders were impacted differently on the basis of the attributes analysed.

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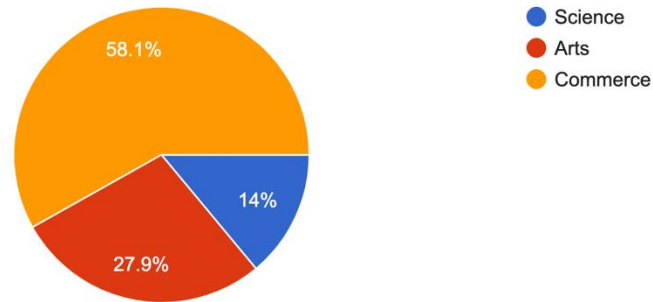
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- [4]. Goh, C., Leong, C. M., Kasmin, K., Hii, P., & Tan, O. (2017). Students' Experiences, Learning Outcomes and Satisfaction in e-Learning.
- [5]. Martin, A. (2020). How to Optimize Online Learning in the Age of Coronavirus (Covid-19): A 5-Point Guide for Educators. . <https://doi.org/4>.

## Annexure

### Annexure 1:

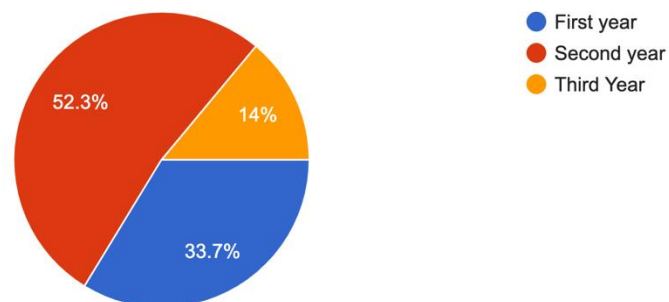
Which stream are you pursuing?

86 responses



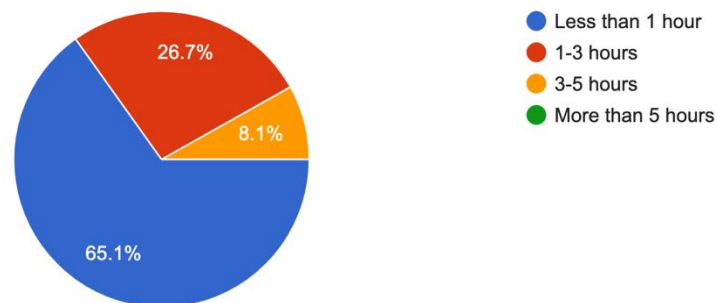
Which year are you studying in?

86 responses



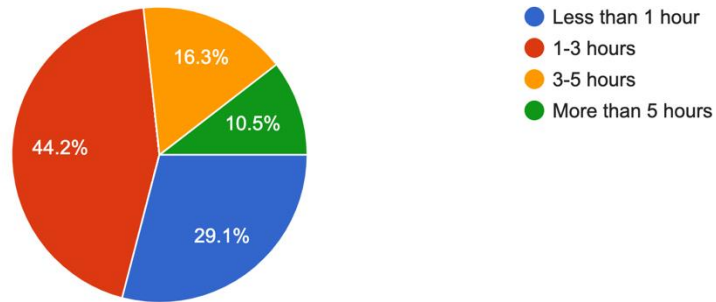
How many hours did you self-study in a day during online classes?

86 responses



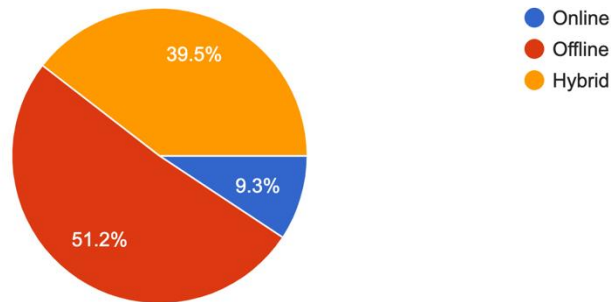
How many hours did you self-study in a day during offline classes?

86 responses



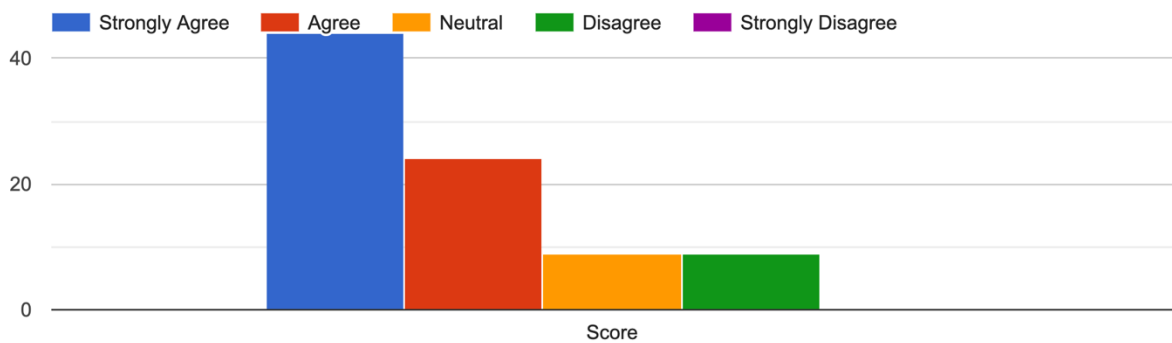
What do you prefer?

86 responses

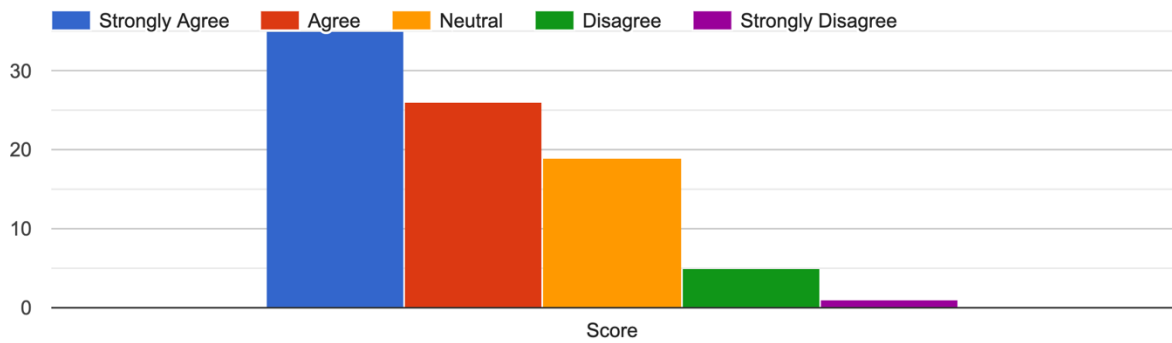


**Motivation:**

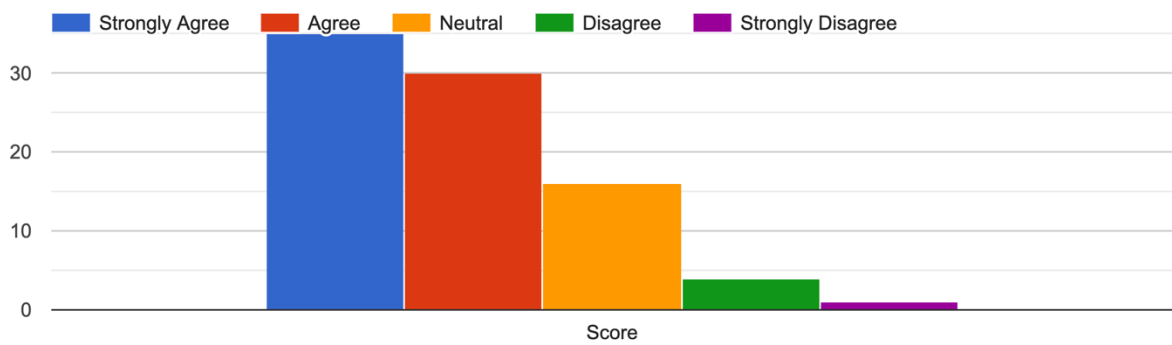
I noticed a decline in my willingness to study on my own during online classes.



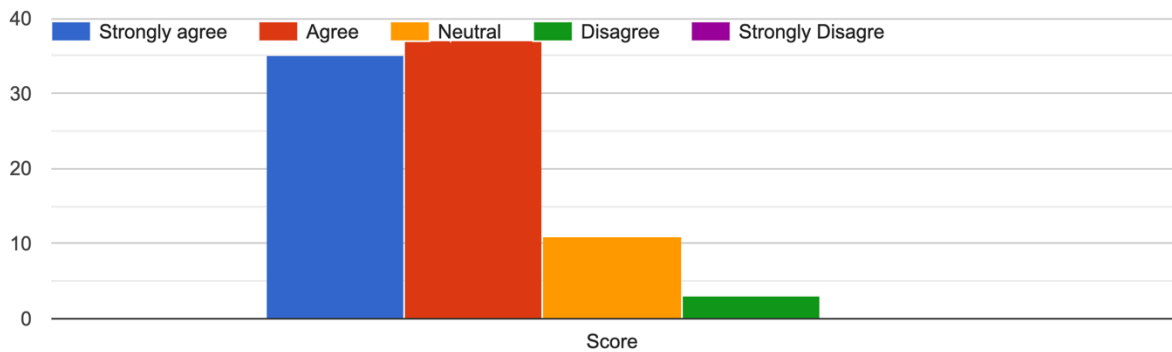
I procrastinated more during online classes and avoided completing tasks.



My motivation levels to work hard and spend more time studying was very low during online classes.

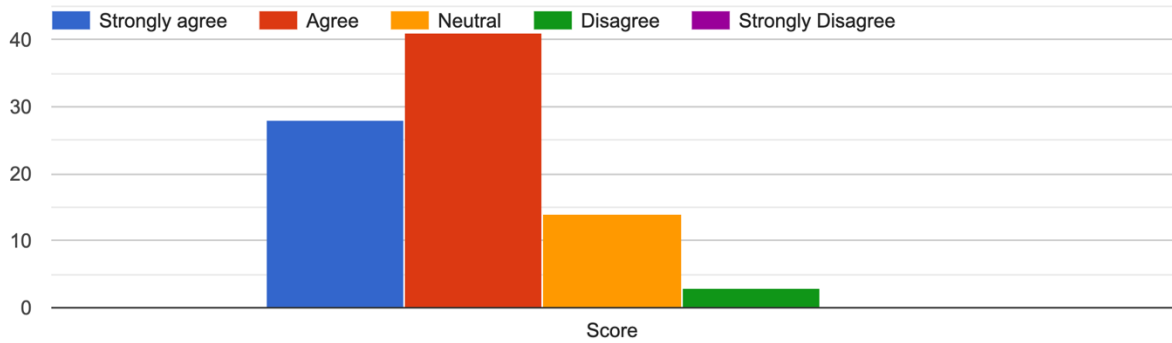


It seemed as if even the faculty was more motivated to teach in offline classes.

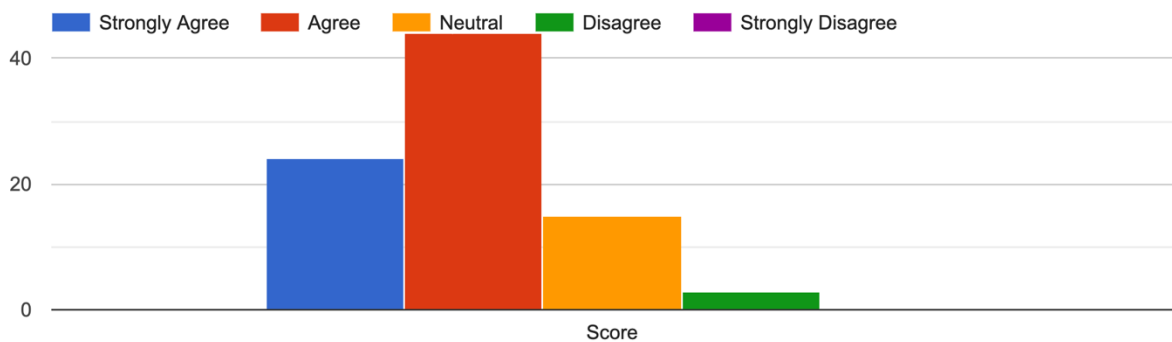


**Concentration & Learning:**

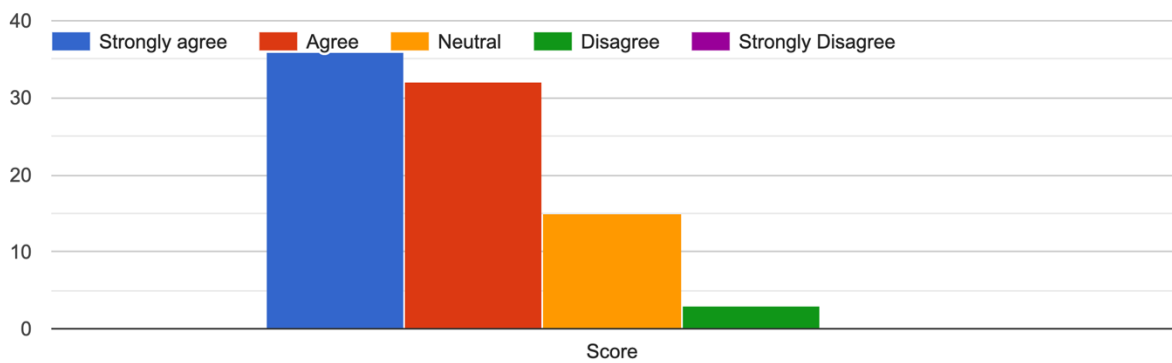
I paid more attention in offline classes compared to classes held online



I was able to retain more information offline.

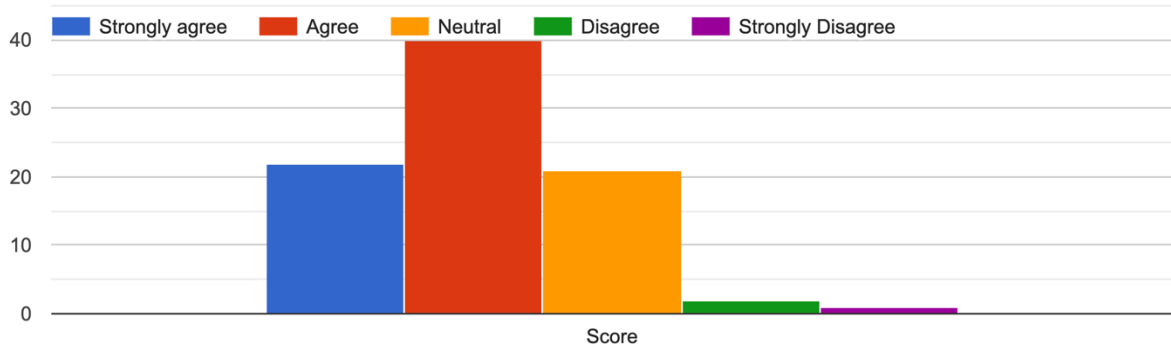


Learning and comprehension of topics was faster and easier in offline classes.



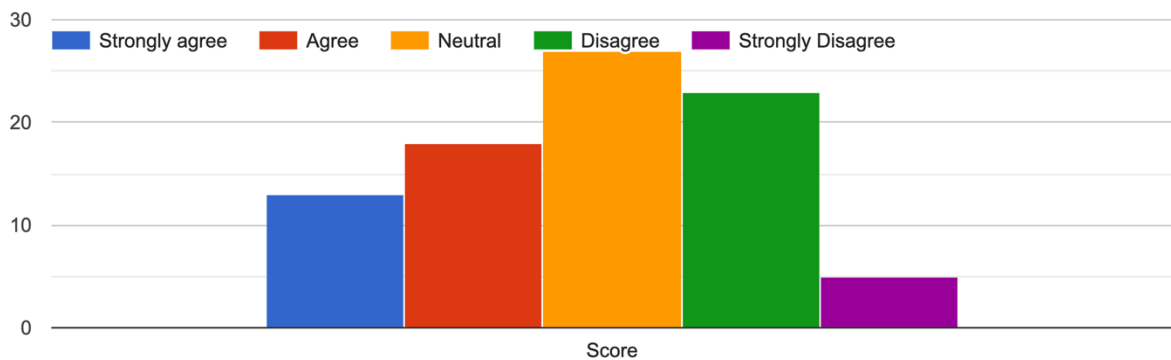


I was less distracted during offline classes

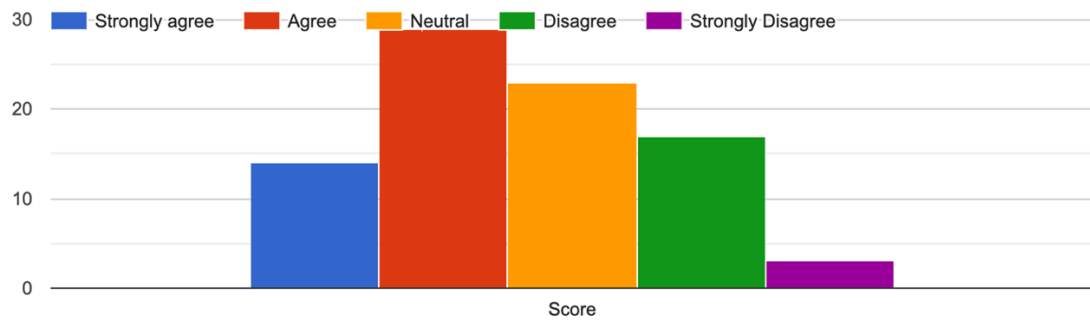


**Mental Health:**

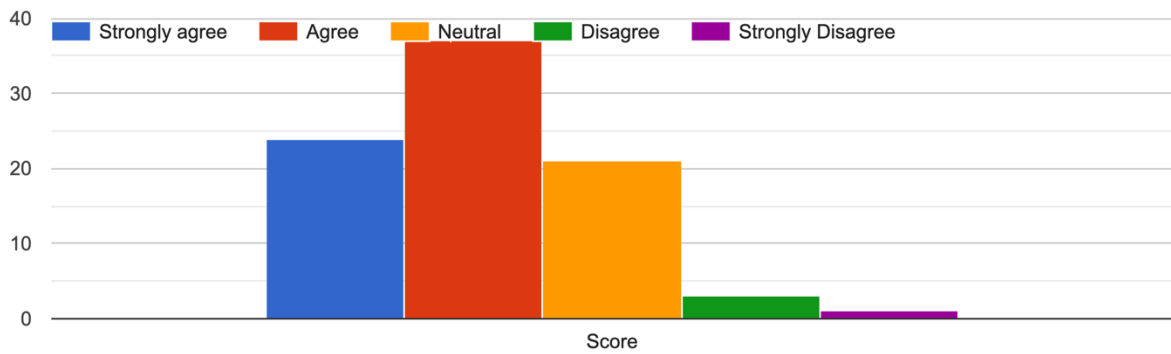
I felt more stressed and anxious during online lectures.



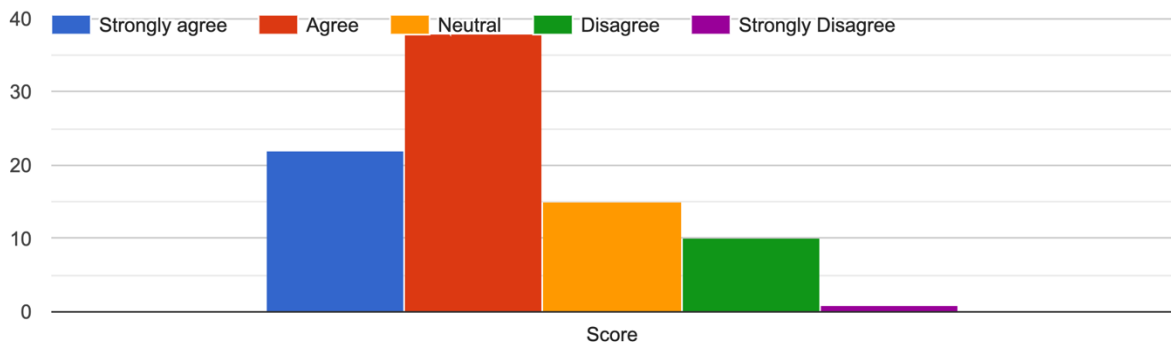
I was more mentally drained while studying online.



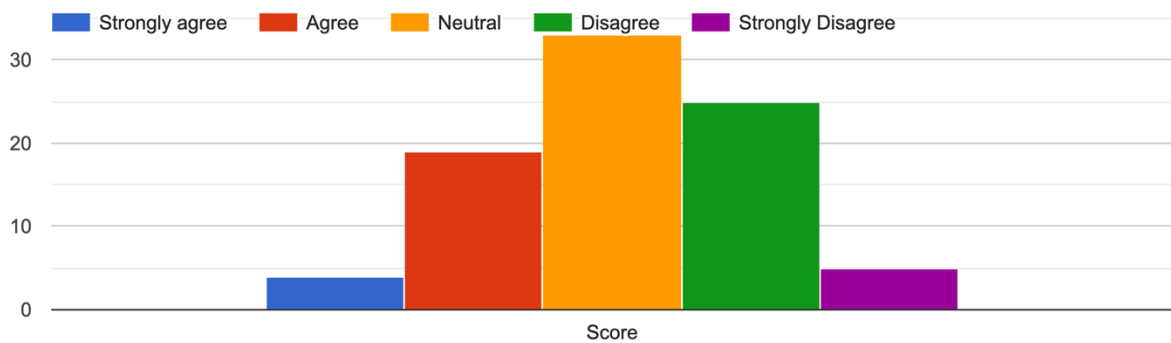
I was overall happier, and in a better mood when classes were held offline.



I felt more lethargic and tired during online classes which reduced my capacity to learn and retain information.

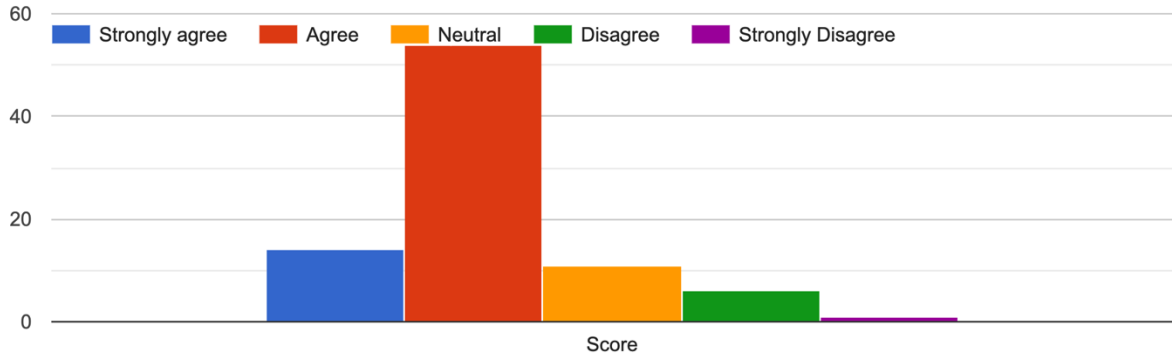


I have noticed a positive change in creativity during online classes.

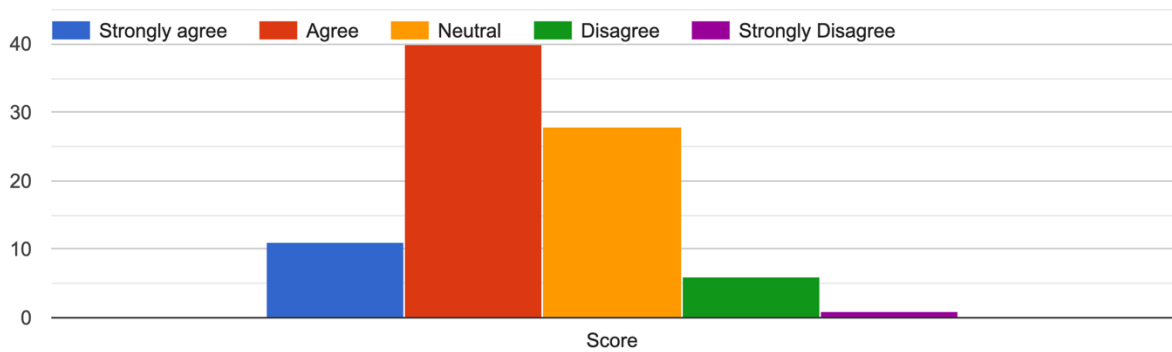


**Discipline and Productivity:**

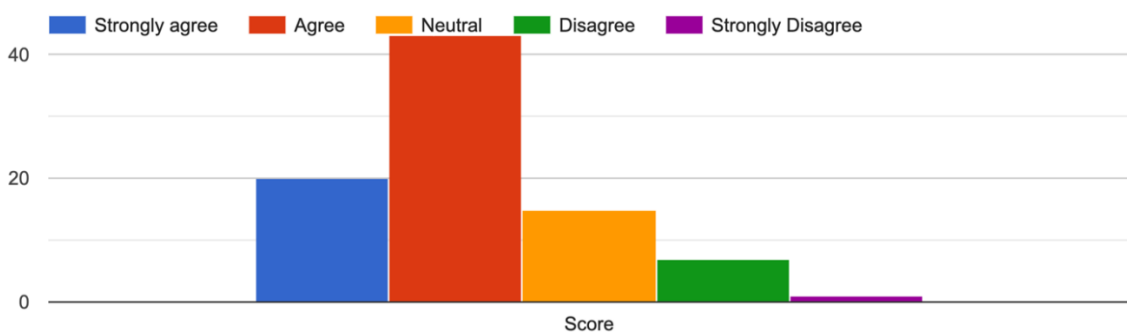
I had a more fixed routine when classes started offline



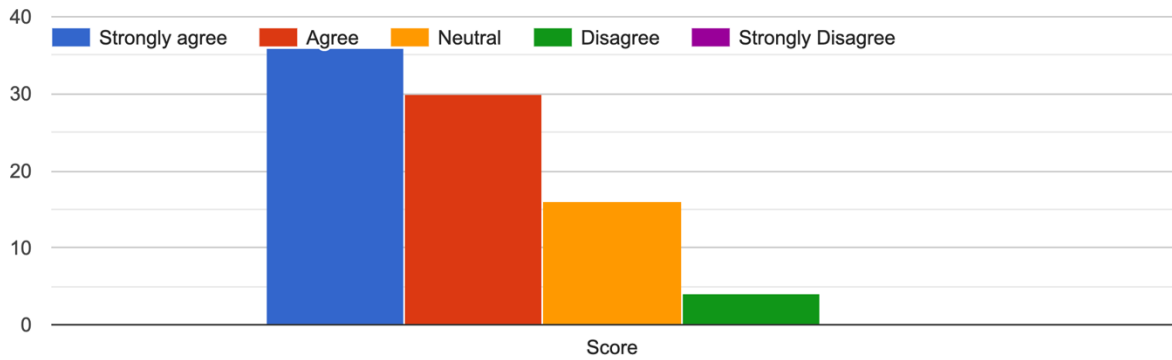
I did more work in lesser time during offline classes



I felt more productive during my day, when classes were offline

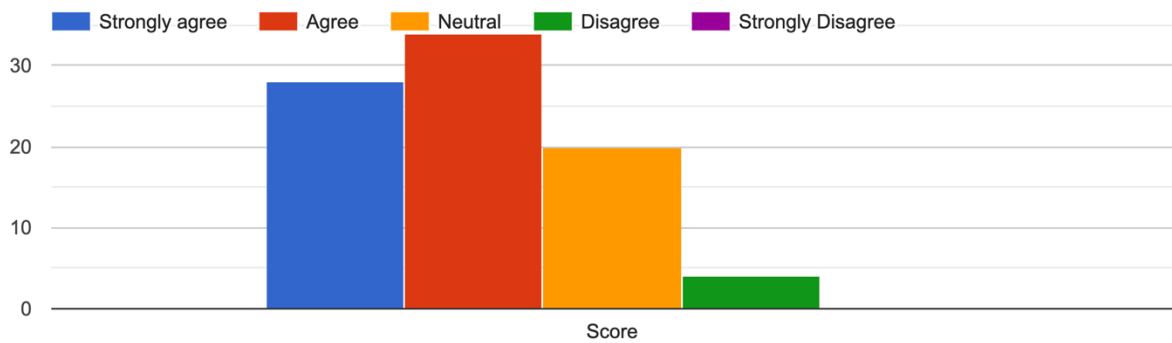


I took Academics more lightly in online classes

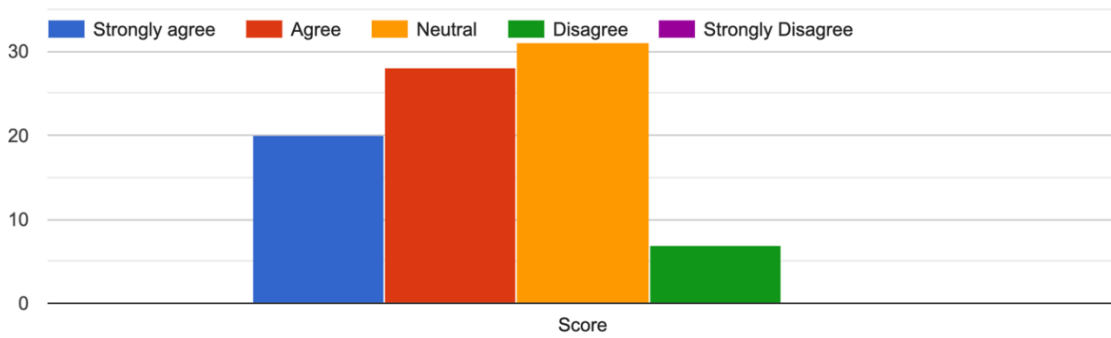


**Class participation:**

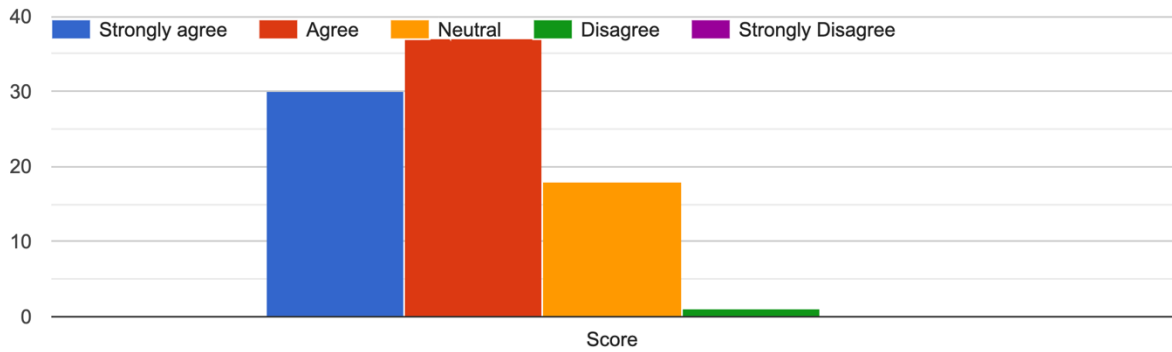
I found myself interacting more during classes on campus compared to online



I asked my doubts and answered questions more freely in offline class



I had a better bond with both teachers and peers in offline classes.



I had lesser confusion related to topics taught in offline classes.

