AN ANALYSIS ON STUDENT SATISFACTION TOWARDS VIRTUAL LEARNING WITH REFERENCE TO ST TERESAS COLLEGE ERNAKULAM

Project Report

Submitted by

ANN THERESA

Reg.No. AM21COM005

Under the guidance of

Ms. BONITA CLARA DSOUZA

In partial fulfillment of requirements for award of the post graduate degree of

Master of Commerce and Management

ST. TERESA'S COLLEGE (AUTONOMOUS), ERNAKULAM

COLLEGE WITH POTENTIAL FOR EXCELLENCE

Nationally Re-Accredited at 'A++'Level (Fourth Cycle) Affiliated to

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March 2023

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CERTIFICATE

This is to certify that the project report title **AN ANALYSIS ON STUDENT SATISFACTION TOWARDS VIRTUAL LEARNING WITH REFERENCE TO ST TERESAS COLLEGE ERNAKULAM submitted** by **ANN THERESA**

Towards partial fulfilment of the requirements for the award of post graduate degree of **Master of Commerce and Management** is a record of bonafide work carried out by them during the academic year 2021-23.

Supervising Guide **Head of the Department**

Ms. Bonita Clara Dsouza
Assistant Professor
Dept. of Commerce

Ms. Ann Thomas Kiriyanthan
Assistant professor
Dept. of Commerce

Place: Ernakulam

Date: 31.3.2023

DECLARATION

I, **ANN THERESA** hereby declare that this dissertation entitled**, 'AN ANALYSIS ON STUDENT SATISFACTION TOWARDS VIRTUAL LEARNING WITH REFERENCE TO ST TERESAS COLLEGE ERNAKULAM'** has been prepared by us under the guidance of **Ms. BONITA CLARA DSOUZA**, Assistant Professor, Department of Commerce, St Teresa's College, Ernakulam.

I also declare that this dissertation has not been submitted by me fully or partly for the award of any Degree, Diploma, Title or Recognition before.

Place: ERNAKULAM **ANN THERESA**

Date: 31.3.2023

ACKNOWLEDGEMENT

I wish to acknowledge all those who helped us to complete this study. I thank God almighty for helping me and guiding me in the right path and who made all things possible.

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I would like to express my thanks to all respondents and colleagues in developing the project.

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ANN THERESA

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

In recent years, the educational landscape has experienced a significant shift towards virtual learning due to advancements in technology and the global adoption of online education platforms. This transition has been further accelerated by unforeseen circumstances such as the COVID-19 pandemic, which prompted educational institutions worldwide to implement remote learning solutions. As virtual learning becomes increasingly prevalent, it is crucial to evaluate its impact on students' satisfaction and overall educational experience. This project analysis aims to assess student satisfaction towards virtual learning and delve into the factors that influence their perception of this educational modality.

The objective of this project analysis is to assess student satisfaction towards virtual learning and delve into the factors that influence their perception of this educational modality. By analysing the opinions, attitudes, and experiences of students, this study aims to provide valuable insights for educators, policymakers, and educational institutions to enhance virtual learning environments and optimize student engagement and satisfaction.

1.2 SIGNIFICANCE OF THE STUDY

The significance of studying student satisfaction towards virtual learning is crucial in improving the quality of online education. By understanding the factors that influence students' satisfaction, educators can develop effective online teaching practices that enhance students' engagement, motivation, and academic achievement. Additionally, this research can provide valuable insights for policymakers and higher education institutions to design online learning programs that meet students' needs and expectations. Ultimately, this study can contribute to the development of a more effective and satisfying virtual learning experience for students, especially in the context of the ongoing COVID-19 pandemic.

1.3 SCOPE OF THE STUDY

The scope of the study on student satisfaction towards virtual learning can cover a range of factors that affect students' perceptions of online education. This may include the quality of course materials, the level of interaction with instructors and peers, the availability of support services, the accessibility of technology, and the overall learning experience. The study may involve a quantitative analysis of student satisfaction surveys or a qualitative examination of students' experiences and perceptions through interviews or focus groups. Additionally, the study can focus on a particular level of education, such as undergraduate or graduate programs, or specific subject areas, such as STEM or humanities. The scope can also include a comparative analysis between traditional face-to-face instruction and online education or a longitudinal study of students' satisfaction over time.

1.4 PROBLEM STATEMENT

The COVID-19 pandemic has caused a rapid shift towards virtual learning as a means to continue education for students across the globe. However, this shift has raised concerns about the quality and effectiveness of online education, particularly in terms of students' satisfaction with their learning experience. Despite the growing popularity of virtual learning, there is a lack of research on what factors contribute to student satisfaction in online education. This gap in knowledge hinders the development of effective online teaching practices and the improvement of the virtual learning experience for students. Therefore, the problem statement is to identify the factors that influence student satisfaction towards virtual learning, which can inform the design and implementation of effective online education programs that meet students' needs and expectations.

1.5 OBJECTIVES OF THE STUDY

- To identify the satisfaction level of students with the “learning environment” experienced in e-learning programs.
- To identify the satisfaction level of students with the “teaching methods” experienced in e-learning programs.
- To find out how satisfied are the students with the resources available.
- To have a comparison in the satisfaction level of students with e-learning and classroom learning.

1.6 HYPOTHESIS

H0 – There is no significant difference between the satisfaction levels of students on the learning environment with respect to age.
H1 – There is a significant difference between the satisfaction levels of students on the learning environment with respect to age.

H0 – There is no significant difference between the satisfaction levels of students on the teaching methods with respect to age.
H1 – There is a significant difference between the satisfaction levels of students on the teaching methods with respect to age.

H0 – There is no significant difference between the student's satisfaction of e-resources available in e-learning with respect to age.
H1 – There is a significant difference between the student's satisfaction of e-resources available in e-learning with respect to age.

H0: The satisfaction level of students with e-learning and classroom learning is independent to age.
H1: The satisfaction level of students with e-learning and classroom learning is dependent to age.

1.7 METHODOLOGY

1.7.1 RESEARCH DESIGN

The present study includes both descriptive and analytical study. It is descriptive in the sense that it tries to identify the various characteristics of research problem under study and the present situation of the issue. It is analytical in the sense that it analyses and interprets data in order to arrive at conclusions.

1.7.2 COLLECTION OF DATA

To study the objectives both primary and secondary data have been used.

1.7.3 SAMPLING DESIGN

Sampling technique: Convenient sampling technique is used for collecting data.

Area of study: Ernakulam

Sample size: 100 samples

1.7.4 TOOLS OF ANALYSIS

The data collected from respondents has been classified, analysed and interpreted keeping in view the objectives of the study. Data collected are properly presented through tables, bar diagrams, and pie charts, thereby making it easy to draw inferences. The statistical tool used for study is percentage test, Kruskal Wallis test, mean and standard deviation.

1.8 LIMITATIONS

- Sample size: The study may be limited by the size and representativeness of the sample, as it may not be possible to include a large and diverse population of students.

- Self-reported data: The study may rely on self-reported data from students, which may be subject to response bias or social desirability bias, and may not reflect their true experiences.

- Generalizability: The study may be limited in terms of generalizability, as the findings may not be applicable to different educational contexts or cultures.

- External factors: The study may not account for external factors that may influence students' satisfaction with virtual learning, such as socioeconomic status, prior academic achievement, or access to technology.

- Time constraints: The study may be limited by time constraints, as it may not be feasible to conduct a longitudinal study that tracks students' satisfaction over an extended period.

- Technology issues: The study may be affected by technical issues that may interfere with students' ability to engage in online learning, such as internet connectivity or computer malfunctions.

1.9 KEY WORDS

- Virtual learning: Refers to the use of digital technologies to deliver educational content and instruction remotely. Virtual learning allows students to participate in courses and programs from anywhere with an internet connection, without needing to be physically present in a classroom.

- E-learning: Refers to the use of electronic technologies and digital media to facilitate learning and teaching. E-learning can include virtual learning environments, multimedia content, online discussion forums, and other digital tools that support learning and instruction.

- Student satisfaction: Refers to the level of contentment that students have with their educational experiences, including the quality of instruction, course materials, support services, and overall learning environment. High

levels of student satisfaction are generally associated with positive academic outcomes, such as higher retention rates and better academic performance.

- COVID-19 pandemic: Refers to the global health crisis caused by the spread of the novel coronavirus, SARS-CoV-2, which emerged in late 2019. The pandemic has had a significant impact on education systems around the world, leading to widespread closures of schools and universities, and a shift towards remote and online learning to ensure the continuity of education

1.10 CHAPTERISATION

- Chapter 1 – Introduction: This is an introduction chapter that includes introduction, significance, problem statement, objectives, methodology, scope, limitation, keywords and chapterisation.
- Chapter 2 – Review of Literature: This chapter deals with literature review which is a collection of many published works.
- Chapter 3 – Theoretical framework: This chapter includes the theoretical works relating with the study.
- Chapter 4 – Data Analysis and Interpretation: This chapter is an analysis of the primary data collected for the purpose of study. It includes tables, graphical representations, their analysis and interpretations.
- Chapter 5 – Summary, funding, recommendations and conclusion: This is the conclusion chapter which contains summary of the study, findings of the study, recommendations.

CHAPTER 2

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Wang, Q., Chen, L., & Liang, Y. (2020). The effects of online learning on students' satisfaction, academic performance, and retention. Journal of Education and Learning, 9(1), 119-126.
This study aimed to investigate the effects of online learning on student satisfaction, academic performance, and retention. The study found that online learning had a positive effect on student satisfaction, academic performance, and retention. The study also found that students who were satisfied with online learning were more likely to continue with online learning in the future.

Kebritchi, M., Lipschuetz, A., & Santiague, L. (2017). Issues and challenges for teaching successful online courses in higher education: A literature review. Journal of Educational Technology Development and Exchange, 10(1), 1-14.
This literature review explored the issues and challenges of teaching successful online courses in higher education. The review found that one of the main challenges was maintaining student satisfaction. The review also found that effective communication, timely feedback, and interaction with peers and instructors were crucial factors in maintaining student satisfaction in online courses.

Eom, S. B., Wen, H. J., & Ashill, N. (2016). The determinants of students' perceived learning outcomes and satisfaction in university online education: An empirical investigation. Decision Sciences Journal of Innovative Education, 14(2), 201-222.
This study investigated the determinants of students' perceived learning outcomes and satisfaction in university online education. The study found that student-instructor interaction, student-content interaction, and student-student interaction were significant predictors of student satisfaction. The study also found that students' perceived learning outcomes were positively associated with student satisfaction.

Alqurashi, E. (2019). Predictors of student satisfaction and perceived learning within online learning environments. Journal of Education and Practice, 10(5), 91-102.

This study examined the predictors of student satisfaction and perceived learning within online learning environments. The study found that student-instructor interaction, student-content interaction, and student-student interaction were significant predictors of student satisfaction. The study also found that perceived learning was positively associated with student satisfaction.

Al-Rahmi, W. M., & Zeki, A. M. (2018). The effects of satisfaction and anxiety on students' performance in online learning: A case of Yemen. International Journal of Information and Education Technology, 8(1), 51-55.

This study investigated the effects of satisfaction and anxiety on students' performance in online learning. The study found that satisfaction had a positive effect on students' performance

Kim, K. J., Liu, S., & Bonk, C. J. (2005). Online MBA students' perceptions of online learning: Benefits, challenges, and suggestions. Internet and Higher Education, 8(4), 335-344.

This study explored online MBA students' perceptions of online learning. The study found that students perceived online learning as providing flexibility and convenience, but also identified challenges such as lack of social interaction and technical difficulties. The study suggests that institutions need to address these challenges to enhance student satisfaction with online learning.

Arbaugh, J. B., Godfrey, M. R., Johnson, M., Pollack, B. L., Niendorf, B., & Wresch, W. (2009). Research in online and blended learning in the business disciplines: Key findings and possible future directions. Internet and Higher Education, 12(2), 71-87.

This review paper summarized the key findings of research on online and blended learning in the business disciplines. The paper found that student satisfaction was one of the most studied topics in the literature on online and blended learning. The

paper suggests that future research should investigate the factors that contribute to student satisfaction in online and blended learning environments.

Zhang, W., Wang, Y., Yang, L., & Wang, C. (2020). The effects of individual and social factors on student satisfaction in online learning during the COVID-19 pandemic. Journal of Educational Technology Development and Exchange, 13(1), 1-20.
This study investigated the effects of individual and social factors on student satisfaction in online learning during the COVID-19 pandemic. The study found that self-efficacy, social support, and perceived instructor care were significant predictors of student satisfaction. The study suggests that institutions should provide support and care to students to enhance their satisfaction with online learning.

Li, X., Ma, X., & Sun, Y. (2021). Exploring the factors that affect student satisfaction in online learning during the COVID-19 pandemic. Education Sciences, 11(1), 27.
This study explored the factors that affect student satisfaction in online learning during the COVID-19 pandemic. The study found that instructor support, technical support, and course design were significant predictors of student satisfaction. The study suggests that institutions should focus on these factors to enhance student satisfaction with online learning.

Lee, S., Lee, Y., & Kim, J. (2020). A comparative analysis of satisfaction and learning outcomes between face-to-face and online learning. Journal of Educational Technology Development and Exchange, 13(2), 25-38.
This study conducted a comparative analysis of satisfaction and learning outcomes between face-to-face and online learning. The study found that online learning had a lower level of student satisfaction compared to face-to-face learning. However, the study found no significant difference in learning outcomes between the two modes of learning. The study suggests that institutions should consider the trade-offs between satisfaction and learning outcomes when deciding on the mode of learning delivery.

Shen, Y., & Chen, N. S. (2019). Understanding and promoting student satisfaction in mobile learning. Journal of Educational Technology Development and Exchange, 12(2), 43-56.
This study investigated the factors that contribute to student satisfaction in mobile learning. The study found that perceived ease of use, perceived usefulness, and perceived enjoyment were significant predictors of student satisfaction. The study suggests that institutions should design mobile learning applications that are easy to use, useful, and enjoyable to enhance student satisfaction.

Andrade, A. D., & Bunker, E. (2021). Virtual synchronous classroom technology in higher education: Analysis of student satisfaction and engagement. Journal of Computing in Higher Education,

Reisetter, M., Borisova, I., & Toker, S. (2019). Student satisfaction with online learning: Lessons from organizational behaviour management. Journal of Applied Research in Higher Education, 11(2), 287-297.
This study applied principles from organizational behaviour management to improve student satisfaction with online learning. The study found that providing clear expectations, timely feedback, and opportunities for social interaction were effective strategies for enhancing student satisfaction. The study suggests that institutions should incorporate these strategies into their online learning design to improve student satisfaction.

Hew, K. F., & Cheung, W. S. (2014). Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges. Educational Research Review, 12, 45-58.
This study explored students' and instructors' motivations and challenges in massive open online courses (MOOCs). The study found that students were motivated by flexibility and convenience, while instructors were motivated by the potential to reach a large audience. The study also identified challenges such as

lack of interaction and feedback. The study suggests that institutions should address these challenges to enhance student satisfaction with MOOCs.

Baran, E., & Correia, A. P. (2014). A professional development framework for online teaching. TechTrends, 58(5), 95-101.
This article proposes a professional development framework for online teaching that emphasizes the importance of pedagogical and technological competencies. The article suggests that institutions should provide professional development opportunities for online instructors to enhance their teaching effectiveness and, in turn, improve student satisfaction with online learning.

Tian, H., Zhao, Y., & Li, X. (2021). The impact of teacher immediacy and student motivation on online learning satisfaction: A mediation model. Educational Sciences: Theory & Practice, 21(3), 68-84.
This study investigated the impact of teacher immediacy and student motivation on online learning satisfaction. The study found that teacher immediacy and student motivation had direct and indirect effects on online learning satisfaction through perceived learning and social presence. The study suggests that institutions should promote teacher immediacy and student motivation to enhance student satisfaction with online learning.

Kuo, Y. C., Walker, A. E., Schroder, K. E., & Belland, B. R. (2014). Interaction, Internet self-efficacy, and self-regulated learning as predictors of student satisfaction in online education courses. The Internet and Higher Education, 20, 35-50.
This study examined the predictors of student satisfaction in online education courses. The study found that interaction, internet self-efficacy, and self-regulated learning were significant predictors of student satisfaction. The study suggests that institutions should design online courses that promote interaction, enhance internet self-efficacy, and foster self-regulated learning to improve student satisfaction.

Lee, Y., Choi, J., Kim, T., & Lee, K. (2020). A study on factors affecting online learning satisfaction of university students: Focusing on the quality of e-learning contents, self-directed learning ability and learning motivation. Sustainability, 12(8), 3269.

This study investigated the factors affecting online learning satisfaction of university students, focusing on the quality of e-learning contents, self-directed learning ability, and learning motivation. The study found that all three factors were significant predictors of online learning satisfaction. The study suggests that institutions should provide high-quality e-learning contents, promote self-directed learning, and foster learning motivation to enhance student satisfaction with online learning.

Alqurashi, E. (2019). Predictors of student satisfaction and perceived learning within online learning environments. Journal of Research on Technology in Education, 51(3), 250-263.

This study examined the predictors of student satisfaction and perceived learning within online learning environments. The study found that instructional design, interaction, and technology were significant predictors of both student satisfaction and perceived learning. The study suggests that institutions should pay attention to these factors when designing online learning environments to enhance student satisfaction.

Aragon, S. R., & Johnson, S. D. (2008). Factors influencing completion and non-completion of community college online courses. American Journal of Distance Education, 22(3), 146-158.

This study investigated the factors influencing completion and non-completion of community college online courses. The study found that student satisfaction was a significant predictor of course completion. The study suggests that institutions should focus on enhancing student satisfaction to increase course completion rates in online learning environments.

Arbaugh, J. B. (2014). Does academic discipline moderate the effects of student engagement on web-based learning outcomes? Journal of Management Education, 38(2), 185-213.
This study examined the moderating effect of academic discipline on the relationship between student engagement and web-based learning outcomes. The study found that the relationship between student engagement and learning outcomes was stronger for students in non-business disciplines than for students in business disciplines. The study suggests that institutions should consider the academic discipline of students when designing online courses to enhance student satisfaction and learning outcomes.

Li, C., & Lalani, F. (2020). The COVID-19 pandemic has changed education forever. This is how. World Economic Forum. Retrieved from https://www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-online-digital-learning/
This article discusses the impact of the COVID-19 pandemic on education and the shift towards online and digital learning. The article suggests that the pandemic has accelerated the adoption of online learning and highlights the importance of designing high-quality online courses that meet the needs of students. The article emphasizes the need for institutions to prioritize student satisfaction with online learning to ensure the effectiveness and sustainability of online education

CHAPTER 3

THEORETICAL FRAMEWORK

3.1 LEARNING THEORIES

To design effective virtual learning environments, it is important to understand the learning theories that underpin them. Learning theories provide a framework for understanding how people learn and what factors influence the learning process. There are several popular learning theories that can be applied to virtual learning, including constructivism, behaviourism, and connectivism. Each of these theories has its own unique perspective on learning, and understanding them can help educators design virtual learning environments that are engaging, effective, and meet the needs of diverse learners.

constructivism, behaviourism, and connectivism are popular learning theories that can be applied to virtual learning.

- Constructivism: This theory posits that learning is an active process of constructing knowledge and meaning through experiences and interactions with the environment. In the context of virtual learning, constructivism suggests that learners should be provided with opportunities to engage with the material in a meaningful way, such as through hands-on activities or collaborative projects. This approach emphasizes the importance of learner-cantered instruction, where learners are encouraged to take an active role in their own learning process.
- Behaviourism: This theory focuses on observable behaviours and the external factors that influence them, such as rewards and punishments. In the context of virtual learning, behaviourism suggests that learners should be provided with clear and specific goals, along with regular feedback and reinforcement. This approach emphasizes the importance of structured and consistent instruction, where learners are guided through a series of steps or tasks.
- Connectivism: This theory posits that learning is a process of connecting information and ideas across networks of people and resources. In the context of virtual learning, connectivism suggests that learners should be

encouraged to explore a variety of sources and perspectives, and to participate in online communities and networks. This approach emphasizes the importance of open and collaborative learning, where learners are encouraged to engage with others and share their own knowledge and experiences.

It's worth noting that these theories are not mutually exclusive, and many educators incorporate elements of multiple theories in their virtual learning design.

3.2 STUDENT SATISFACTION MODELS

Student satisfaction models are frameworks that explain how and why students evaluate their satisfaction with virtual learning environments. These models can provide a structured approach to understanding student satisfaction and can help educators and administrators identify specific areas of improvement.

One such model is the American Customer Satisfaction Index (ACSI), which is a well-established model for measuring customer satisfaction in various industries, including education. The ACSI model evaluates satisfaction based on several factors, including expectations, perceived quality, and perceived value. It provides a numerical score between 0 and 100, with higher scores indicating greater satisfaction.

Another model that can be applied to virtual learning is the Student Evaluation of Educational Quality (SEEQ) model. The SEEQ model was developed specifically for evaluating teaching effectiveness in higher education but can also be applied to virtual learning environments. This model assesses student satisfaction based on factors such as instructor communication, organization, and course content.

Both of these models, and others like them, can provide a framework for understanding and evaluating student satisfaction with virtual learning environments. By considering these models in the theoretical framework,

researchers can develop a comprehensive understanding of the factors that contribute to student satisfaction with virtual learning during COVID-19.

3.2.1 AMERICAN CUSTOMER SATISFACTION INDEX(ACSI)

The American Customer Satisfaction Index (ACSI) is a widely used model for measuring customer satisfaction in a variety of industries, including education. The ACSI model is based on the premise that customer satisfaction is a function of customer expectations and perceptions of product/service quality.

The ACSI model involves three components: customer expectations, perceived quality, and perceived value. Customer expectations refer to the customer's pre-purchase expectations of the product or service, while perceived quality refers to the customer's evaluation of the actual quality of the product or service. Perceived value is the customer's evaluation of the overall value received from the product or service relative to the cost.

In the context of virtual learning environments, the ACSI model can be used to assess student satisfaction by measuring their expectations of the virtual learning experience, their perceptions of the actual quality of the experience, and their evaluation of the value of the experience relative to the cost. The ACSI model can provide valuable insights into specific areas of virtual learning environments that may need improvement in order to increase student satisfaction.

3.2.2 STUDENT EVALUATION OF EDUCATIONAL QUALITY(SEEQ)

The Student Evaluation of Educational Quality (SEEQ) model is another popular model used to evaluate student satisfaction with educational environments. It was developed in the 1970s by Herbert W. Marsh and colleagues and has been widely used in higher education settings.

The SEEQ model focuses on four main dimensions of educational quality:

- Instructor effectiveness: This dimension assesses the instructor's communication skills, knowledge of the subject matter, enthusiasm, and ability to challenge and motivate students.
- Course content: This dimension assesses the relevance, clarity, and organization of the course content.
- Personal interaction: This dimension assesses the degree to which the instructor shows interest in and respect for students, listens to and responds to student concerns, and provides helpful feedback.
- Overall quality: This dimension assesses students' overall satisfaction with the course and instructor.

SEEQ uses a combination of open-ended and Likert-type questions to gather data on these four dimensions. The responses are then analysed to generate a composite score for each dimension as well as an overall score for the course. SEEQ has been shown to have high reliability and validity, and it is widely used by institutions to gather feedback from students and improve the quality of education.

3.3 OVERVIEW OF THE IMPACT OF COVID-19 PANDEMIC ON EDUCATION SYSTEMS WORLDWIDE

The COVID-19 pandemic has had a profound impact on education systems around the world, with many institutions forced to shift from traditional classroom-based learning to virtual learning environments almost overnight. This sudden transition has presented numerous challenges for students, teachers, and educational institutions alike.

One major challenge has been the need for rapid adaptation and upskilling in order to effectively deliver and participate in virtual learning. Teachers have had to quickly develop new skills and adapt their teaching methods to suit the online

environment, while students have had to adjust to new technologies and learn how to engage with their peers and instructors in a virtual setting.

Another challenge has been the digital divide, which has left many students without access to the necessary technology or internet connectivity to participate in virtual learning. This has created a significant equity issue, with some students being unable to fully engage with their education due to their socioeconomic status or geographic location.

The shift to virtual learning has also had an impact on the social and emotional wellbeing of students. The lack of face-to-face interaction and the isolation of learning from home has led to feelings of loneliness, anxiety, and stress for many students.

Despite these challenges, the COVID-19 pandemic has also highlighted the potential benefits of virtual learning, including increased flexibility and accessibility, as well as the ability to leverage technology to enhance learning outcomes. As such, understanding the impact of the pandemic on education systems and virtual learning environments is critical to developing effective strategies for the future.

3.4 STUDENT ENGAGEMENT AND MOTIVATION

Student engagement and motivation are crucial components of effective learning in virtual environments. To maximize student engagement and motivation, virtual learning environments should be designed to provide students with opportunities for active participation and meaningful interaction with the course material and their peers. Various factors influence student engagement and motivation in virtual learning environments, including gamification, social learning, and self-determination theory. Understanding these factors and how they interact with each other can help educators design virtual learning environments that promote student engagement and motivation, leading to improved learning outcomes

The success of virtual learning environments largely depends on the engagement and motivation of students. In order to design effective virtual learning environments, it is important to understand the factors that influence student engagement and motivation. This can include a range of factors, from the design of the virtual learning environment itself to the individual characteristics and learning preferences of the students. In this section of the theoretical framework, we will explore some of the key factors that can impact student engagement and motivation in virtual learning environments. Factors that influence student engagement and motivation in virtual learning environments:

- Gamification: Gamification is the use of game elements and game design techniques in non-game contexts. In virtual learning environments, gamification can be used to increase student engagement and motivation by making learning more fun and interactive. For example, incorporating badges, rewards, and leader boards into the virtual learning platform can incentivize students to participate and engage in the learning process.
- Social Learning: Social learning theory suggests that individuals learn through observation and imitation of others. In virtual learning environments, social learning can be facilitated through discussion forums, group projects, and peer feedback. This creates a sense of community and collaboration among students, which can increase engagement and motivation.
- Self-Determination Theory: Self-determination theory is a motivational theory that suggests individuals are motivated by three innate psychological needs: autonomy, competence, and relatedness. In virtual learning environments, autonomy can be fostered by giving students control over their learning experience, such as allowing them to choose their own topics or pace of learning. Competence can be promoted by providing students with challenging but achievable tasks and providing feedback to help them improve. Relatedness can be facilitated by promoting a sense of community and belonging through group activities and peer interaction.

Overall, understanding these factors can help in designing virtual learning environments that promote engagement and motivation among students.

3.5 PEDAGOGICAL STRATEGIES USED FOR VIRTUAL LEARNING

Pedagogical strategies refer to the various teaching methods and techniques used by educators to impart knowledge and skills to students. In the context of virtual learning, there are several pedagogical strategies that have been found to be effective in promoting student engagement and learning.

- Active learning is a pedagogical strategy that involves students in the learning process by requiring them to participate actively in class discussions, group projects, and problem-solving activities. Collaborative learning is another strategy that involves students working together in groups to complete assignments and projects. This encourages them to share ideas and perspectives, and also helps to develop their communication and teamwork skills.

- Problem-based learning is a strategy that involves students in solving real-world problems or case studies. This promotes critical thinking, problem-solving, and decision-making skills. Another effective strategy is the flipped classroom approach, where students learn the content at home through online resources, and class time is used for discussions, problem-solving, and collaboration.

- Educational technology tools such as learning management systems (LMS), video conferencing software, and online assessment tools have also been used as part of pedagogical strategies in virtual learning. The LMS provides a platform for instructors to manage course content, assessments, and communication with students. Video conferencing software allows for virtual classroom sessions and real-time interaction between students and instructors. Online assessment tools enable instructors to evaluate student learning and provide feedback in a timely and efficient manner.

- Video conferencing software allows instructors to hold live virtual classes or meetings with students. This can be used to facilitate discussions, provide

feedback, and answer students' questions. Video conferencing software also helps to create a sense of community and foster social interaction among students.

- Online assessment tools allow instructors to create and administer quizzes, tests, and exams online. This can be used to assess students' learning and provide feedback on their progress. Online assessment tools also help to improve the efficiency of grading and provide immediate feedback to students.

By employing these pedagogical strategies and using educational technology tools, instructors can create a more engaging and effective virtual learning environment, even during the COVID-19 pandemic.

CHAPTER 4
DATA ANALYSIS

DATA ANALYSIS

4.1 AGE

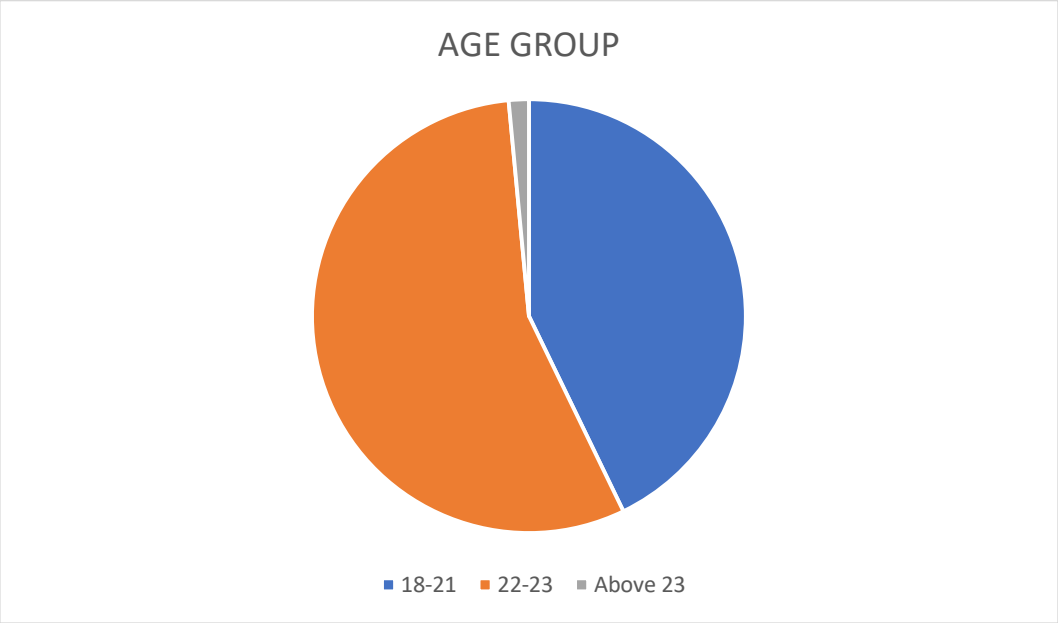

FIGURE 4.1

Age Group	Frequency	Percent
18 -21	40	40.0
22 -23	52	52.0
Above 23	8	8.0
Total	100	100.0

TABLE 4.1 Source: Primary data

Interpretation

From the figure and table, it can be inferred that the highest age category belongs to the group of 22-23 which comprises of 52% and the lowest age category belongs to the group of above 23 which consists of 8%

4.2 Better Platforms for e learning

Better Platforms for e learning	Mean	Std. Deviation	Coefficient of Variation
Moodle	3.530	1.473	41.738
Google classroom	3.300	1.541	46.688
Google Meet	2.970	1.521	51.199
Zoom	**3.580**	**1.401**	**39.138**
Ms Teams	3.380	1.405	41.582

TABLE 4.2 Source: Primary data

Interpretation

Table 4.2 reveals the better platform for e learning. Most of the students says that zoom is a better platform for e learning. The respondents mean value of Moodle is 3.530. Co efficient of variation is a measure of relative variability and the least value shows that it is more consistent. In this table 39.138 is the least value so Zoom is the most consistent variable in this factor.

4.3 E-learning courses provide different learning modalities

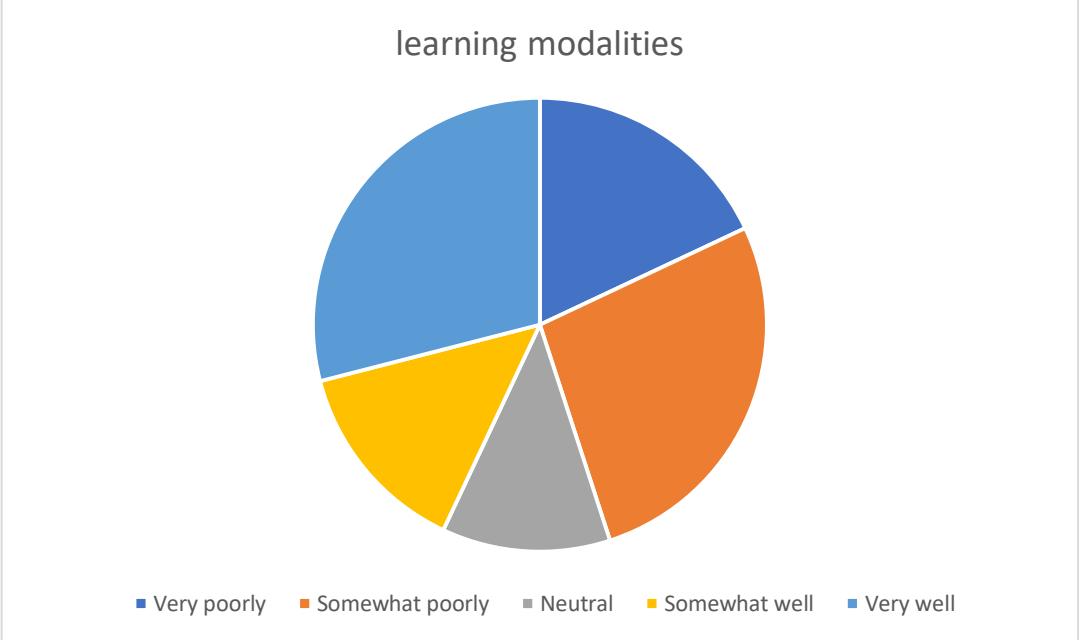

FIGURE 4.3

E-learning courses provide different learning modalities	Frequency	Percent
Very poorly	18	18.0
Somewhat poorly	27	27.0
Neutral	12	12.0
Somewhat well	14	14.0
Very well	29	29.0
Total	100	100.0

TABLE 4.3 Source: Primary data

Interpretation

From the figure and table, it can be inferred that 27% and 18% of respondents rated e-learning courses as somewhat or very poorly, 14% as somewhat well, and 29% as very well. Another 12% of respondents were neutral.

4.4 E-learning courses provide interactive and engaging learning experiences

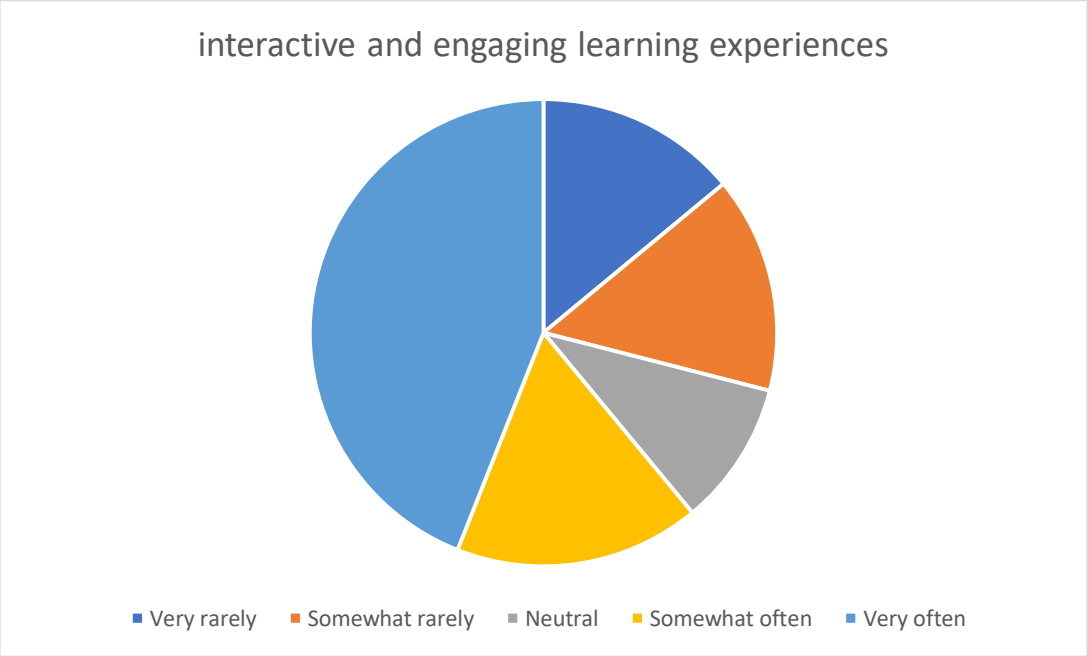

FIGURE 4.4

E-learning courses provide interactive and engaging learning experiences	Frequency	Percent
Very rarely	14	14.0
Somewhat rarely	15	15.0
Neutral	10	10.0
Somewhat often	17	17.0
Very often	44	44.0
Total	100	100.0

TABLE 4.4 Source: Primary data

Interpretation

From the figure and table, it can be inferred that E-learning courses provide interactive and engaging learning experiences very often for 44%, somewhat often for 17% of respondents and 10% has a neutral opinion.

4.5 E-learning courses challenge you to think critically and apply what you have learned

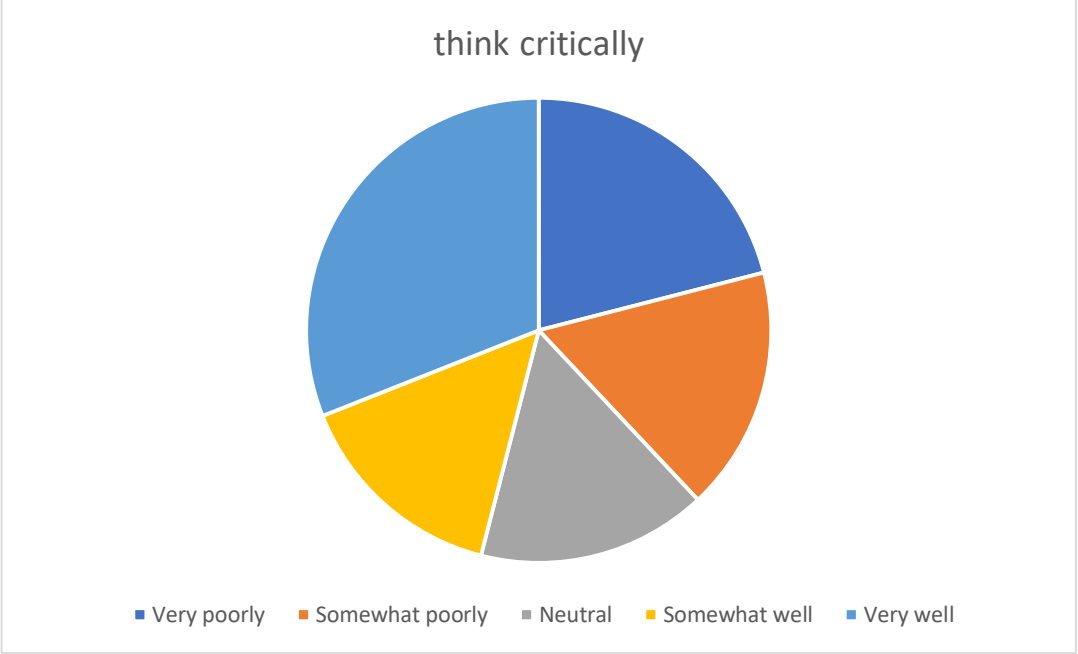

FIGURE 4.5

E-learning courses challenge you to think critically and apply what you have learned	Frequency	Percent
Very poorly	21	21.0
Somewhat poorly	17	17.0
Neutral	16	16.0
Somewhat well	15	15.0
Very well	31	31.0
Total	100	100.0

TABLE 4.5 Source: Primary data

Interpretation

From the above figure and table, 31% respondents felt that E-learning courses challenge you to think critically and apply what you have learned very well and 15% feels E-learning courses challenge you to think critically and apply what you have learned somewhat well.

4.6 Most valuable aspect of the e-learning environment

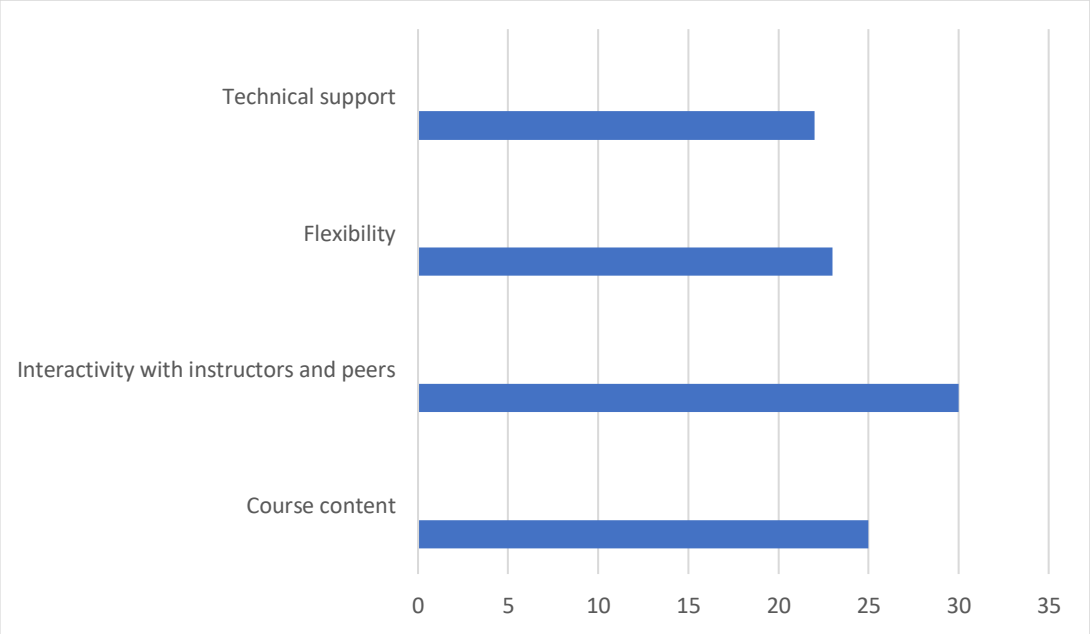

FIGURE 4.6

Most valuable aspect of the e-learning environment for you	Frequency	Percent
Course content	25	25.0
Interactivity with instructors and peers	30	30.0
Flexibility	23	23.0
Technical support	22	22.0
Total	100	100.0

TABLE 4.6 Source: Primary data

Interpretation

From the above figure and table, it can be inferred that the Most valuable aspect of the e-learning environment was Interactivity with instructors and peers according to 30% of the respondents, followed by course content with 25%, flexibility with 23% and the least technical support with 22%.

4.7 Features in the e-learning environment

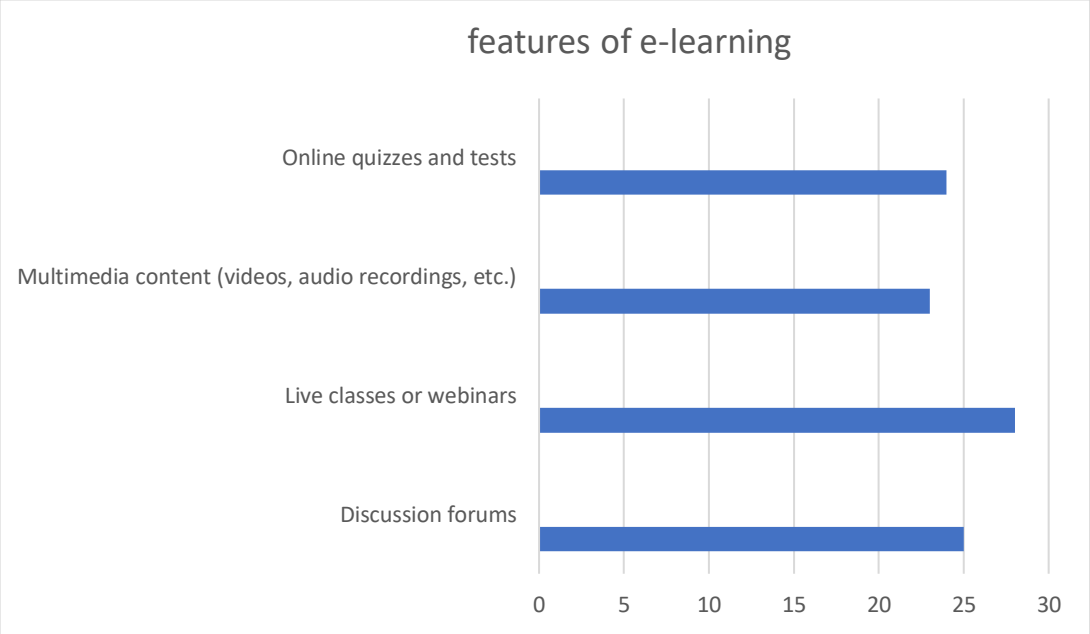

FIGURE 4.7

Features in the e-learning environment did you find most helpful	Frequency	Percent
Discussion forums	25	25.0
Live classes or webinars	28	28.0
Multimedia content (videos, audio recordings, etc.)	23	23.0
Online quizzes and tests	24	24.0
Total	100	100.0

TABLE 4.7 Source: Primary data

Interpretation

From the above figure and table, it can be inferred that the most helpful features in e-learning were live classes or webinars, according to 28% of the respondents followed by discussion forums with 25% and online quizzes and tests with 24%.

4.8 “teaching methods” experienced in e-learning programs

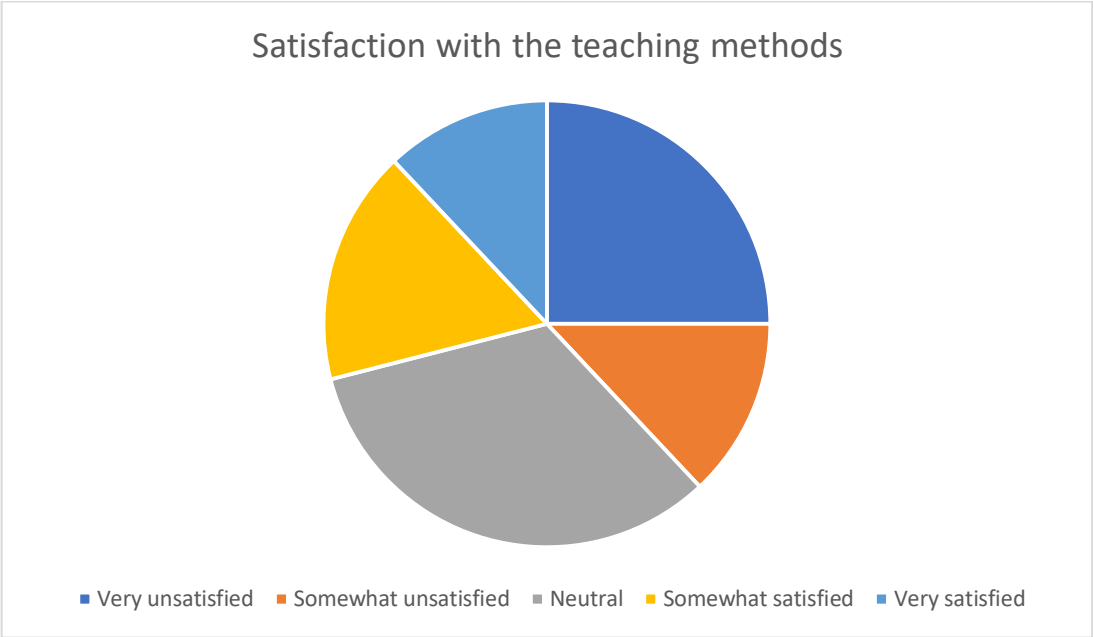

FIGURE 4.8

Satisfaction with the teaching methods used in your e-learning courses	Frequency	Percent
Very unsatisfied	25	25.0
Somewhat unsatisfied	13	13.0
Neutral	33	33.0
Somewhat satisfied	17	17.0
Very satisfied	12	12.0
Total	100	100.0

TABLE 4.8

Interpretation

From the above figure and table, most students were neutral (33%) towards the teaching methods in e-learning courses, while 25% were very unsatisfied and 13% were somewhat unsatisfied. 17% of students were somewhat satisfied, and 12% were very satisfied. Improvement in teaching methods may increase student satisfaction, and specific feedback can help identify areas to improve.

4.9 Support provided by the instructors in your e-learning

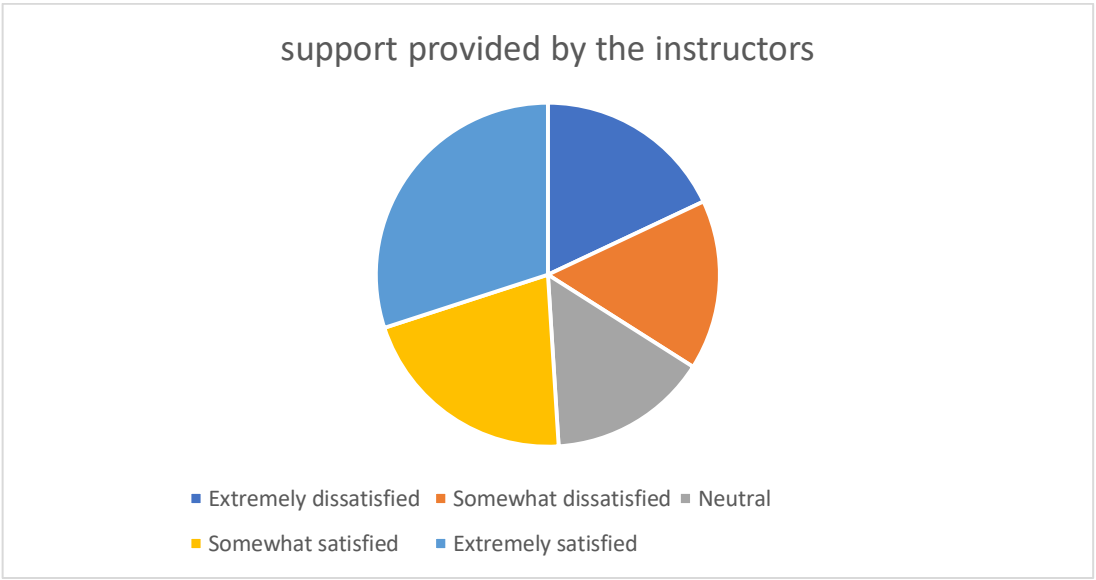

FIGURE 4.9

Satisfaction with the level of support provided by the instructors in your e-learning courses	Frequency	Percent
Extremely dissatisfied	18	18.0
Somewhat dissatisfied	16	16.0
Neutral	15	15.0
Somewhat satisfied	21	21.0
Extremely satisfied	30	30.0
Total	100	100.0

TABLE 4.9

Interpretation

From the above figure and table, 30% of students were extremely satisfied, and 21% were somewhat satisfied with the level of support provided by instructors in e-learning courses. 15% were neutral, while 18% were extremely dissatisfied, and 16% were somewhat dissatisfied. It's important to address the concerns of the dissatisfied students to improve the support provided to them.

4.10 Effective teaching methods

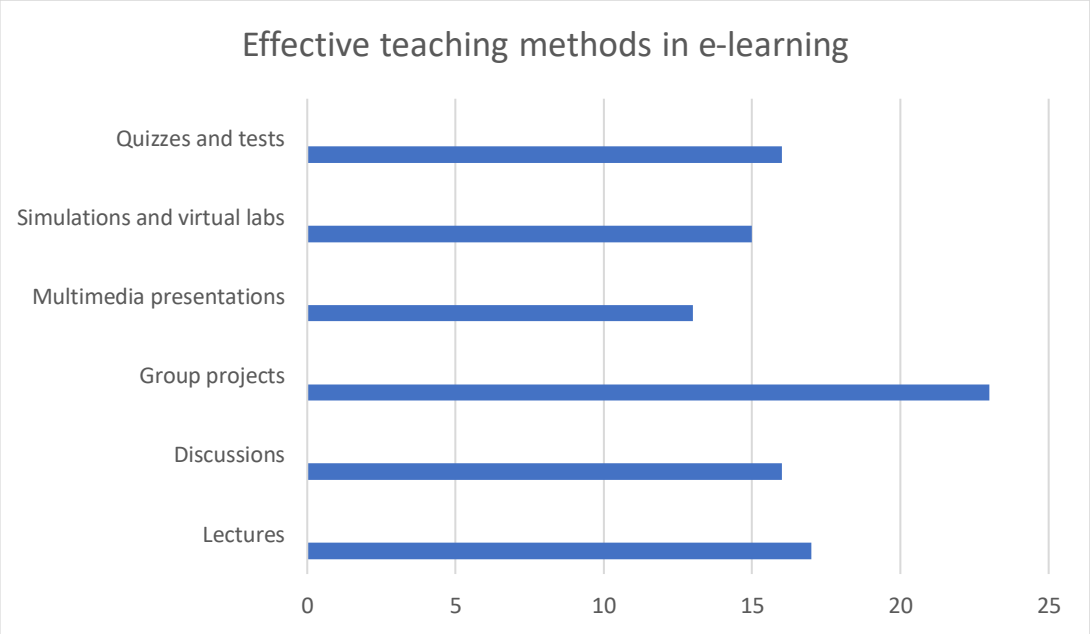

FIGURE 4.10

Teaching methods that you find most effective	Frequency	Percent
Lectures	17	17.0
Discussions	16	16.0
Group projects	23	23.0
Multimedia presentations	13	13.0
Simulations and virtual labs	15	15.0
Quizzes and tests	16	16.0
Total	100	100.0

TABLE 4.10

Interpretation

From the above figure and table, Group projects were the most effective teaching method with 23% of votes, followed by lectures (17%), discussions (16%), quizzes and tests (16%), simulations and virtual labs (15%), and multimedia presentations (13%).

4.11 Teaching methods that you found least effective

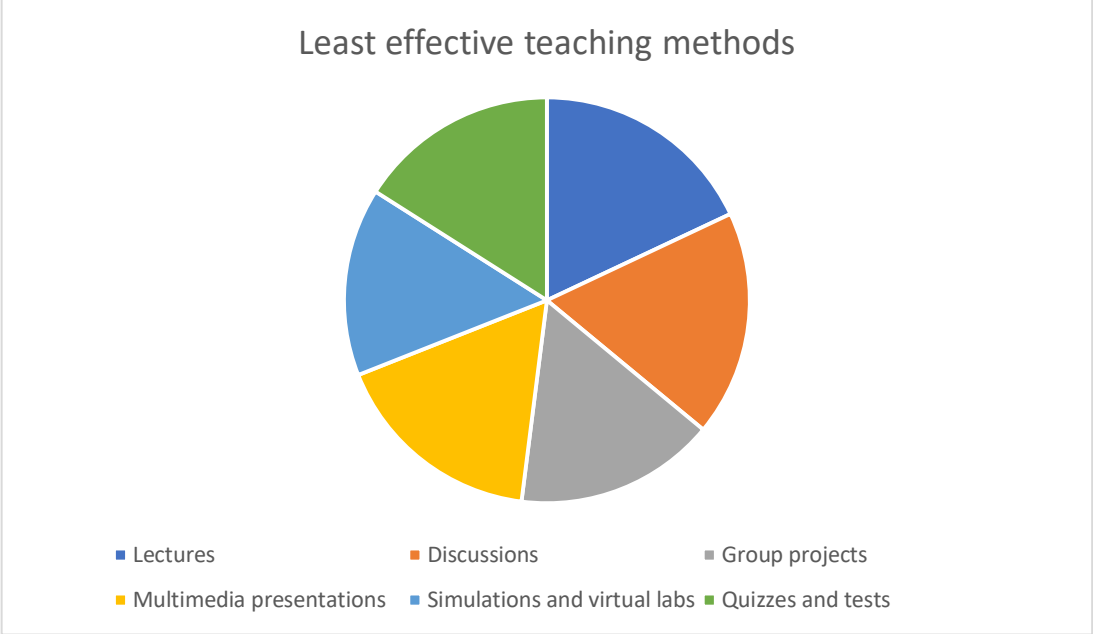

FIGURE 4.11

Teaching methods that you found least effective	Frequency	Percent
Lectures	18	18.0
Discussions	18	18.0
Group projects	16	16.0
Multimedia presentations	17	17.0
Simulations and virtual labs	15	15.0
Quizzes and tests	16	16.0
Total	100	100.0

TABLE 4.11

Interpretation

From the above figure and table, Lectures and discussions were the least effective teaching methods, with 18% of votes each. Multimedia presentations were also deemed ineffective by 17% of students, while simulations and virtual labs were the least effective for 15% of students. Both group projects and quizzes and tests received 16% of votes for being the least effective teaching method.

4.12 Improvements to the teaching methods used in the e-learning program

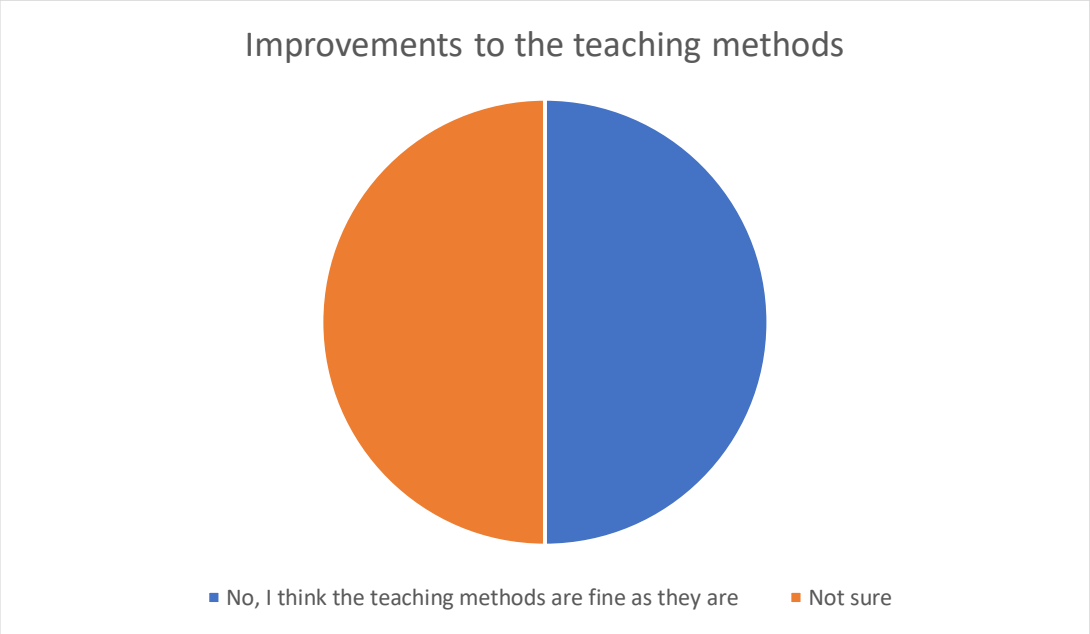

FIGURE 4.12

Changes or improvements to the teaching methods used in the e-learning program	Frequency	Percent
No, I think the teaching methods are fine as they are	50	50.0
Not sure	50	50.0
Total	100	100.0

TABLE 4.12

Interpretation

From the above figure and table, 50% of students did not see the need for changes or improvements to the teaching methods used in the e-learning program. Another 50% of students were not sure if any changes were necessary. In summary, there seems to be an equal split among students regarding the need for changes or improvements to the teaching methods used in the e-learning program.

4.13 Satisfaction with the availability of online resources for your course

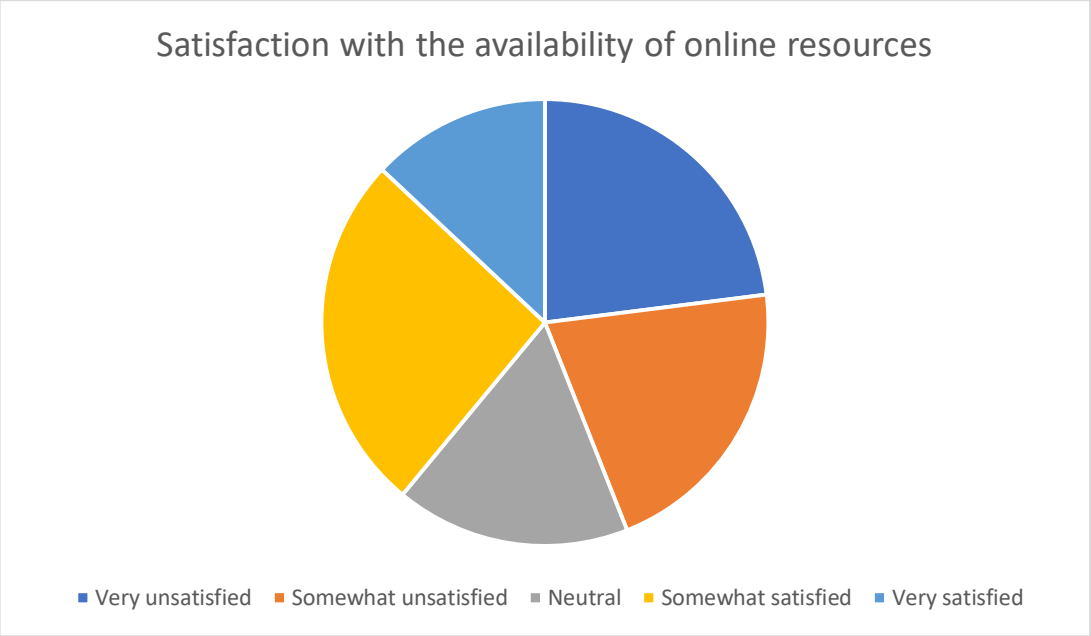

FIGURE 4.13

Satisfaction with the availability of online resources for your course	Frequency	Percent
Very unsatisfied	23	23.0
Somewhat unsatisfied	21	21.0
Neutral	17	17.0
Somewhat satisfied	26	26.0
Very satisfied	13	13.0
Total	100	100.0

TABLE 4.13

Interpretation

From the above figure and table, 23% of students were very unsatisfied and 21% were somewhat unsatisfied with the availability of online resources for their course. 17% were neutral, while 26% were somewhat satisfied and 13% were very satisfied. The majority of students were not satisfied with the availability of online resources.

4.14 Easiness to access the e-learning platform and resources provided by your institution

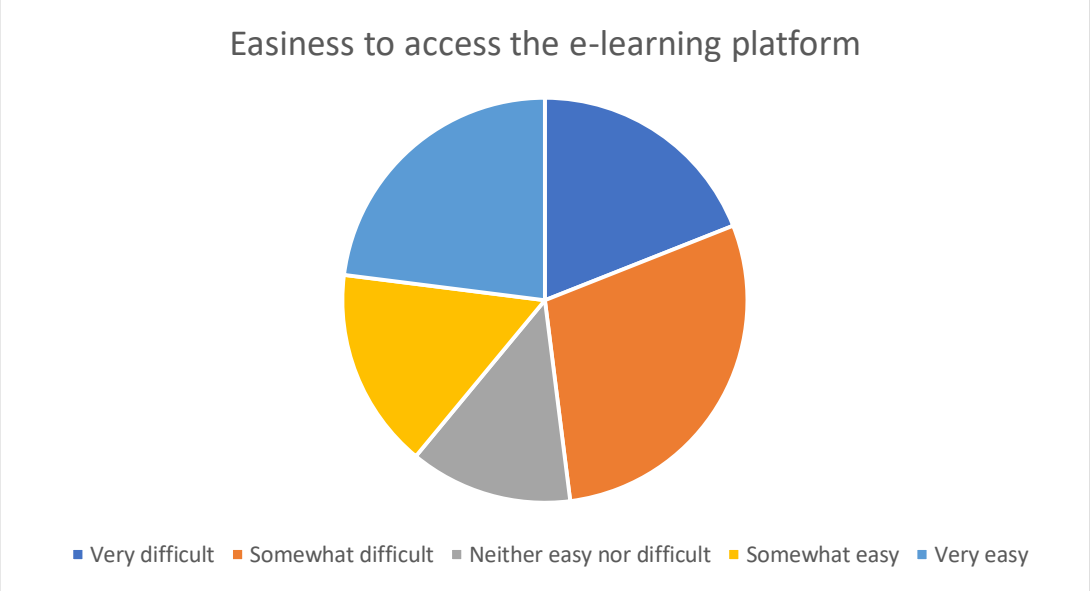

FIGURE 4.14

Easiness to access the e-learning platform and resources provided by your institution	Frequency	Percent
Very difficult	19	19.0
Somewhat difficult	29	29.0
Neither easy nor difficult	13	13.0
Somewhat easy	16	16.0
Very easy	23	23.0
Total	100	100.0

TABLE 4.14

Interpretation

From the above figure and table, 19% of students found it very difficult and 29% found it somewhat difficult to access the e-learning platform and resources provided by their institution. 23% found it very easy, and 16% found it somewhat easy.

4.15 What did you like most about the e-learning resources provided

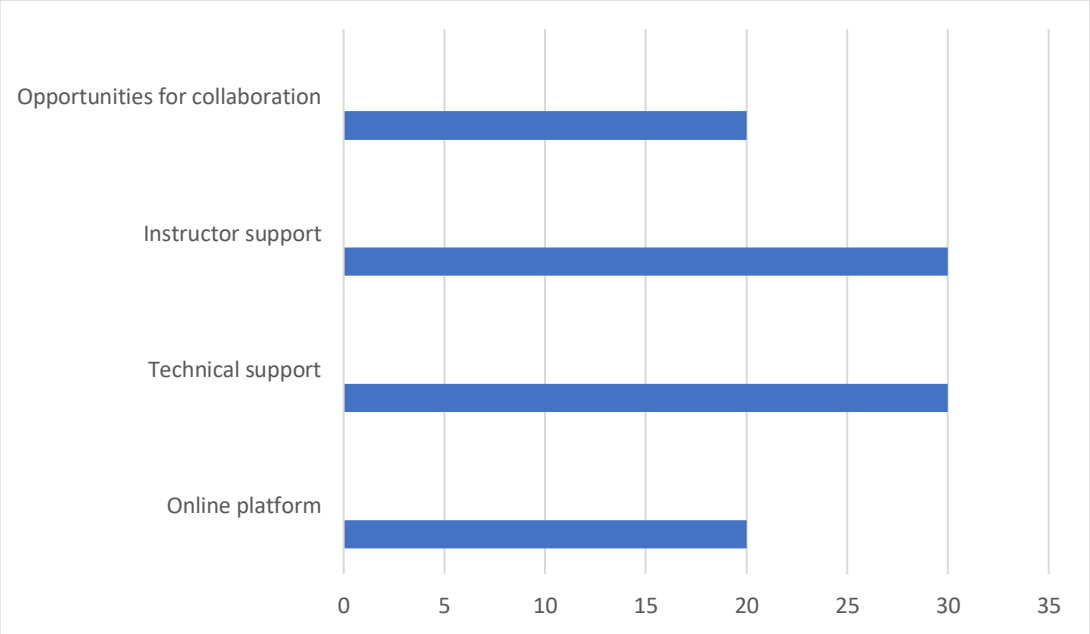

FIGURE 4.15

What did you like most about the e-learning resources provided?	Frequency	Percent
Online platform	20	20.0
Technical support	30	30.0
Instructor support	30	30.0
Opportunities for collaboration	20	20.0
Total	100	100.0

TABLE 4.15

Interpretation

From the above figure and table, according to the data provided, 30% of students liked the technical support provided, and 30% liked the instructor support. 20% of students appreciated the online platform, and another 20% liked the opportunities for collaboration.

4.16 Improvements that you suggest for the e-learning resources provided

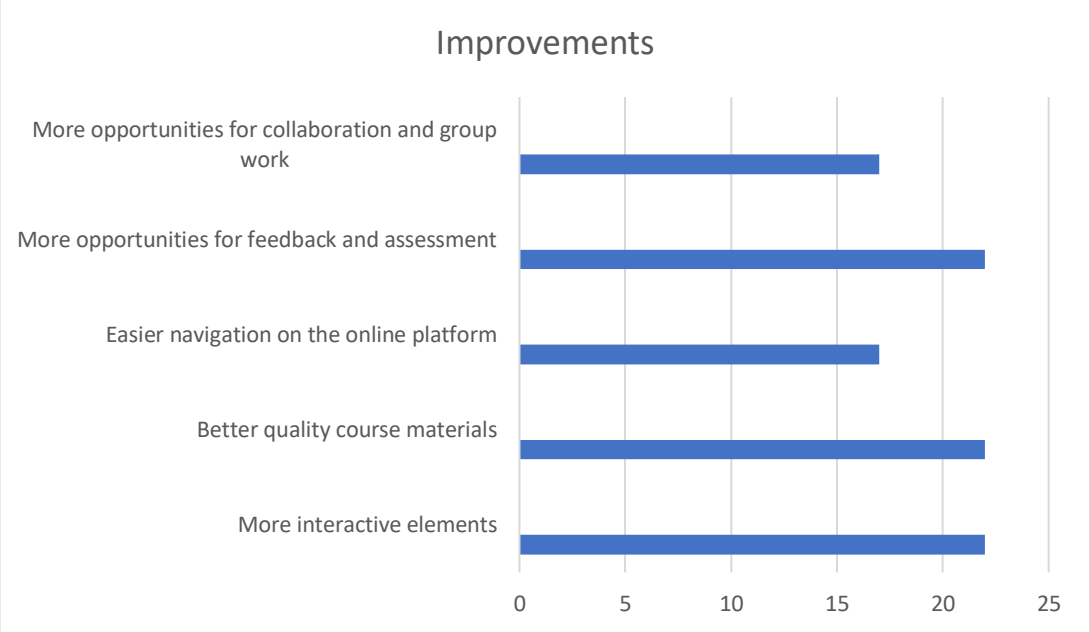

FIGURE 4.16

Improvements that you suggest for the e-learning resources provided	Frequency	Percent
More interactive elements	22	22.0
Better quality course materials	22	22.0
Easier navigation on the online platform	17	17.0
More opportunities for feedback and assessment	22	22.0
More opportunities for collaboration and group work	17	17.0
Total	100	100.0

TABLE 4.16

Interpretation

From the above figure and table, students suggested several improvements to the e-learning resources provided. 22% of students suggested adding more interactive elements and providing better quality course materials. Another 22% suggested providing more opportunities for feedback and assessment. 17% of students suggested making the online platform easier to navigate and providing more opportunities for collaboration and group work.

4.17 Specific challenges or obstacles faced while using the e-learning resources

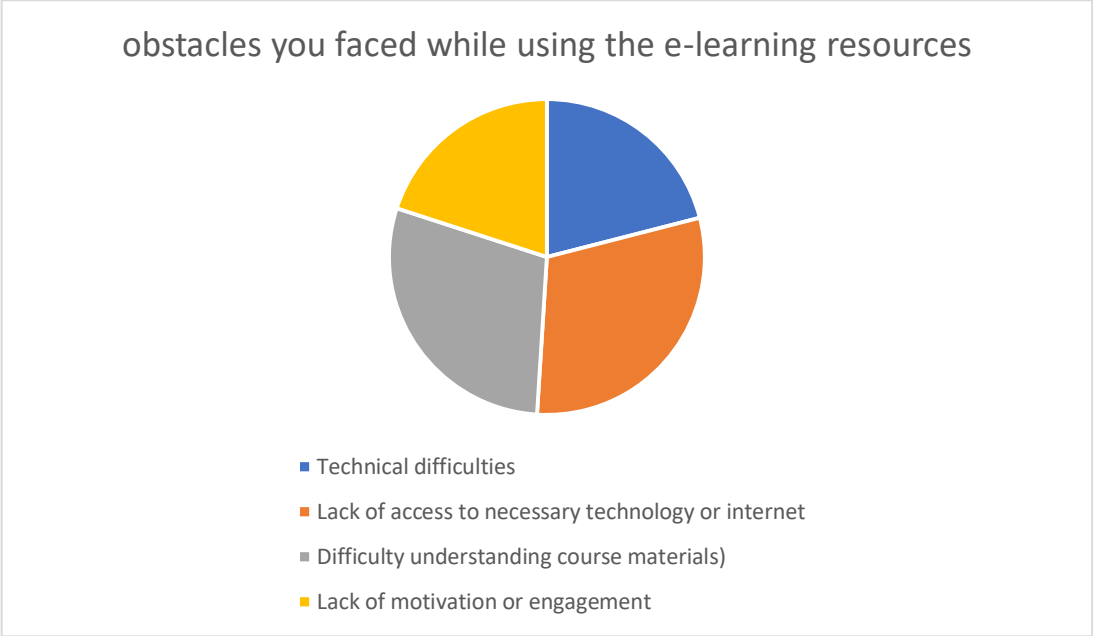

FIGURE 4.17

Specific challenges or obstacles you faced while using the e-learning resources	Frequency	Percent
Technical difficulties	21	21.0
Lack of access to necessary technology or internet	30	30.0
Difficulty understanding course materials)	29	29.0
Lack of motivation or engagement	20	20.0
Total	100	100.0

TABLE 4.17

Interpretation

From the above figure and table, students faced several challenges or obstacles while using the e-learning resources. 30% of students faced a lack of access to necessary technology or internet, and 29% of students faced difficulty understanding the course materials. 21% of students faced technical difficulties, and 20% of students faced a lack of motivation or engagement.

4.18 Have you taken courses in both e-learning and traditional classroom formats?

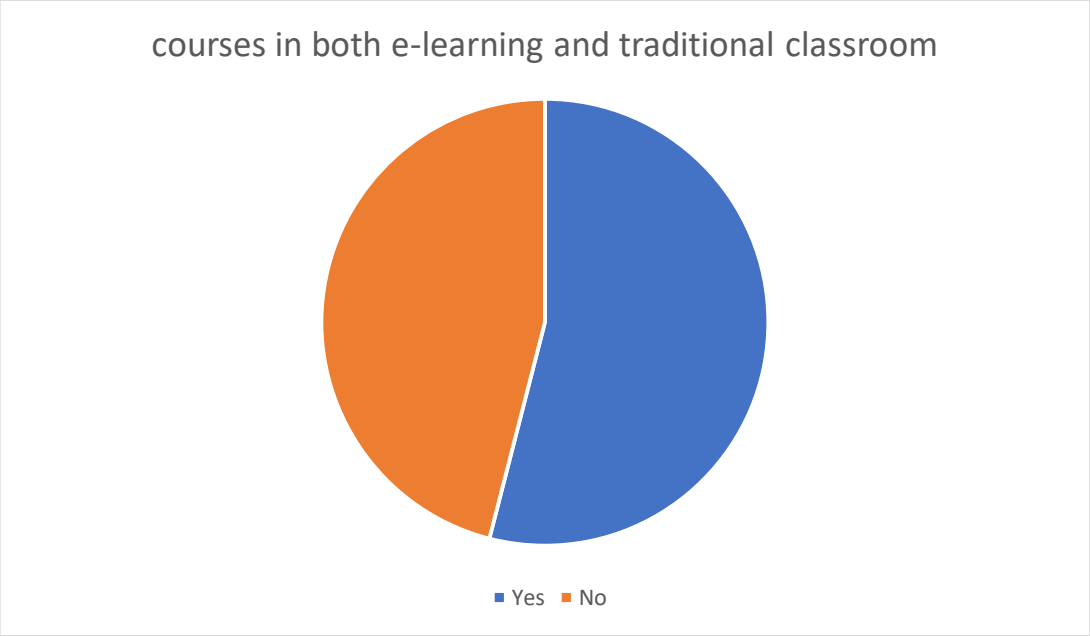

FIGURE 4.18

Have you taken courses in both e-learning and traditional classroom formats?	Frequency	Percent
Yes	54	54.0
No	46	46.0
Total	100	100.0

TABLE 4.18

Interpretation

From the above figure and table,54% has taken class in both e-learning and traditional classroom formats.

4.19 Satisfaction with the e-learning format in comparison to the traditional classroom format?

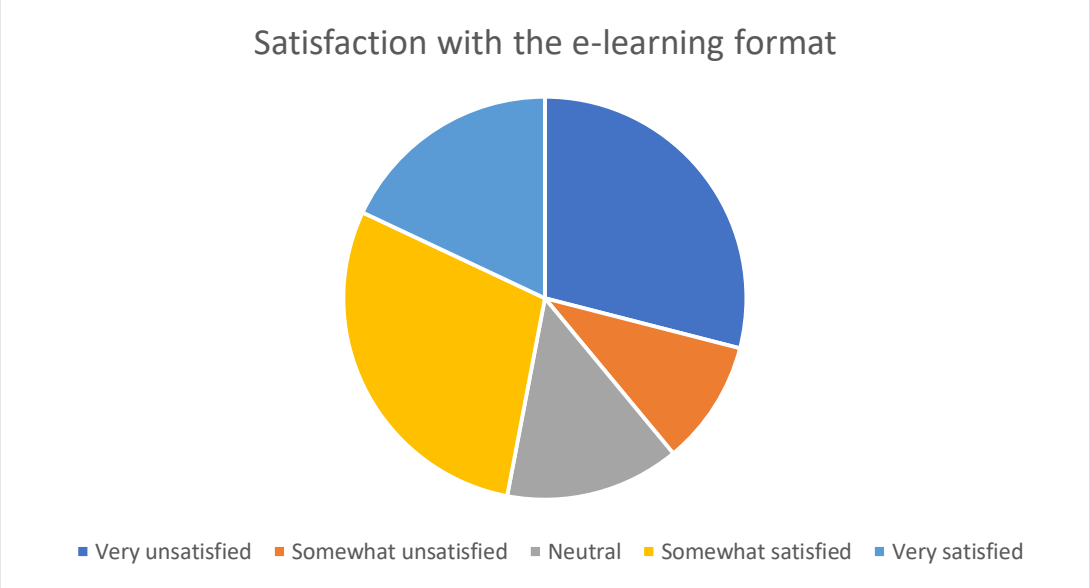

FIGURE 4.19

Satisfaction with the e-learning format in comparison to the traditional classroom format?	Frequency	Percent
Very unsatisfied	29	29.0
Somewhat unsatisfied	10	10.0
Neutral	14	14.0
Somewhat satisfied	29	29.0
Very satisfied	18	18.0
Total	100	100.0

TABLE 4.19

Interpretation

From the above figure and table, 29% of the respondents were very unsatisfied with the e-learning format in comparison to the traditional classroom format, while

18% were very satisfied. 29% were somewhat satisfied, 14% were neutral, and 10% were somewhat unsatisfied.

4.20 In what ways do you find e-learning to be more beneficial or effective than traditional classroom learning?

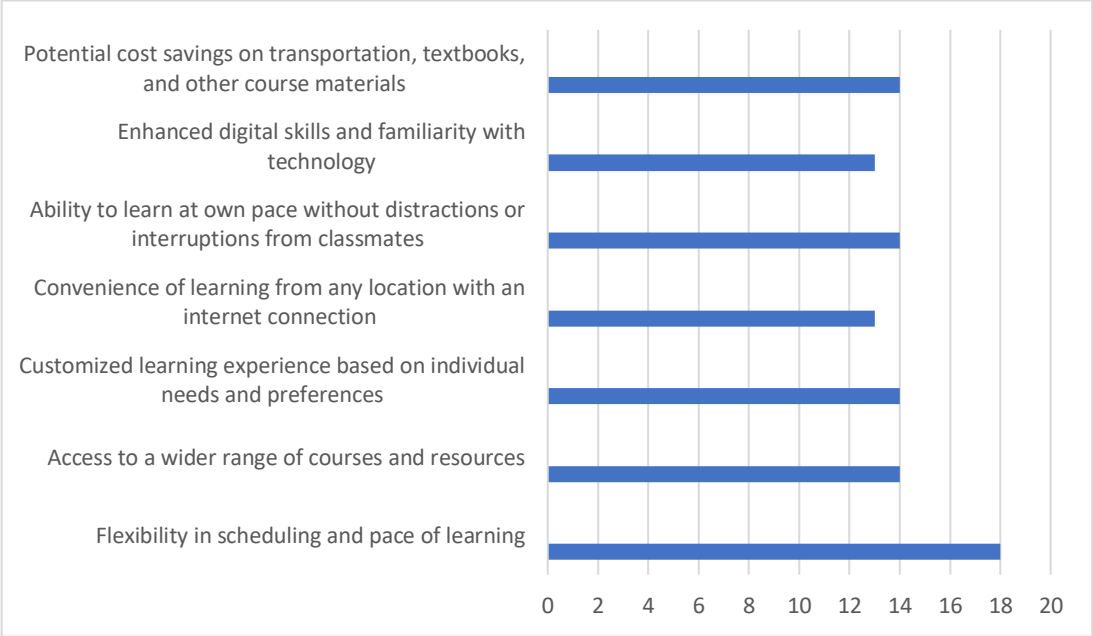

FIGURE 4.20

In what ways do you find e-learning to be more beneficial or effective than traditional classroom learning?	Frequency	Percent
Flexibility in scheduling and pace of learning	18	18.0
Access to a wider range of courses and resources	14	14.0
Customized learning experience based on individual needs and preferences	14	14.0
Convenience of learning from any location with an internet connection	13	13.0
Ability to learn at own pace without distractions or interruptions from classmates	14	14.0
Enhanced digital skills and familiarity with technology	13	13.0
Potential cost savings on transportation, textbooks, and other course materials	14	14.0
Total	100	100.0

TABLE 4.20

Interpretation

From the above figure and table, the most common responses were flexibility in scheduling and pace of learning (18%) and access to a wider range of courses and resources (14%). Other common responses included customized learning experiences (14%), convenience of learning from any location (13%), and the ability to learn at one's own pace (14%).

4.21 In what ways do you find traditional classroom learning to be more beneficial or effective than e-learning?

FIGURE 4.21

In what ways do you find traditional classroom learning to be more beneficial or effective than e-learning?	Frequency	Percent
Face-to-face interaction with instructors and peers	10	10.0
Personalized attention and immediate feedback from instructors	9	9.0
Hands-on learning opportunities and access to physical resources	11	11.0
Active participation in group activities and discussions	9	9.0
Greater accountability and structure in learning	10	10.0
Formation of a strong community and social connections with peers	9	9.0
Opportunities for leadership and teamwork in extracurricular activities	10	10.0
Access to campus resources and facilities	9	9.0
Development of communication and interpersonal skills through face-to-face interactions	10	10.0
Higher motivation and engagement through in-person activities and group dynamics.	13	13.0
Total	100	100.0

TABLE 4.21

Interpretation

From the above figure and table, the majority of respondents (39%) believe that traditional classroom learning offers higher motivation and engagement through in-person activities and group dynamics. Other significant benefits of traditional classroom learning include hands-on learning

opportunities and access to physical resources (11%), personalized attention and immediate feedback from instructors (9%), and face-to-face interaction with instructors and peers (10%).

4.22 Mode of learning do you find more engaging and interactive

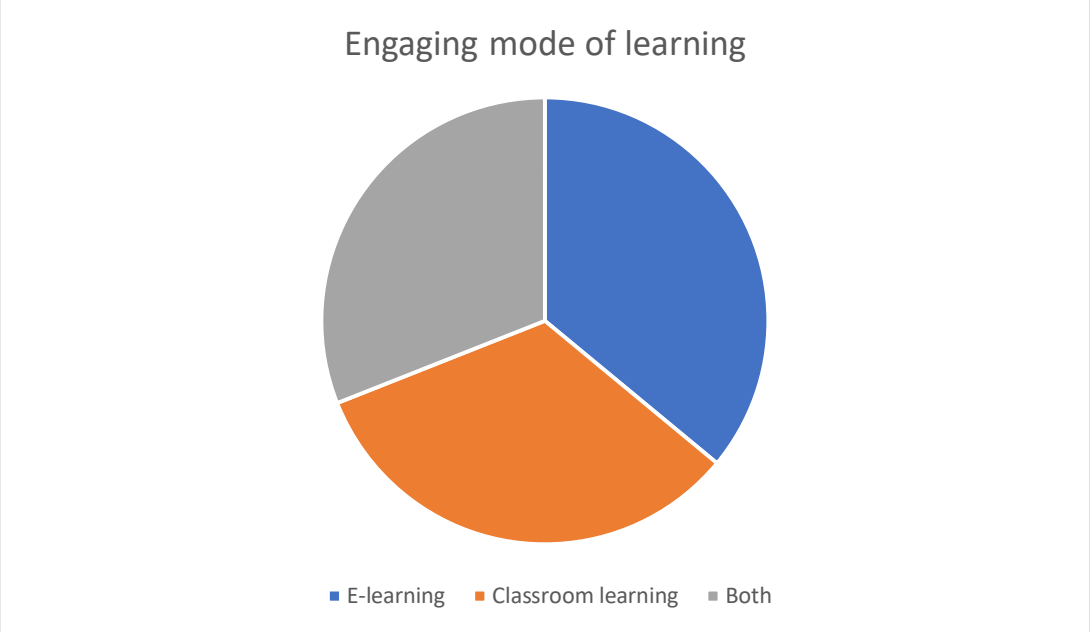

FIGURE 4.22

Mode of learning do you find more engaging and interactive	Frequency	Percent
E-learning	36	36.0
Classroom learning	33	33.0
Both	31	31.0
Total	100	100.0

TABLE 4.22

Interpretation

From the above figure and table, 36% of respondents find e-learning more engaging and interactive, 33% prefer classroom learning, and 31% find both modes of learning engaging and interactive.

4.23 Provides better opportunities for collaboration and interaction with peers and instructors?

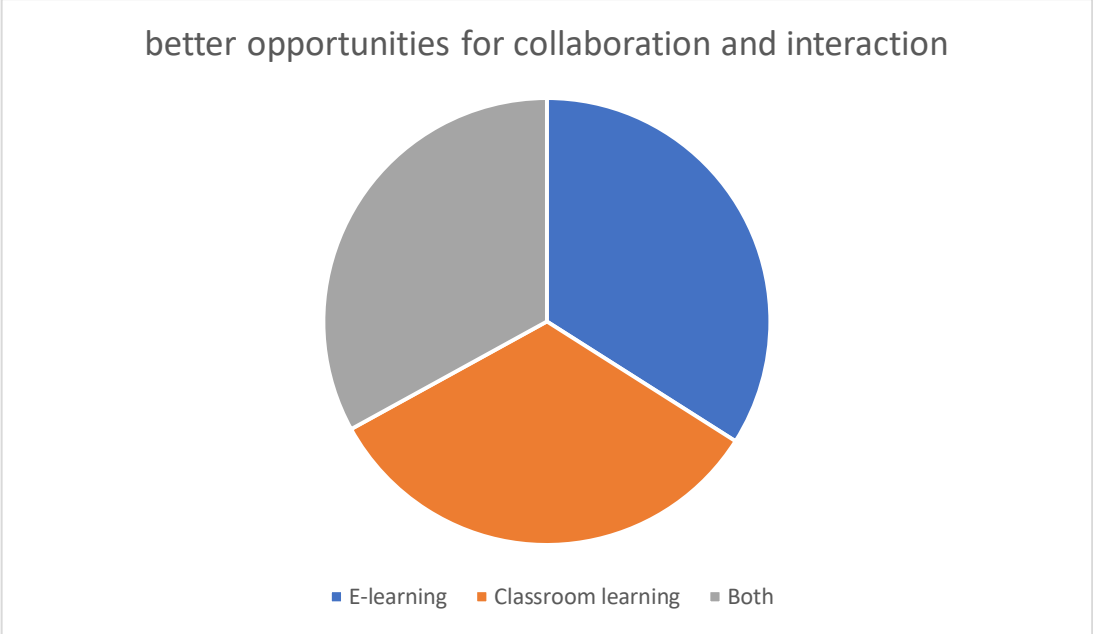

FIGURE 4.23

Provides better opportunities for collaboration and interaction with peers and instructors?	Frequency	Percent
E-learning	34	34.0
Classroom learning	33	33.0
Both	33	33.0
Total	100	100.0

TABLE 4.23

Interpretation

From the above figure and table, there is no clear winner between e-learning and classroom learning in terms of providing better opportunities for collaboration and interaction with peers and instructors. The respondents were evenly split between e-learning (34%), classroom learning (33%), and both (33%).

4.24 More convenient and flexible

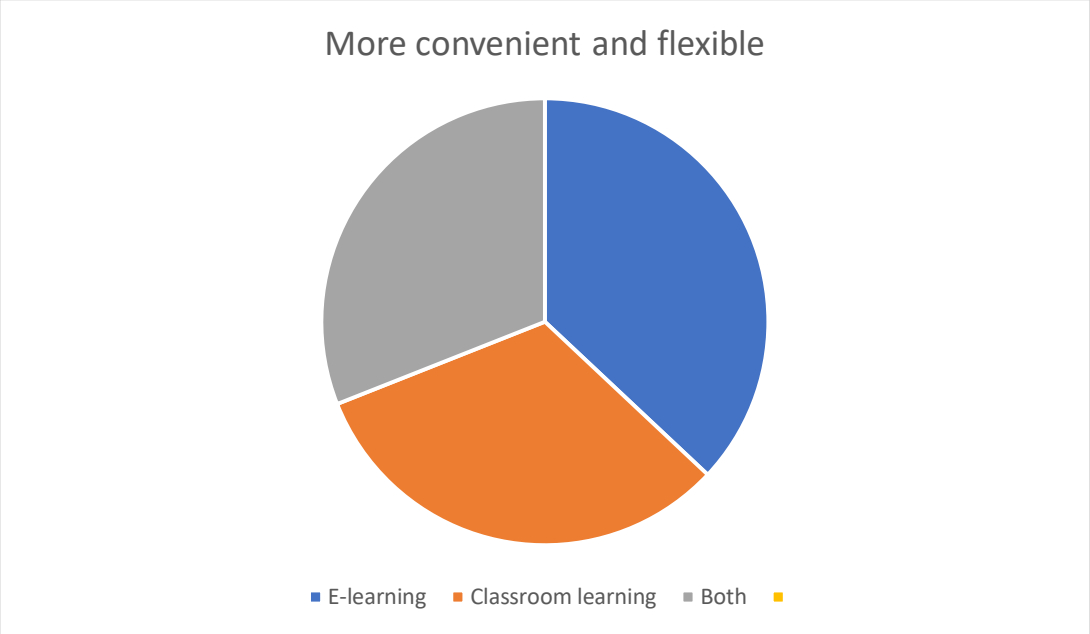

FIGURE 4.24

More convenient and flexible	Frequency	Percent
E-learning	37	37.0
Classroom learning	32	32.0
Both	31	31.0
Total	100	100.0

TABLE 4.24

Interpretation

From the above figure and table, 37% of the participants find e-learning more convenient and flexible, while 32% prefer traditional classroom learning, and 31% find both modes of learning to be equally convenient and flexible.

4.25 Mode of learning do you find more convenient for studying

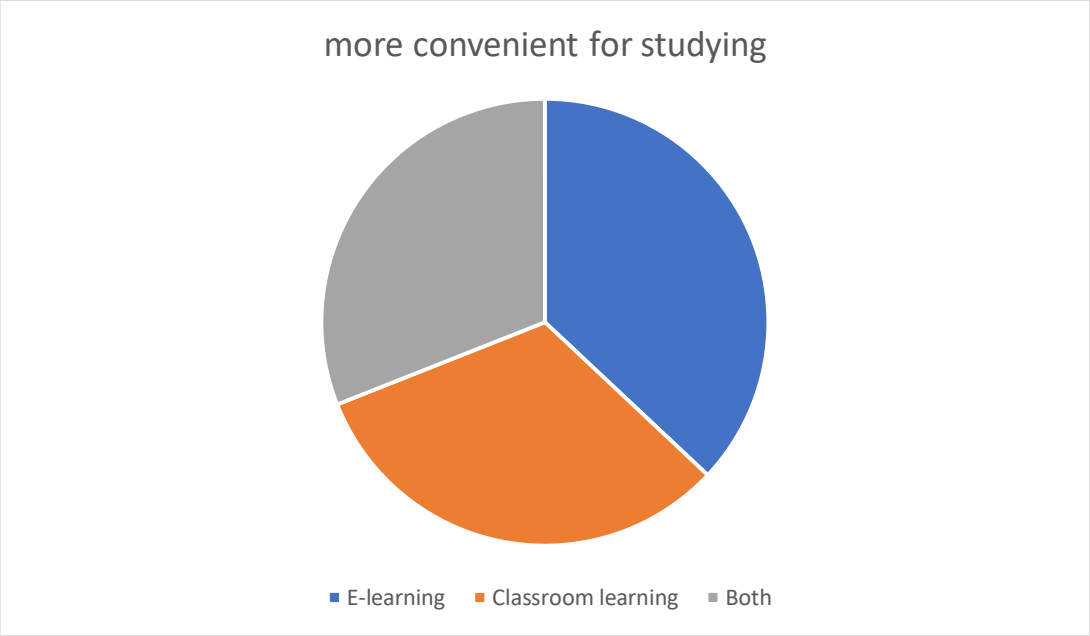

FIGURE 4.25

Mode of learning do you find more convenient for studying	Frequency	Percent
E-learning	37	37.0
Classroom learning	32	32.0
Both	31	31.0
Total	100	100.0

TABLE 4.25

Interpretation

From the above figure and table, 37% of the respondents find e-learning more convenient for studying, 32% prefer classroom learning, and 31% prefer both modes of learning.

4.26 Mode of learning do you think provides better opportunities for feedback and assessment

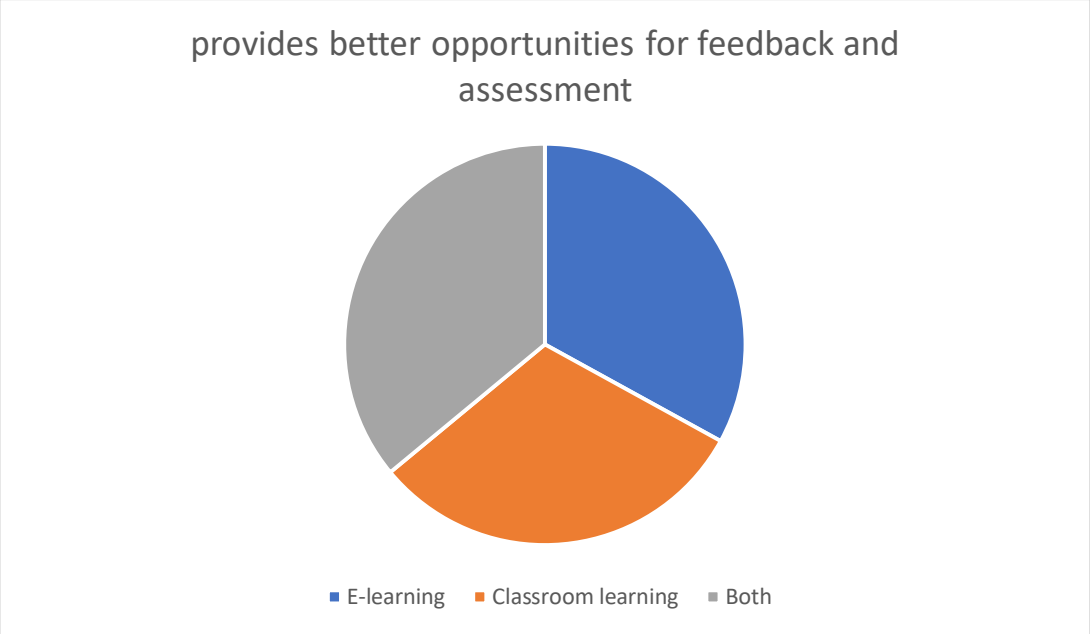

FIGURE 4.26

Mode of learning do you think provides better opportunities for feedback and assessment	Frequency	Percent
E-learning	33	33.0
Classroom learning	31	31.0
Both	36	36.0
Total	100	100.0

TABLE 4.26

Interpretation

From the above figure and table, 36% of the participants believe that both e-learning and classroom learning provide better opportunities for feedback and assessment. Meanwhile, 33% of the participants believe that e-learning provides

better opportunities for feedback and assessment, and 31% believe that classroom learning provides better opportunities for feedback and assessment.

4.27 More cost-effective for you

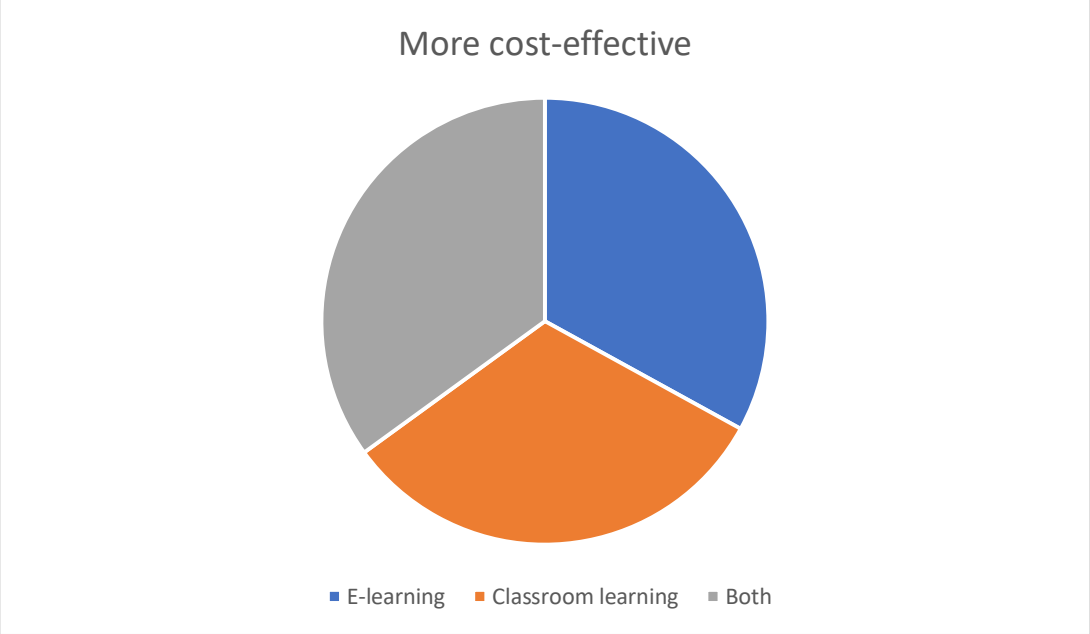

FIGURE 4.27

More cost-effective for you	Frequency	Percent
E-learning	33	33.0
Classroom learning	32	32.0
Both	35	35.0
Total	100	100.0

TABLE 4.27

Interpretation

From the above figure and table, it seems that there is no clear preference for either e-learning or traditional classroom learning in terms of which mode of

learning is more cost-effective. The results are fairly evenly split between those who find e-learning more cost-effective, those who find traditional classroom learning more cost-effective, and those who think both are equally cost-effective.

4.28 More effective in improving your performance in the course

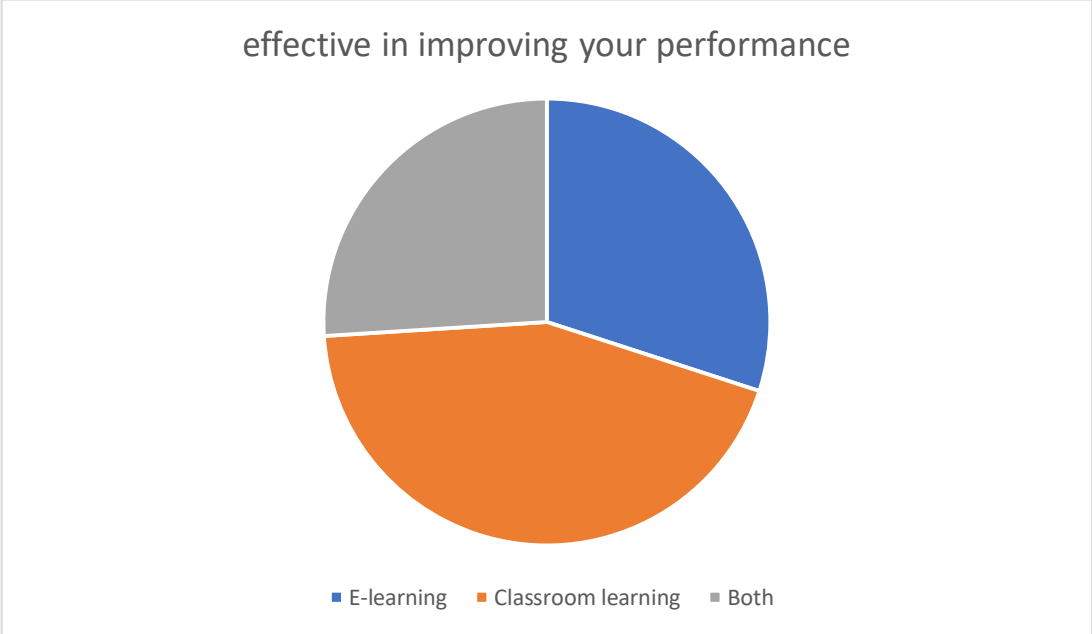

FIGURE 4.28

More effective in improving your performance in the course	Frequency	Percent
E-learning	30	30.0
Classroom learning	44	44.0
Both	26	26.0
Total	100	100.0

TABLE 4.28

Interpretation

From the above figure and table, 44% of respondents found classroom learning more effective in improving their performance in the course, while 30% found e-learning more effective, and 26% found both equally effective

4.29 Mode of learning preference

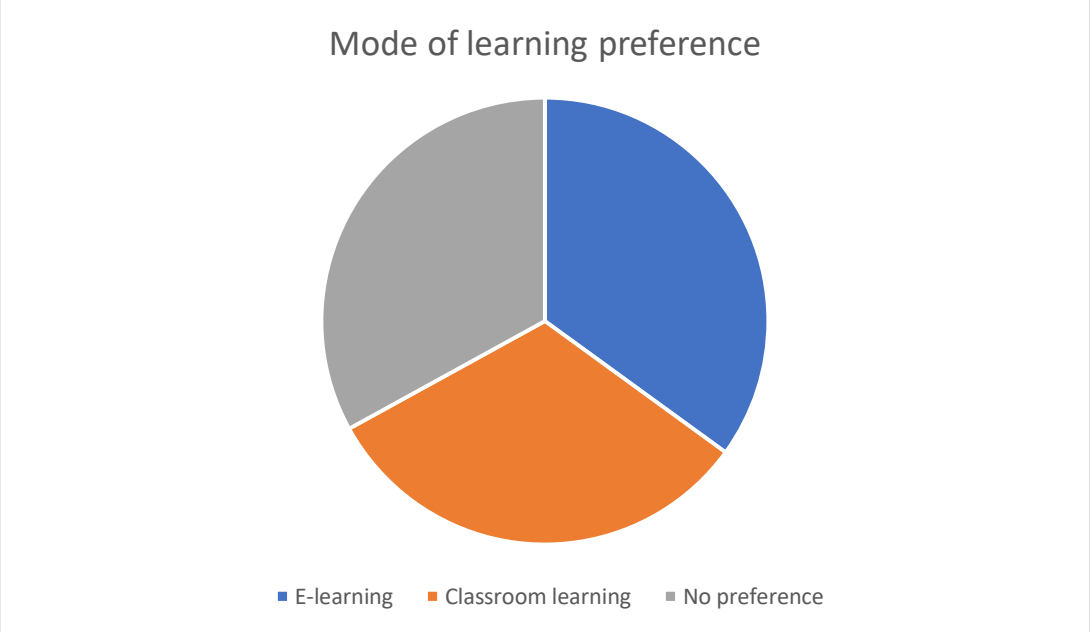

FIGURE 4.29

Mode of learning preference	Frequency	Percent
E-learning	35	35.0
Classroom learning	32	32.0
No preference	33	33.0
Total	100	100.0

TABLE 4.29

Interpretation

From the above figure and table, out of the total respondents, 35% preferred e-learning, 32% preferred traditional classroom learning, and 33% had no preference.

4.30 HYPOTHESIS ANALYSIS

Hypothesis 1

H0 – There is no significant difference between the satisfaction levels of students on the learning environment with respect to age.

H1 – There is a significant difference between the satisfaction levels of students on the learning environment with respect to age.

Satisfaction level of students with the learning environment	Mean	Std. Deviation
ease of use of platform	3.610	1.377
quality of content provided	3.090	1.408
effectiveness of teaching methods	3.080	1.390
Technical Support provided by institution	3.330	1.349
Overall satisfaction with e learning	3.290	1.533

TABLE 4.30 Source: Primary data

Table 4.30 depicts that the mean satisfaction levels for different aspects of the learning environment are, Ease of use of platform: 3.610, Quality of content provided: 3.090, Effectiveness of teaching methods: 3.080, Technical support provided by the institution: 3.330, Overall satisfaction with e-learning: 3.290

The standard deviation for each of these aspects indicates the level of variability in responses among the students. For example, the standard deviation of 1.377 for ease of use of the platform indicates that the responses were somewhat varied,

with some students finding the platform very easy to use and others finding it more difficult.

Age Group		ease of use of platform	quality of content provided	effectiveness of teaching methods	Technical Support provided by institution	Overall satisfaction with e learning
18 -21	Mean	3.550	3.100	3.175	3.500	3.125
	N	40	40	40	40	40
	Std. Deviation	1.413	1.392	1.466	1.359	1.588
22 -23	Mean	3.654	3.135	3.038	3.250	3.462
	N	52	52	52	52	52
	Std. Deviation	1.356	1.428	1.343	1.250	1.475
Above 23	Mean	3.625	2.750	2.875	3.000	3.000
	N	8	8	8	8	8
	Std. Deviation	1.506	1.488	1.458	1.927	1.690
Total	Mean	3.610	3.090	3.080	3.330	3.290
	N	100	100	100	100	100

Std. Deviation	1.377	1.408	1.390	1.349	1.533

TABLE 4.31 Source: Primary data

Table 4.31 age groups-based satisfaction levels with various aspects of the learning environment. The mean value indicates that students in the 22-23 age group reported the highest satisfaction levels in most aspects of the learning environment, including ease of use of platform, technical support provided by the institution, and overall satisfaction with e-learning. However, students aged above 23 had lower satisfaction levels compared to other age groups in most aspects of the learning environment. Thus, it concludes that the satisfaction level of students with e-learning and classroom learning is dependent to age.

Kruskal-Wallis on Satisfaction level of students with the learning environment with respect to age	ease of use of platform	quality of content provided	effectiveness of teaching methods	Technical Support provided by institution	Overall satisfaction with e learning
Kruskal-Wallis H	17.108	19.576	31.411	18.156	20.393
df	2	2	2	2	2
Asymp. Sig.	0.008	0.019	0.004	0.011	0.008

TABLE 4.32 Source: Primary data

The Kruskal-Wallis's test has been conducted to determine if there are significant differences in satisfaction levels with various aspects of the learning environment among different age groups.

The results indicate that there are significant differences in satisfaction levels with ease of use of platform, quality of content provided, effectiveness of teaching methods, technical support provided by the institution, and overall satisfaction

with e-learning among different age groups, as indicated by the low p-values provided are less than 0.05.

The Kruskal-Wallis H statistic provides information on the strength of the difference between groups, and the degrees of freedom (df) provide information on the number of groups being compared. The larger the H statistic and the smaller the p-value, the stronger the evidence for rejecting the null hypothesis that there are no differences between groups.

Overall, these results suggest that age may be a significant factor in determining satisfaction levels with various aspects of the learning environment, and further analysis may be needed to explore the nature and extent of these differences.

Conclusion: There is a significant difference between the satisfaction levels of students on the learning environment with respect to age.

Hypothesis 2

H0 – There is no significant difference between the satisfaction levels of students on the teaching methods with respect to age.

H1 – There is a significant difference between the satisfaction levels of students on the teaching methods with respect to age.

Satisfaction level of students with the teaching methods	Mean	Std. Deviation
instructors in your e-learning courses explain concepts clearly and effectively	2.200	1.333
e-learning courses provide opportunities for experiential or hands-on learning	2.700	1.494
e-learning courses are tailored to your individual learning needs and preferences	3.050	1.459
Instructors in your e-learning courses are available and responsive to your questions or concerns	2.500	1.573
Instructors in your e-learning courses provide opportunities for interaction and collaboration with peers	2.460	1.344

Instructors in your e-learning courses provide feedback and guidance on your progress	3.190	1.542
Instructors in your e-learning courses provide real-world examples and case studies to illustrate concepts	2.850	1.445

TABLE 4.33 Source: Primary data

Table 4.33 shows the satisfaction levels of students on different aspects of teaching methods in e-learning courses. The mean score ranges from 2.2 to 3.19, with higher scores indicating higher satisfaction levels. The standard deviation ranges from 1.333 to 1.573, indicating a moderate level of variability in the responses.
Based on these descriptive statistics, we can get an idea of the overall satisfaction levels of the students with the e-learning teaching methods.

Age Group		instructors in your e-learning courses explain concepts clearly and effectively	e-learning courses provide opportunities for experiential or hands-on learning	e-learning courses are tailored to your individual learning needs and preferences	Instructors in your e-learning courses are available and responsive to your questions or concerns	Instructors in your e-learning courses provide opportunities for interaction and collaboration with peers	Instructors in your e-learning courses provide feedback and guidance on your progress	Instructors in your e-learning courses provide real-world examples and case studies to illustrate concepts
18 - 21	Mean	2.200	2.750	2.725	2.600	2.450	3.200	2.825
	N	40	40	40	40	40	40	40
	Std. Deviation	1.244	1.515	1.339	1.566	1.239	1.488	1.448
22 - 23	Mean	2.231	2.615	3.250	2.423	2.442	3.154	2.885
	N	52	52	52	52	52	52	52
	Std. Deviation	1.490	1.523	1.507	1.601	1.447	1.626	1.477

Above 23	Mean	2.000	3.000	3.375	2.500	2.625	3.375	2.750
	N	8	8	8	8	8	8	8
	Std. Deviation	0.535	1.309	1.598	1.604	1.302	1.408	1.389
Total	Mean	2.200	2.700	3.050	2.500	2.460	3.190	2.850
	N	100	100	100	100	100	100	100
	Std. Deviation	1.333	1.494	1.459	1.573	1.344	1.542	1.445

TABLE 4.34 Source: Primary data

Table 4.34 shows the mean, standard deviation, and sample size for each age group on different aspects of teaching methods in e-learning courses.

Looking at the means for each age group, we can see that the satisfaction levels vary across different aspects of teaching methods. For example, students in the 18-21 age group have the lowest satisfaction level with instructors explaining concepts clearly and effectively, while students in the above 23 age group have the highest satisfaction level with e-learning courses providing opportunities for experiential or hands-on learning. The standard deviation for each age group shows the variability in responses, with some aspects having a higher level of variability than others.

Kruskal-Wallison Satisfaction level of students with the teaching methods with respect to age	instructors in your e-learning courses explain concepts clearly and effectively	e-learning courses provide opportunities for experiential or hands-on learning	e-learning courses are tailored to your individual learning needs and preferences	Instructors in your e-learning courses are available and responsive to your questions or concerns	Instructors in your e-learning courses provide opportunities for interaction and collaboration with peers	Instructors in your e-learning courses provide feedback and guidance on your progress	Instructors in your e-learning courses provide real-world examples and case studies to illustrate concepts
Kruskal-Wallis H	21.326	24.707	26.378	25.414	26.324	26.091	31.080
df	2	2	2	2	2	2	2
Asymp. Sig.	0.009	0.002	0.005	0.013	0.000	0.006	0.001

TABLE 4.35 Source: Primary data

In Table 4.35 the Kruskal-Wally's test has been conducted on the satisfaction level of students with the teaching methods with respect to age for seven different aspects of e-learning courses. The test results indicate that there is a significant difference in the satisfaction levels of students with respect to age for all seven aspects of e-learning courses. The Kruskal-Wallis H statistic is greater than the critical value at a significance level of 0.05 and the p-value is less than 0.05 for all seven aspects. Therefore, we can reject the null hypothesis and conclude that there is a significant difference in the satisfaction levels of students with respect to age for all aspects of e-learning courses.

Conclusion: There is a significant difference between the satisfaction levels of students on the teaching methods with respect to age.

Hypothesis 3

H0 – There is no significant difference between the student's satisfaction of e-resources available in e-learning with respect to age.

H1 – There is a significant difference between the student's satisfaction of e-resources available in e-learning with respect to age.

Satisfaction of E-resources available in E-learning	Mean	Std. Deviation
Quality of online lectures and course materials	2.700	1.573
Availability of online study groups and peer-to-peer interaction	2.740	1.502
Level of accessibility of online library resources for your studies	2.430	1.519
Level of engagement and feedback provided by your instructors in the e-learning environment	2.200	1.333

TABLE 4.36 Source: Primary data

Table 4.36 shows the mean and standard deviation of the satisfaction level of students with the e-resources available in e-learning. The satisfaction is measured in four aspects: quality of online lectures and course materials, availability of online study groups and peer-to-peer interaction, level of accessibility of online library resources for studies, and level of engagement and feedback provided by instructors in the e-learning environment.

Age Group		Quality of online lectures and course materials	Availability of online study groups and peer-to-peer interaction	Level of accessibility of online library resources for your studies	Level of engagement and feedback provided by your instructors in the e-learning environment
18 -21	Mean	2.700	2.775	2.450	2.200
	N	40	40	40	40
	Std. Deviation	1.556	1.527	1.501	1.244
22 -23	Mean	2.519	2.635	2.404	2.231
	N	52	52	52	52
	Std. Deviation	1.603	1.482	1.550	1.490
Above 23	Mean	3.875	3.250	2.500	2.000
	N	8	8	8	8
	Std. Deviation	0.991	1.581	1.604	0.535
Total	Mean	2.700	2.740	2.430	2.200
	N	100	100	100	100

Std. Deviation	1.573	1.502	1.519	1.333

TABLE 4.37 Source: Primary data

The table3.37 shows the mean, standard deviation, and number of respondents for each age group for four aspects of satisfaction with e-resources available in e-learning. The four aspects are quality of online lectures and course materials, availability of online study groups and peer-to-peer interaction, level of accessibility of online library resources for your studies, and level of engagement and feedback provided by your instructors in the e-learning environment. The age groups are 18-21, 22-23, and above 23. The total column shows the overall mean, standard deviation, and number of respondents for each aspect.

Kruskal-Wallis on Satisfaction of E-resources available in E-learning with respect to age	Quality of online lectures and course materials	Availability of online study groups and peer-to-peer interaction	Level of accessibility of online library resources for your studies	Level of engagement and feedback provided by your instructors in the e-learning environment
Kruskal-Wallis H	15.273	14.292	13.050	19.326
df	2	2	2	2
Asymp. Sig.	0.002	0.004	0.005	0.019

TABLE 4.38 Source: Primary data

The Kruskal-Wally's test was conducted to analyse if there is a significant difference in the satisfaction of e-resources available in e-learning with respect to age. The results show that there is a significant difference in the satisfaction levels of students with respect to age for all four e-resources: quality of online lectures and

course materials, availability of online study groups and peer-to-peer interaction, level of accessibility of online library resources for your studies, and level of engagement and feedback provided by your instructors in the e-learning environment. The p-values for all four tests are less than 0.05, which indicates a significant difference.

Conclusion: There is a significant difference between the student's satisfaction of e-resources available in e-learning with respect to age.

Hypothesis 4

H0: The satisfaction level of students with e-learning and classroom learning is independent to age.

H1: The satisfaction level of students with e-learning and classroom learning is dependent to age.

General Comparison in the satisfaction level of students with e-learning and classroom with respect to age	E-learning is better	Classroom learning is better	No preference	Total
18 - 21	10	25	5	40
22- 23	16	32	4	52
Above 23	2	4	2	8
Total	28	61	11	100

TABLE 4.39 Source: Primary data

Chi-Square Tests on comparison in the satisfaction level of students with e-learning and classroom	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square with respect to age	23.145	4	.011

TABLE 4.40 Source: Primary data

Table 4.40 shows that P-value of the variable such as satisfaction level of students with e-learning and classroom with respect to age is below 0.05 and chi-square value is 23.145. So, the result of variable with respect to age is statistically significant. Hence it is implied that the satisfaction level of students with e-learning and classroom learning is dependent to age.

Conclusion: The satisfaction level of students with e-learning and classroom learning is dependent to age.

CHAPTER 5

FINDINGS SUGGESTIONS AND CONLUSION

5.1 SUMMARY

The COVID-19 pandemic forced traditional classrooms to shift to online learning, leading to a need to assess the satisfaction level of students with e-learning programs. This study aimed to identify the satisfaction level of students with the learning environment, teaching methods, and resources available in e-learning programs, as well as to compare the satisfaction level of e-learning and traditional classroom learning.

The findings suggest that students value the flexibility and convenience of e-learning, particularly in terms of scheduling and access to resources, but miss the motivation and engagement offered by traditional classrooms, particularly through in-person activities and group dynamics. Challenges with e-learning included a lack of access to necessary technology or internet, difficulty understanding course materials, and technical difficulties.

In conclusion, while e-learning has proven to be a viable alternative to traditional classrooms during the pandemic, there is a need for continued improvement to address the challenges and ensure that students are satisfied with their learning experience.

5.2 FINDINGS

- The majority of respondents (52%) belonged to the age group of 22-23 years.
- The majority of respondents (44%) reported that e-learning courses provide interactive and engaging learning experiences very often.
- The majority of respondents (31%) felt that e-learning courses challenge them to think critically and apply what they have learned very well.
- The majority of respondents (30%) considered Interactivity with instructors and peers as the most valuable aspect of the e-learning environment.

- majority of respondents (28%) considered live classes or webinars as the most helpful feature in e-learning.
- The majority of students were neutral (33%) towards the teaching methods in e-learning courses.
- The majority of students were not satisfied with the availability of online resources, with 44% being either somewhat or very unsatisfied.
- There was an equal split among students regarding the need for changes or improvements to the teaching methods used in the e-learning program, with 50% not seeing the need for changes and 50% unsure if changes were necessary.
- Group projects were seen as the most effective teaching method by the majority of students (23%).
- Lectures and discussions were seen as the least effective teaching methods by the majority of students, with 18% of respondents voting for each as being the least effective.
- The majority of students (48%) found it either somewhat or very difficult to access the e-learning platform and resources provided by their institution.
- The majority of students (30%) liked the instructor support. 20% of students appreciated the online platform, and another 20% liked the opportunities for collaboration.
- : The majority of respondents (22%) suggested adding more interactive elements and better-quality course materials. Another 22% suggested providing more opportunities for feedback and assessment, and 17% suggested making the online platform easier to navigate and providing more opportunities for collaboration and group work.
- The majority of respondents (30%) faced a lack of access to necessary technology or internet, while 29% faced difficulty understanding the course materials. 21% faced technical difficulties, and 20% faced a lack of motivation or engagement.
- The majority of respondents (29%) were very unsatisfied with the e-learning format compared to the traditional classroom format, while 18% were very

satisfied. 29% were somewhat satisfied, 14% were neutral, and 10% were somewhat unsatisfied.

- The most common benefits of e-learning reported by respondents were flexibility in scheduling and pace of learning (18%) and access to a wider range of courses and resources (14%). Other common benefits included customized learning experiences (14%), convenience of learning from any location (13%), and the ability to learn at one's own pace (14%).
- The majority of respondents (39%) believe that traditional classroom learning offers higher motivation and engagement through in-person activities and group dynamics. Other significant benefits of traditional classroom learning include hands-on learning opportunities and access to physical resources (11%), personalized attention and immediate feedback from instructors (9%), and face-to-face interaction with instructors and peers (10%).
- The respondents were evenly split between e-learning (34%), classroom learning (33%), and both (33%) in terms of providing better opportunities for collaboration and interaction with peers and instructors.
- The majority of respondents (37%) find e-learning more convenient and flexible, while 32% prefer traditional classroom learning, and 31% find both modes of learning to be equally convenient and flexible.
- There is no clear preference for either e-learning or traditional classroom learning in terms of which mode of learning is more cost-effective.
- The majority of respondents (44%) found classroom learning more effective in improving their performance in the course, while 30% found e-learning more effective, and 26% found both equally effective.

5.3 SUGGESTIONS

- To improve e-learning resources, it is suggested to add more interactive elements and provide better quality course materials. Additionally, providing more opportunities for feedback and assessment, making the

online platform easier to navigate, and providing more opportunities for collaboration and group work can also be beneficial.

- As many students faced challenges or obstacles while using e-learning resources, it is recommended to provide necessary technology and internet access to all students. Efforts should also be made to simplify course materials and address technical difficulties. In addition, strategies should be developed to enhance student motivation and engagement.
- Since almost one-third of respondents were very unsatisfied with e-learning format compared to traditional classroom learning, it is important to address these concerns. It is suggested that educators should provide more in-person activities and group dynamics, hands-on learning opportunities, personalized attention and immediate feedback from instructors, and face-to-face interaction with instructors and peers to increase student motivation and engagement.
- Given the benefits identified by students, including flexibility in scheduling and pace of learning, access to a wider range of courses and resources, customized learning experiences, convenience of learning from any location, and the ability to learn at one's own pace, educators should continue to incorporate these benefits in both e-learning and traditional classroom learning to enhance student learning experiences.
- Since the preference for e-learning versus traditional classroom learning is evenly split, it is suggested to provide both modes of learning to students. This will enable students to choose the mode that best suits their learning styles and preferences.
- Educators should continue to find ways to make e-learning more convenient and flexible for students, as this was identified as a significant benefit. Efforts should be made to address the challenges faced by students, such as providing internet access and simplifying course materials, to further enhance the convenience and flexibility of e-learning.
- Strategies should be developed to ensure that both e-learning and traditional classroom learning provide opportunities for feedback and

assessment. Educators should identify the best practices in providing feedback and assessment in both modes of learning and incorporate these practices into their teaching.

- Finally, educators should continue to explore the cost-effectiveness of e-learning versus traditional classroom learning. They should identify the areas where each mode of learning is more cost-effective and incorporate these findings into their teaching practices.

5.4 CONCLUSION

Based on the findings of this project, it can be concluded that the satisfaction level of students with e-learning programs is mixed. While some students find it more engaging, flexible, and convenient, others struggle with technical difficulties, a lack of access to technology, and difficulty understanding course materials. Additionally, students have suggested several improvements to e-learning resources, such as adding more interactive elements, providing better quality course materials, and more opportunities for feedback and collaboration.

In the context of the COVID-19 pandemic, traditional classrooms were shifted online, leading to a massive adoption of e-learning programs. This transition was not without its challenges, with many students and teachers experiencing difficulties adapting to the new format. However, the findings of this project suggest that e-learning programs have the potential to be an effective alternative to traditional classroom learning, as long as certain issues are addressed and improvements are made to the resources provided.

Overall, it is important for educational institutions to take into account the feedback and suggestions provided by students in order to continually improve and adapt e-learning programs to better meet their needs and ensure a high level of satisfaction

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APPENDIX

QUESTIONNAIRE

AN ANALYSIS ON STUDENT SATISFACTION TOWARDS VIRTUAL LEARNING IN ST TERESA'S COLLEGE ERNAKULAM

ANN THERESA

1.Name
2. Age
3.Name of institution

4.platforms used for e learning

platforms	Always	Frequently	Occasionally	Rarely	never
Moodle					
Google classroom					
Google Meet					
Zoom					
Ms Teams					

5.rate the following based on your experience.

Statements	Highly satisfied	satisfied	neutral	Dissatisfied	Highly dissatisfied
ease of use of platform					
quality of content provided					
effectiveness of teaching methods					
Technical Support provided by institution					
Overall satisfaction with e learning					

6. To what extent do you feel that the e-learning courses provide different learning modalities (e.g., visual, auditory, hands-on)?
a. Very well
b. Somewhat well
c. Neutral
d. Somewhat poorly

e. Very poorly

7.How often do you feel that the e-learning courses provide interactive and engaging learning experiences?
a. Very often
b. Somewhat often
c. Neutral
d. Somewhat rarely
e. Very rarely

8.To what extent do you feel that e-learning courses challenge you to think critically and apply what you have learned?
a. Very well
b. Somewhat well
c. Neutral
d. Somewhat poorly
e. Very poorly

9.What was the most valuable aspect of the e-learning environment for you?
a. Course content
b. Interactivity with instructors and peers
c. Flexibility
d. technical support
e. Other (please specify)

10.Which of the following features in the e-learning environment did you find most helpful?
a. Discussion forums
b. Live classes or webinars
c. Multimedia content (videos, audio recordings, etc.)
d. Online quizzes and tests
e. Other (please specify)

11.On a scale of 1 to 5, how satisfied are you with the teaching methods used in your e-learning courses?
1: Very unsatisfied
2: Somewhat unsatisfied
3: Neutral
4: Somewhat satisfied
5: Very satisfied

12.How satisfied are you with the level of support provided by the instructors in your e-learning courses?
a. Extremely satisfied
b. Somewhat satisfied
c. Neutral
d. Somewhat dissatisfied
e. Extremely dissatisfied

13.To what extent do you feel that

statements	Very well	Somewhat well	Neutral	Somewhat poorly	Very poorly
instructors in your e-learning courses explain concepts clearly and effectively?					
e-learning courses provide opportunities for experiential or hands-on learning?					
e-learning courses provide opportunities for experiential or hands-on learning?					
e-learning courses are tailored to your individual learning needs and preferences?					

14.How often do you feel that

statements	Very often	Somewhat often	Neutral	Somewhat rarely	Very rarely
instructors in your e-learning courses are available and responsive to your questions or concerns?					
instructors in your e-learning courses provide opportunities for interaction and collaboration with peers?					
instructors in your e-learning courses provide feedback and guidance on your progress?					

instructors in your e-learning courses provide real-world examples and case studies to illustrate concepts?					

15.What teaching methods did you find most effective in helping you learn and understand the course material? (Check all that apply)
a.Lectures
b.Discussions
c.Group projects
d.Multimedia presentations
e.Simulations and virtual labs
f.Quizzes and tests
g.Other (please specify)

16.Were there any teaching methods that you found least effective in helping you learn and understand the course material? (Check all that apply)
a.Lectures
b.Discussions
c.Group projects
d.Multimedia presentations
e.Simulations and virtual labs
f.Quizzes and tests
g.Other (please specify)

17.Would you like to see any changes or improvements to the teaching methods used in the e-learning program? (Choose one)
a.Yes, I have some suggestions (please specify)
b.No, I think the teaching methods are fine as they are
c.Not sure

18.On a scale of 1 to 5, how satisfied are you with the availability of online resources for your course?
1: Very unsatisfied
2: Somewhat unsatisfied
3: Neutral
4: Somewhat satisfied
5: Very satisfied

19.How easy was it for you to access the e-learning platform and resources provided by your institution?
a.Very difficult
b.Somewhat difficult
c.Neither easy nor difficult
d.Somewhat easy
e.Very easy

20.How satisfied were you with the following

Statements	Highly satisfied	satisfied	neutral	Dissatisfied	Highly dissatisfied
quality of online lectures and course materials?					
availability of online study groups and peer-to-peer interaction in your e-learning experience?					
level of accessibility of online library resources for your studies?					
level of engagement and feedback provided by your instructors in the e-learning environment?					

21.What did you like most about the e-learning resources provided?
Course materials
a.Online platform
b.Technical support
c.Instructor support
d.Opportunities for collaboration
e.Other (please specify)

22.What improvements would you suggest for the e-learning resources provided?
a.More interactive elements
b.Better quality course materials
c.Easier navigation on the online platform
d.More opportunities for feedback and assessment
e.More opportunities for collaboration and group work
f.Other (please specify)

23.Were there any specific challenges or obstacles you faced while using the e-learning resources?
a.Technical difficulties
b.Lack of access to necessary technology or internet
c.Difficulty understanding course materials
d.Lack of motivation or engagement
e.Other (please specify)

24.Have you taken courses in both e-learning and traditional classroom formats?
a.Yes
b.No

25.If yes, on a scale of 1 to 5, how satisfied are you with the e-learning format in comparison to the traditional classroom format?
1: Very unsatisfied
2: Somewhat unsatisfied
3: Neutral
4: Somewhat satisfied
5: Very satisfied

26.In what ways do you find e-learning to be more beneficial or effective than traditional classroom learning?
a.Flexibility in scheduling and pace of learning
b.Access to a wider range of courses and resources
c.Customized learning experience based on individual needs and preferences
d.Convenience of learning from any location with an internet connection
e.Ability to learn at own pace without distractions or interruptions from classmates
f.Enhanced digital skills and familiarity with technology
g.Potential cost savings on transportation, textbooks, and other course materials

27.In what ways do you find traditional classroom learning to be more beneficial or effective than e-learning?
a.Face-to-face interaction with instructors and peers
b.Personalized attention and immediate feedback from instructors
c.Hands-on learning opportunities and access to physical resources
d.Active participation in group activities and discussions
e.Greater accountability and structure in learning
f.Formation of a strong community and social connections with peers
g.Opportunities for leadership and teamwork in extracurricular activities
h.Access to campus resources and facilities
i.Development of communication and interpersonal skills through face-to-face interactions
j.Higher motivation and engagement through in-person activities and group dynamics.

28.Choose one from the following

Statement	E-learning	Classroom learning	Both
mode of learning do you find more engaging and interactive?			
provides better opportunities for collaboration and interaction with peers and instructors?			
more convenient and flexible?			
mode of learning do you find more convenient for studying?			

mode of learning do you think provides better opportunities for feedback and assessment?			
more cost-effective for you?			
more effective in improving your performance in the course?			

29.Which mode of learning do you prefer overall?
a.E-learning
b.Classroom learning
c.No preference