

**LEARNING OUTCOMES AND STUDENTS' SATISFACTION IN
TRADITIONAL AND ONLINE COURSES OFFERED BY
MIZORAM UNIVERSITY**

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REQUIREMENTS FOR THE DEGREE OF DOCTOR OF
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JUMRI RIBA

MZU REGISTRATION NO: 1906292

Ph.D. REGISTRATION NO: MZU/Ph.D./1980 of 19.04.2022



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**LEARNING OUTCOMES AND STUDENTS' SATISFACTION IN ONLINE
AND TRADITIONAL COURSES OFFERED BY MIZORAM UNIVERSITY**

BY

JUMRI RIBA

Department of Education

Dr. VEMULA MUTTU

Supervisor

Submitted

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Dr. Vemula Muttu
Assistant Professor
M.Sc. (Psychology); M.Sc. (Maths); M.Ed.; Ph.D.

School of Education
drmuttuedu@gmail.com
Contact: 9908802204

CERTIFICATE

This is to certify that the work incorporated in this thesis entitled “Learning Outcomes and Students’ Satisfaction in Online and Traditional Courses Offered by Mizoram University” is the Bonafide research work carried out by Jumri Riba under my supervision.

I, hereby, certify that he has fulfilled all the required norms laid down under the Ph.D. Regulations of Mizoram University and that the thesis is a result of her own investigation. Neither the thesis as a whole nor any part of it was ever submitted for any degree to any other University. (Dr. VEMULA MUTTU) Supervisor

(Dr. Vemula Muttu)
Supervisor

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MIZORAM UNIVERSITY

October, 2025

I, Jumri Riba, hereby declare that the subject matter of this thesis is the record of work done by me, that the contents of this thesis did not form basis of the award of any previous degree to me or, to do the best of my knowledge to anybody else, and that the thesis has not been submitted by me for any research degree in any other University/Institute.

This is being submitted to the Mizoram University for the degree of Doctor of Philosophy in Education.

(JUMRI RIBA)

Candidate

(Prof. LALBIAKDIKI HNAME)

Head of Department

(Dr. VEMULA MUTTU)

Supervisor

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CHAPTER-I

INTRODUCTION

Now a day's individuals discover things more on the Internet than from newspapers or the books. One can have undesirable sentiments like depression, emptiness, etc., when he/she is not online. The internet provides several capabilities such as online gaming, shopping, the newest information, banking and a platform to communicate with individuals across the globe. In the past decades, personal computers have played a crucial role in our everyday lives, with the growth in popularity and networking of computers, inter-communication between different computers became more easier, which led to the phenomena dubbed the internet. Today most of the people are learning from online videos by exploring the internet in their topic of interest. The impact of digital videos on our everyday life is evident. That online video sharing services such as YouTube, Vimeo and Meta Cafe boast monthly audience counts in the millions. With digital videos continuing to gain popularity, it seems only reasonable that this familiar and widespread platform should extend into the school system.

According to Paul & Jefferson (2019), "Contrary to popular assumption, online education is not a new phenomenon. The earliest correspondence and distant learning educational programs were launched in the mid-1800s by the University of London. This type of educational learning was dependent on the mail service and consequently wasn't seen in America until the late Nineteenth century. It was in 1873 when what is regarded the first formal correspondence educational program was created in Boston, Massachusetts known as the "Society to Encourage Home Studies." Since then, non-traditional education has matured into what is presently considered a more realistic online teaching method. Technological innovation indubitably helped increase the pace and accessibility of distance learning courses; now students worldwide may attend sessions from the comfort of their homes."

Students that participate in online learning utilize their personal computers to access the internet. For many unconventional students, among them all those who

desire to continue working full time or raising families, online graduations and courses have become popular in the past decade. Often online graduation and course programs, some of which are done utilising digital technology, are supplied via the online learning site of the host university. Computer-based training, Web-based training, Internet-based training, online training, e-learning (electronic learning), m-learning (mobile learning), computer-aided distance education, online education goes by many names and comes in a variety of styles, but at its core: “Online education is electronically supported learning that relies on the Internet for teacher/student interaction and the distribution of class materials.” Naheem (2020)

1.1 ONLINE LEARNING: A DIGITAL REVOLUTION IN REALM OF EDUCATION

The introduction of the ICT has altered various facets of human life, and education is no exception. Online learning, a style of instruction that leverages digital technologies to offer educational content, has gained substantial popularity in recent years. This study seeks to provide an overview of online learning, analysing its definition, important characteristics, benefits, obstacles, and its impact on traditional education.

Online mode of learning, commonly known as ‘e-learning’ also known as ‘distant learning’ comprises a wide range of educational activities that take place outside of a physical classroom. To facilitate communication between students and teachers, it makes use of a variety of digital tools, including online forums, video-conferencing software, and learning management systems (LMS). Because of this flexibility, students can access learning materials and participate in activities at their own pace and leisure.

One among the defining aspects of online learning is its asynchronous nature. Unlike traditional classrooms, where instruction follows a fixed schedule, students learning online can access course materials and participate in activities at times that fit their unique schedules. The flexibility of online-mode is particularly advantageous for working professionals, parents, and persons with disabilities who may find it tough to attend traditional programs.

Moreover, online learning offers a varied range of educational alternatives. Learners have access to a vast array of courses and programs from educational institutions across the globe, ranging from micro-credentials to massive open online courses. This accessibility has democratized education, making it more affordable and accessible to people from all walks of life.

Online learning also has various benefits for learners. It can boost engagement and motivation by providing interaction from learning experiences, such as simulations, games, and virtual reality. Additionally, online learners have the opportunity to retrieve a plethora of resources, namely e-libraries, databases, and multimedia information, which can increase their grasp of the subject matter. Furthermore, online learning can stimulate self-directed learning and build capability to manage time, problem-solution and critical thinking skills.

However, online mode of learning is not without its obstacles. The risk of social disengagement and loneliness is one of the main issues. Online learners may be devoid of the face-to-face interactions and informal learning opportunities that occur in regular classrooms. Moreover, technological challenges, such as problems with software or internet connectivity, could interfere with learning.

Despite these challenges, online learning has the potential to transform education. It offers a flexible, accessible, and stimulating educational opportunity that can support conventional classroom teaching. We may anticipate more developments in online learning as technology develops, which will increase its usefulness and efficacy as a teaching tool.

Online learning, a style of instruction that leverages digital technologies to offer educational content, has undergone a meteoric development in India over the past decade. This paradigm change is mostly linked to developments in technology, increasing internet coverage, and the growing need for flexible and accessible education.

The Indian government has actively encouraged the adoption of online learning through various initiatives. The National Digital Education Architecture (NDEA),

launched in 2020, aims to provide a comprehensive digital infrastructure for education, including online learning platforms and content repositories. Additionally, the government has allocated substantial funds for digital literacy programs to connect the digital division and make online learning accessible to a wider population.

Online learning in India offers several advantages, including flexibility, accessibility, and affordability. Learners can access educational content at their pace and convenience, making it excellent for working professionals, individuals residing in remote areas, and those with disabilities. Moreover, since they do not require physical infrastructure or transportation costs, online courses are typically more affordable than traditional in-person programs.

However, there are certain obstacles to the expansion of online education in India. It is necessary to address problems including insufficient digital literacy, a lack of internet connectivity, and concerns about the caliber of online education. Investing in infrastructure development, raising digital literacy, and establishing quality standards for online courses are all essential to the success of online learning.

In conclusion, online learning has emerged as a significant force in the Indian education landscape, offering numerous benefits to learners and contributing to the country's development. By addressing the challenges and leveraging the opportunities presented by online learning, India can create a more inclusive and equitable education system for all.

1.1.1 Characteristics of Online Learning

Online learning, often known as ‘e-learning’ or ‘web-based learning’, utilizes digital platforms and internet technology to deliver education and enhance learning. It has become a major mode of education delivery due to its flexibility, accessibility, and potential for pedagogical innovation (Allen & Seaman, 2017).

1. Flexibility and Accessibility

Online learning allows learners to acquire data, complete assignments, and engage in conversations at their suitability. This mode of learning supports both

synchronous and asynchronous communication, thereby accommodating different learning styles and schedules (Hrastinski, 2008). Furthermore, it promotes inclusivity by reaching students in remote or underserved areas (Means et al., 2014).

2. Learner-Centered Approach

Online education emphasizes student autonomy. Learners often manage their own schedules, engage in self-directed study, and choose personalized learning paths (Anderson, 2008). “This promotes the development of lifelong learning skills and critical thinking” (Garrison, 2011).

3. Use of Technology

Online learning is facilitated by Learning Management Systems (LMS) like Moodle, Blackboard, and Canvas. “These platforms enable course delivery, communication, and assessment” (Watson & Watson, 2007). “The integration of multimedia components, such as movies, animations, and simulations, promotes engagement and comprehension” (Clark & Mayer, 2016). Additionally, learning analytics enable educators track student development in real time (Siemens, 2013).

4. Interactive Learning Environment

Though online learning lacks physical presence, it compensates through interactive tools like forums, video conferencing, and collaborative documents. These features promote active engagement and social learning (Moore, 1993; Swan, 2001). Immediate feedback from quizzes and AI tools supports effective formative assessment (Bennett, 2011).

5. Scalability and Cost-Effectiveness

“Massive Open Online Courses (MOOCs) show the scalability of online learning, allowing institutions to reach enormous numbers of learners globally” (Yuan & Powell, 2013). “Online courses are generally more cost-effective for both institutions and students, as they decrease the requirement for physical infrastructure” (Allen & Seaman, 2017).

6. Assessment and Evaluation

Online learning uses diverse assessment formats, such as auto-graded quizzes, peer evaluations, and e-portfolios (Gikandi et al., 2011). Tools like Turnitin and Grammarly help maintain academic integrity through plagiarism detection.

7. Challenges and Limitations

The drawbacks of online learning:

- Digital divide: Many students lack reliable internet or digital devices (Van Dijk, 2020).
- Social isolation: The absence of face-to-face interaction can affect learner motivation (Kaufmann & Vallade, 2020).
- Digital literacy: Both educators and learners must be proficient in technology to navigate platforms effectively (Ng, 2012).
- Quality assurance: Concerns persist regarding the credibility and rigor of online education (Bates, 2015).

1.1.2 Advantages of Online Learning

1. Flexibility

The most frequently accepted benefits of learning online is the level of freedom it affords to learners. Unlike traditional classroom-based education, which functions on fixed timetables and physical presence, it allows students to study at their own pace, in their own environment, and at times that fit their daily habits. Online learning is suitable for adult learners, working professionals, students with family obligations, and those living in geographically isolated places.

For example, a student from a rural village who may have previously struggled with long commutes or hostel arrangements can now access university-level education without leaving home. It empowers learners to fit education into their lives rather than restructuring their lives around education.

2. Greater Access and Inclusion

Online learning plays an important role in broadening access to education. For persons with physical limitations, those in distant or underserved places, or learners from underprivileged backgrounds, online education breaks down traditional barriers that may have hindered their participation in higher education. In addition, internet platforms often come packed with accessible capabilities such as screen readers, subtitles, and material in numerous formats, which further encourages diversity. The democratization of knowledge, facilitated by digital platforms, allows a wider spectrum of learners to participate in academic programs that would otherwise remain out of reach.

3. Cost Savings and Affordability

While the cost of setting up online learning platforms and acquiring necessary digital tools can be significant for institutions, students often experience online education as a cheaper choice. They save money on commuting, housing, printed textbooks, and even meals. Moreover, several colleges offer free or low-cost ‘open educational resources’ and ‘Massive Open Online Courses’ that further reduce financial burdens. For families with limited income, this economic aspect of online learning can be a decisive factor in enabling continued education.

4. Personalized and Self-Paced Learning

Online learning’s ability to be personalized is yet another important advantage. Learners can progress according to their own pace, revisit recorded lectures, pause to take notes, or replay complex explanations. This self-paced strategy is particularly helpful for learners who may need more time to absorb certain concepts or those who want to move quickly through familiar topics. In contrast to one-size-fits-all teaching, online learning creates opportunities for differentiated instruction and self-directed learning, where learners have more control over the process and style of their education.

5. Development of Technical and Professional Skills

In today's digital world, being proficient in technology is not optional, it is essential. Online learning environments naturally foster digital literacy, helping students become comfortable with a range of software tools, learning management systems (LMS), communication platforms, and collaborative technologies. Additionally, students also improve soft skills like time-management, self-motivation, independent learning, and online communication. These competencies are highly valued in modern workplaces, thereby aligning the educational experience with the expectations of the job market.

6. Richness of Learning Resources

Unlike traditional classrooms that often rely on chalk-and-board teaching, online platforms integrate multimedia and interactive resources to support varied learning styles. Visual learners can benefit from films and animations, auditory learners from podcasts and recorded lectures, and kinaesthetic learners from simulations and gamified activities. Many courses also include quizzes, real-time feedback, case studies, and peer discussions that deepen understanding and encourage reflection. This diversity enriches the learning experience and supports better retention of knowledge.

7. Global Connectivity and Collaboration

Online learning offers the ability to link learners across national and cultural borders. A student in Mizoram might take a course with peers from different parts of India or even other countries. This global exposure encourages intercultural communication, broadens perspectives, and opens doors to international collaboration. Such experiences are particularly valuable in an increasingly interconnected and interdependent world.

1.1.3 Disadvantages of Online Learning

1. Lack of Physical Interaction

Among many others most frequently reported difficulties of online learning is the absence of personal touch with teachers and peers. The classroom, in its traditional form, is not only a space for intellectual development but also a social environment where students form relationships, engage in spontaneous discussions, and learn through human connection. On the Internet world, even if video conferencing and discussion boards, the experience can feel distant and impersonal. This lack of immediacy and non-verbal cues may reduce the quality of communication and hinder the development of a strong learning community.

2. Digital Divide and Inequality

While online learning promises accessibility, it ironically also highlights the disparities in access to technology. Not all students have high-speed internet, reliable devices, or a quiet place to study. Those from economically weaker sections or rural areas may face frequent power cuts, poor connectivity, or lack of basic digital tools. These limitations create a digital divide that can marginalize certain groups and lead to unequal learning outcomes. In such cases, the very promise of inclusive education through digital platforms remains unfulfilled.

3. Feelings of Isolation

Without the structure and social context of a physical campus, many students express feelings of loneliness and detachment in online programs. The absence of informal interactions, like chatting with classmates before class or seeking instant clarification from instructors, can lead to a diminished sense of belonging. Self-esteem, motivation, and general learning experience satisfaction may all be impacted by this emotional disconnect. Mental health problems such as anxiety and loneliness may become more pronounced, especially when students are studying alone for extended periods.

4. Dependence on Self Discipline and Motivation

The online student has a great deal of responsibility when learning online. Unlike typical classrooms where the schedule is planned and tightly overseen by the teacher, online students must manage their own time, maintain discipline, and stay motivated without continual supervision. For many, this independence is empowering. For others, particularly those new to higher education, it can be overwhelming. Without proper guidance, students may procrastinate, miss deadlines, or struggle to stay engaged, leading to poor academic performance or even dropout.

5. Technical Issues and Learning Curve

Technology, while essential to online education, can also be a source of frustration. Glitches in learning platforms, difficulties in logging in, audio/video lags during live sessions, and sudden internet failures can disrupt learning. Additionally, both students and instructors may face a steep learning curve when adapting to new platforms or tools, especially if they are not technologically savvy. These challenges can lead to stress and disengagement.

6. Challenges in Assessment and Academic Integrity

Assessment in online environments poses several challenges. Ensuring fairness, transparency, and academic honesty is more complex when exams are conducted remotely. Despite the use of online proctoring tools and plagiarism checkers, there are concerns regarding cheating, impersonation, and the authenticity of submissions. Furthermore, the nature of online assessment often leans heavily toward objective testing, which may not fully capture higher-order thinking or the depth of students' understanding.

7. Variable Quality and Lack of Standardization

Not all online courses are created equal. The standard of content, the extent of instructor engagement, and the effectiveness of course design can vary significantly from one course to another. Some courses may simply consist of pre-recorded lectures

and PDFs, with little opportunity for interaction or active learning. Without proper instructional design and regular updates, online courses may become outdated, monotonous, or ineffective in achieving learning outcomes. This inconsistency can affect students' experiences and lead to dissatisfaction.

1.1.4 Modes of Online Learning

1. Synchronous Learning

Students and teachers communicate in real time during synchronous learning, a type of online education, usually using video conferencing platforms like zoom, Google Meet, or Microsoft Teams. The learning process in this setup is identical to that of a traditional classroom, when the teacher and pupils are present simultaneously. A dynamic and captivating learning environment is created by allowing students to ask questions, take part in live discussions, and get prompt response from professors. Students may immediately express their thoughts and engage with peers in this manner, which fosters a feeling of community and involvement. However, because synchronous learning necessitates [participants' simultaneous availability, it may be inconvenient for students in various time zones or those balancing their studies with other obligations.

2. Asynchronous Learning

Asynchronous learning authorizes the students to access course resources such as pre-recorded lectures, readings, and quizzes at their own convenience. There is no requirement for the real-time communication between students and teachers, which provides learners the opportunity to study at their own speed. This style is particularly advantageous for persons who have variable schedules, like students with family obligations or working professionals. It also allows learners the chance to review materials as needed, which promotes comprehension and retention. While asynchronous learning allows greater autonomy and flexibility, it can further contribute students' sense of loneliness, as students may lack the social connection and quick feedback that synchronous modes provide. Moreover, the lack of organised class schedules can make it tougher for certain students to keep motivated or on track.

3. Blended Learning

A hybrid approach that combines online and in-person instruction is called blended learning. In a blended learning setting, students can attend in-person meetings for discussions, practical exercises, or group projects while also participating in online lectures, readings, and assignments. This approach combines the social and interactive elements of conventional classroom settings with the best features of online learning, such flexibility and accessibility. Blended learning encourages engagement through live interactions and offers students with the ability to apply theoretical knowledge in practical, in-person contexts. For institutions like Mizoram University, this model can be particularly effective since it allows them to maintain a balance between digital resources and in-person participation, delivering a holistic educational experience for all students.

4. Massive Open Online Courses (MOOCs)

Massive Open Online Courses are the large-scale, open-access online courses offered by universities or platforms like Coursera, edX, or SWAYAM. They are typically available to anyone with an internet connection, and many of them are free or low-cost, with options for paid certificates. MOOCs provide an opportunity for learners to access world-class education from prestigious institutions without the need for physical attendance. These courses usually follow an asynchronous format, where pupils are free to learn at their own speed by watching pre-recorded lectures and completing assignments. While MOOCs offer a broad range of subjects and can reach a global audience, they are often less personalized, with limited interaction between students and instructors. This lack of direct engagement may make it difficult for learners to receive personalized feedback or deeply connect with the course content.

5. Self-Paced Learning

The most adaptable type of online learning is self-paced learning, allowing students to proceed through course content at their own time. There are no defined deadlines, and learners can devote as much as little time as possible to each portion of the course as they require. This mode is particularly well-suited for persons who have

variable schedules or prefer to work autonomously. Students can review tough ideas and go through easy topics more rapidly, adapting the learning experience to their specific needs. However, self-paced learning takes a strong degree of self-control and determination. Without the structure offered by planned classes or deadlines, some students may struggle to maintain progress or feel detached from the learning community.

1.2 TRADITIONAL LEARNING

When students, teachers, and facilitators all gather in the same time location at the same times, it's called a face-to-face session. Participants, instructors, and facilitators interact in real time during a face-to-face session or event. In order to maintain contacts and promote information exchange, face to face interaction can help to dissolve boundaries and offer genuine cross-cultural experiences and networking opportunities. Examples of face-to-face learning include conferences, seminars, workshops, and classes when all participants gather in one location. More information may be expressed in face-to-face interactions through gestures, body language, and speech modulation, tone, and loudness. All things considered, in-person contact provides a higher level of information richness. Non-verbal body language and the quantity of information it conveys are entirely lost in distance learning. It is uncommon for a teacher to notice confused expression or impromptu inquiries in such a situation. Classroom training is often far more structured than online learning. Every week, you meet at the same times on the same days. This reduces one's flexibility in terms of work and other pursuits. Usually, you have to attend class in order to fulfil your commitments and gain knowledge. After class ends, there is no way to get in class teaching unless your lecturers record their lectures. Given the aforementioned drawbacks of in person instruction and the rapid globalization of technology, distance learning is the best option for everyone, particularly adults looking to further their careers and better themselves.

The recent explosion of COVID-19 made the whole country to decide the requirement for online learning methodologies, therefore most of the schools, colleges, and institutions learning were delivered Online. So, this study explores and proposes

to determine the learning outcomes of college student by comparing learning satisfaction with learning outcomes of online and traditional learning method.

1.2.1 Characteristics of Traditional Learning

Traditional learning, stands out as a method of education that has been the backbone of education systems all over the world for millennia. It thrives on human interaction and personal engagement, establishing a setting where students and teachers can engage in direct communication and dynamic learning experiences. Below are the defining qualities of Traditional learning, described in detail:

- 1. Face-to-Face Interaction:** Many defining element of Traditional learning is the direct, physical interaction between the teachers and Students. In a classroom, students are not just passive users of knowledge but active participants in a dynamic process of communication. Teachers can rapidly measure pupils' understanding by body language, facial emotions, and verbal responses. This real-time feedback loop encourages a more personalized learning environment where teachers can alter their approach to match the needs of students quickly. Similarly, students can ask questions, engage in conversations, and clarify uncertainties on the spot, leading to a fuller, more immersive learning experience.
- 2. Structured Timetable:** Traditional education is typically built around a fixed timetable. Students know when their classes begin and end, and this routine creates a structured environment. The regularity of scheduled class sessions helps students stay on track, build discipline, and manage their time effectively. This structured approach also facilitates better planning for assignments, exams, and group activities. While the lack of flexibility can be challenging for those with unpredictable schedules, it also helps students to establish good time management practices. The presence of deadlines and set hours ensures that students stay focused and engaged with their coursework.
- 3. Classroom Environment:** Traditional learning happens in a physical, dedicated learning space, often a classroom, laboratory, or seminar hall, where students and instructors gather to engage in the educational process. These

spaces are often equipped with physical resources such as whiteboards, projectors, and printed materials that can enhance the learning experience. The classroom setting is designed to stimulate concentration, conversation, and collaboration. For many students, it is also a familiar and comfortable place where they feel at home asking questions, connecting with peers, and absorbing new material. Unlike online learning, where distractions from the home environment might occur, the classroom provides a controlled space for students to immerse themselves in learning.

4. **Limited Flexibility:** One prominent attribute of Traditional learning is the lack of flexibility compared to online education. In traditional settings, students are compelled to be physically present in class at specified times, sticking to a rigorous schedule. While this framework can help create discipline and a habit, it can also be a hindrance for students who balance other responsibilities like as part-time work, family care, or long commutes. The inability to access course materials at one's convenience can be constraining for students with unpredictable schedules, and this lack of flexibility is one of the primary reasons some learners can find Traditional education problematic, especially in the modern, fast-paced environment.
5. **Social Interaction:** Traditional learning is one of the key strengths in social interaction it fosters. Students are not isolated behind a screen but are physically present with their peers and instructors. This creates an environment where spontaneous conversations, collaborative work, and peer-to-peer learning thrive. Group discussions, project work, and informal interactions during breaks or after class build camaraderie among students and encourage the development of communication and interpersonal skills. This sense of community and belonging is often one of the most cherished aspects of Traditional learning. The opportunity to form study groups, ask questions informally, and connect with others in a classroom setting offers significant social and emotional benefits that cannot be easily replicated in online learning environments.

- 6. Instructor-Led Learning:** In the Traditional learning, the instructor act as a central role in guiding the educational experience. Teachers are the primary source of knowledge and act as facilitators of learning. They are responsible for delivering lectures, organizing activities, leading discussions, and addressing any challenges students may face in understanding the content. The face-to-face format allows instructors to engage with students in a more personal way, adjusting their teaching style based on student responses and needs. For students who thrive on direct interaction and guidance, this mode of learning provides a sense of support and structure that can significantly enhance their educational journey.
- 7. Physical Resources:** Traditional learning involves the use of tangible, physical resources. Students have direct access to textbooks, notebooks, whiteboards, lab equipment, and printed handouts during their lessons. In practical fields like science, engineering, or arts, the physical presence of tools and equipment is critical for hands-on learning. For example, in a chemistry lab, students can conduct experiments, manipulate instruments, and observe real-world phenomena. These physical interactions provide an invaluable learning experience that digital resources cannot always replicate. Furthermore, Traditional education can facilitate access to local resources, such as libraries and archives, enhancing the overall learning experience through research and discovery.
- 8. Limited Technological Dependency:** Unlike online learning, which relies heavily on internet connectivity and digital tools, Traditional education operates independently of technological infrastructure. Students do not need to worry about technical issues such as poor internet connection, software glitches, or device malfunctions. This makes Traditional learning more accessible in areas with limited technological resources or where internet access is inconsistent. In a traditional classroom, students are focused solely on the learning process without being distracted by digital tools. This simplicity can sometimes lead to a more focused, straightforward learning experience,

especially for students who prefer hands-on, less tech-heavy learning environments.

9. Real-Time Assessments: In Traditional education, assessments are typically conducted in real-time and in-person, whether through written exams, oral tests, group presentations, or practical demonstrations. This allows instructors to directly observe students' abilities and gauge their understanding of the material. Immediate feedback can be provided, helping students identify areas for improvement. The assessment process in Traditional learning is usually more personal, with the teacher able to ask follow-up questions or engage in one-on-one discussions about student progress. This immediacy in evaluation and feedback often enhances the learning process by creating opportunities for timely intervention.

10. Variety of Teaching Methods: Traditional learning encompasses a wide range of teaching methods, making it a versatile mode of education. Instructors can mix traditional lectures with seminars, group work, workshops, case studies, and field visits. Each method is designed to address different learning styles, whether auditory, visual, or kinaesthetic. For example, while lectures may suit students who benefit from structured presentations, workshops or group activities cater to those who learn best through hands-on experiences or peer collaboration. Field visits to museums, industries, or research centers offer students the chance to connect classroom knowledge with real-world contexts. This range of instructional strategies enhances the educational process, making it more engaging and comprehensive.

1.2.2 Advantages of Traditional Learning

1. Direct Interaction and Immediate Feedback: Main advantages of Traditional The instantaneous, real-time interaction between students and teachers are called learning. This enables for a more tailored learning experience. When students ask questions or exhibit confusion, instructors can provide instant clarification. This direct feedback is vital for reinforcing topics

and ensuring that students fully understand the material before moving on. Additionally, the face-to-face nature of the classroom allows professors to read students' body language and assess their level of participation, making it easier to adapt teaching approaches as needed.

2. **Enhanced Social Interaction:** Traditional learning provides an environment that fosters social interaction, both between students and instructors and among peers. The classroom setting allows students to participate in group discussions, collaborate on projects, and form study groups. These social interactions are crucial for developing communication, teamwork, and interpersonal skills. The classroom also helps students develop a sense of belonging and community, which is often more difficult to establish in online learning environments where interaction is primarily through digital means. These social connections can enhance the overall learning experience, making it more enjoyable and less isolating.
3. **Structured Environment:** The structured nature of Traditional learning is beneficial for many students who thrive in a predictable, routine environment. The fixed schedules, set class times, and clearly defined course structures help students stay focused and manage their time effectively. The presence of deadlines for assignments, projects, and exams provides motivation and encourages students to stay on track. This structure is particularly beneficial for learners who struggle with time management and need external guidance to stay organized. It also helps students develop discipline and responsibility, which are valuable skills both during and after their education.
4. **Hands-On Learning and Practical Experiences:** Traditional learning is especially advantageous for subjects that require practical application. For fields like science, engineering, medicine, and the arts, hands-on learning in labs, workshops, or clinical settings is crucial. Students can interact directly with the materials, conduct experiments, or engage in creative projects. This hands-on approach allows students to apply theoretical knowledge in a real-world context, deepening their understanding and improving their skills. Moreover, many Traditional learning environments feature resources like textbooks, lab equipment, and visual aids that enhance the learning process.

5. **Reduced Technological Barriers:** Unlike online learning, which is heavily reliant on technology, Traditional learning is less prone to technical issues like internet connectivity problems or device malfunctions. This makes it more accessible, particularly for students who live in areas with limited technological infrastructure or those who are not comfortable using digital tools. The focus on traditional teaching methods, such as verbal communication and physical materials, ensures that students are not distracted by technical difficulties. For those who find technology overwhelming or prefer a more straightforward approach, Traditional learning can be a more comfortable and effective mode of education.

1.2.3 Disadvantages of Traditional Learning

1. **Limited Flexibility:** Traditional learning is often criticized for its lack of flexibility. Students are forced to go to courses at specified schedules and locations, which might be onerous for those with busy schedules or family obligations. For instance, students those who work part-time or live in rural places may find it difficult to attend classes consistently, leading to absenteeism or delayed coursework. This inflexible format can be particularly problematic for non-traditional learners, such as adult learners, working professionals, or individuals with special needs, who may struggle to accommodate typical class times into their lives.
2. **Geographical Constraints:** Traditional education is inherently tied to a physical location, meaning that students must be present in a particular classroom or campus. This can limit access for individuals living in rural areas or locations far from educational institutions. For those who cannot easily travel, whether due to distance or financial constraints, Traditional learning may not be a viable option. Geographical limitations also mean that students are often restricted to institutions in their immediate area, reducing the range of educational opportunities available to them.
3. **Resource Limitations:** Despite the accessibility of tangible resources, including textbooks, equipment, and classroom aids, Traditional learning

environments can face limitations. For example, large class sizes can make it challenging for educators to offer individual attention to every student. Additionally, schools or universities may lack sufficient resources, such as updated textbooks, technological tools, or space for hands-on activities. The effectiveness of Traditional learning can be impacted by these resource constraints, making it harder for students to access high-quality materials or engage in comprehensive learning experiences.

4. **Higher Costs:** Traditional education often comes with higher costs compared to online learning. Students must cover expenses such as commuting, accommodation, textbooks, and classroom materials, in addition to tuition fees. These costs can be burdensome, especially for students from lower-income backgrounds. Institutions also face higher operational costs, including maintaining physical classrooms, providing staff salaries, and ensuring that the infrastructure is up to date. These financial factors can make Traditional education less accessible and reasonably priced, particularly for students who are non-traditional or have limited financial resources.
5. **Limited Access for Diverse Learners:** Traditional education may not be as inclusive as online learning, particularly for students with disabilities. Traditional classrooms may not always be equipped with the necessary resources or accommodations, such as sign language interpreters, adaptive technologies, or accessible materials. Moreover, Traditional learning often doesn't cater to diverse learning styles as well as online education, which can offer more personalized, flexible options. This can make it difficult for some students to fully participate or succeed in a traditional classroom setting, limiting their educational opportunities.

1.2.4 Modes of Traditional Learning

Traditional learning is diverse and multifaceted, offering various ways through which students can engage with content and develop their understanding. These different methods of learning are designed to cater to various learning styles and educational needs, assured that students not only absorb knowledge but also apply it

in real-world scenarios. Below are some key modes of Traditional learning, each contributing uniquely to the educational experience:

1. Lectures

One of the most traditional and common modes of Traditional learning is the lecture, where a teacher or instructor presents information to a large group of students. Lectures are typically formal and structured, often focusing on the delivery of key concepts, theories, and foundational knowledge related to a subject. While lectures may appear to be a one-way communication method, they can also incorporate visual aids like slides, videos, and diagrams to support the content being discussed.

The advantage of lectures lies in their ability to efficiently communicate large amounts of information to a broad audience in a relatively short period. However, the lecture mode may not always engage students actively, especially if the content is too dense or delivered in a monotonous manner. To combat this, many instructors now use interactive lectures, which include opportunities for student participation, such as question-and-answer sessions, live polls, or brief discussions.

2. Seminars and Workshops

Seminars and workshops are smaller, more intimate settings than traditional lectures. In these settings, the focus shifts from one-way information delivery to interactive learning. Seminars typically involve detailed discussions on specific topics or issues, allowing students to dive deeper into the material. The atmosphere is more informal, encouraging active participation, debate, and critical thinking.

Workshops, on the other hand, often involve practical activities and hands-on experiences. Students are encouraged to put their more tangible way, such as through problem-solving, group exercises, or real-world simulations. These modes are particularly useful in fields like business, law, and the arts, where the application of theoretical knowledge is crucial.

The key advantage of seminars and workshops is that they foster a feeling of community and peer interaction students are able to share knowledge with on another, share ideas, and get immediate feedback. These settings also promote a deeper understanding of material by encouraging students to actively engage with the content, rather than passively absorbing information.

3. Laboratory Sessions

In certain academic disciplines, particularly in science, engineering, and medicine, Traditional learning is enhanced through laboratory sessions. Laboratories provide students with hands-on opportunities to engage with the material they've studied in class by conducting experiments, using specialized equipment, or working on practical projects.

These sessions are intended to close the gap that exists between theory and practice. For example, a biology student might dissect a specimen in the lab to gain a deeper knowledge of human anatomy, or an engineering student might test the structural integrity of materials usepd in construction. Laboratory work allows students to explore complex concepts through direct experience, enabling them to see how theories play out in the real world.

Beyond the technical skills, lab sessions also foster critical thinking, problem-solving, and teamwork. Instructors often guide students through experiments and activities, encouraging them to question hypotheses, analyze results, and reflect on their learning.

4. Field Based Learning

It brings students beyond the classroom and into real-world contexts, generally in the form of internships, study tours, or research projects undertaken in the field. This form of learning emphasizes experiential education; it allows the students to apply their knowledge and experiences in actual contexts. For example, a student studying environmental science would spend time observing ecosystems in the field, while a future historian might visit historical locations to obtain primary source material.

Field learning experiences offer a unique perspective that classroom teaching cannot replicate. Students gain real-world insights, develop professional skills, and often have the chance to work directly with experts in the field. This hands-on learning can be transformative, as it ties theoretical information to actual application, making learning more relevant and meaningful.

In addition to enriching students' academic experiences, field-based learning provides opportunities for personal growth. Students may develop greater independence, improve their problem-solving abilities, and enhance their ability to work collaboratively in diverse environments.

5. Tutorials and One-on-One Instruction

Tutorials are smaller, more personalized learning sessions where students can receive individualized attention from instructors. Unlike larger lectures, tutorials often focus on specific questions, problems, or challenges faced by students. These sessions allow instructors to provide tailored guidance, clarify concepts, and help students work through difficult material.

One-on-one education can be particularly advantageous for students who need extra guidance or for those who are failing to master certain aspects of a course. The more intimate environment of a tutorial helps students to express questions without feeling ashamed, creating a deeper comprehension and more confident learning. Tutorials are also a fantastic opportunity for students to discuss their ideas and receive critical comments on their progress, be it in writing, presentations, or projects.

6. Study Groups and Peer Learning

Study groups and peer learning are modes of Traditional learning that leverage the power of collaboration. Students come together in small groups to discuss course material, exchange ideas, and help one another understand challenging topics. In these settings, the focus is on shared learning rather than individual instruction. Students can work through difficult problems together, teach each other new concepts, and support one another in preparing for exams.

Peer learning has been found to offer various benefits, including increased engagement, higher retention of knowledge, and enhanced communication skills. By explaining concepts to their peers, students reinforce their own grasp of the material. This type of learning atmosphere also creates a sense of camaraderie, as students discover that they are not alone in tackling problems.

7. Project-Based Learning

It is a hands-on, Learner-centered approach which deal with working on long-term projects that require in-depth research, collaboration, and creative problem-solving. Students typically work in teams to tackle complex issues or tasks, often resulting in the creation of tangible outcomes, such as research papers, presentations, or prototypes.

This mode of learning encourages critical thinking, creativity, and collaboration, as students must work together to address a problem or challenge. PBL assists students in applying their academic understanding to practical circumstances and gets them ready for careers that require problem-solving, teamwork, and leadership. The process of completing a project from start to finish is a valuable learning experience that extends beyond just the academic content, it also builds essential life skills like time management and communication.

1.3 THEORIES ON ONLINE AND TRADITIONAL LEARNING

The advent of Virtual learning has questioned conventional notions of education, leading scholars to investigate the foundational theories that dictate learning in both settings. This study will explore essential theories that enhance our comprehension of online and traditional learning, assessing their strengths, shortcomings, and relevance to modern educational settings.

1.3.1 Cognitive Theories

Cognitive theories emphasize the cognitive functions that go into learning, including perception, memory, attention, and problem-solving. Both mode of learning has been benefited from the application of several theories:

Constructivism: “This theory posits that learners actively construct their own knowledge through interaction with the environment. In online learning, constructivism is often implemented through interactive activities, simulations, and collaborative projects.” (Piaget, J. (1970).

Cognitive Load Theory: “This theory suggests that learners have limited cognitive capacity and that overloading them with information can hinder learning. In online learning, instructional designers can reduce cognitive load by breaking down complex information into smaller chunks, providing clear instructions, and using multimedia elements.” (Sweller, J. (1988)

1.3.2 Social Theories

Social theories highlight the significance of interpersonal relationships and culture factors in learning. These theories have been especially pertinent to online education, which often involves asynchronous and synchronous interactions with peers and instructors.

Social Cognitive Theory: “This theory proposes that learning occurs through observation, imitation, and self-regulation. In online learning, social cognitive theory can be applied to the design of virtual communities, mentoring programs, and collaborative projects.” (Bandura, A. (1977)

Situated Learning Theory: “This theory suggests that learning is context-specific and occurs within social and cultural settings. In online learning, situated learning can be fostered by creating authentic learning environments that reflect real-world situations.” (Lave, J., & Wenger, E. (1991).

Connectivism: “Connectivism is a more recent theory that emerged in response to the digital age. It emphasizes the importance of networks and connections in

learning, rather than individual knowledge acquisition. Connectivism has been particularly influential in online learning, where learners often rely on networks and online communities to access information and collaborate with others.” (Siemens, G. (2005).

1.3.3 Comparing Online and Traditional Learning

While these theories offer insightful information and traditional and online education, there are significant differences between the two environments that may influence the application of these theories.

Flexibility: Online learning offers greater flexibility related to time and location, which can be facilitate self-paced learning and accommodate diverse learner needs.

Technology: Online learning it relies mostly on technology, which can provide a new opportunity for learning but also pose obstacles including technological issues and digital divide.

Social Interaction: Traditional learning typically involves face-to-face interactions, which can promote stronger social bonds and provide immediate feedback. However, online learning can also foster social interactions through virtual communities and collaborative tools.

1.4 COMMITTEES AND COMMISSIONS ON ONLINE AND TRADITIONAL LEARNING: A COMPREHENSIVE OVERVIEW

The rapid proliferation of online learning has necessitated the establishment of committees and commissions to investigate its effectiveness, challenges, and potential benefits. These bodies have been playing an important role in shaping educational policies, guidelines, and standards. This paper will explore key committees and commissions worldwide that have focused on online and Traditional learning, examining their recommendations and contributions to the field.

1.4.1 International Committees and Commissions

1. **UNESCO Digital Education Task Force:** Established in 2011, this task force aimed to promote the use of information and communication technologies in education. It produced a framework for digital education and provided recommendations on policy development, infrastructure development, and teacher training,
2. **OECD Education Committee:** The OECD Education Committee has conducted extensive research on online learning, including its influence on student achievement, equity, and teacher professional development. The committee's reports have provided valuable insights for policymakers and educators. OECD. (2017).
3. **European Commission:** The European Commission has been instrumental in promoting the use of ICTs in education across the European Union. It has funded various projects and initiatives related to online learning, including the e-Learning Action Plan and the Digital Education Accelerator. European Commission (2018).

1.4.2 National Committees and Commissions

- **National Educational Technology Plan (NETP), India:** According to Ministry of Human Resource Development, Government of India (2012) “The NETP, launched in 2012, outlined a vision for integrating technology into education in India. It recommended the development of digital content, teacher training, and infrastructure to support online learning.”
- **National Commission on Higher Education (NCHE), South Africa:** “The NCHE, established in 1996, investigated the state of higher education in South Africa and made recommendations for its improvement. It emphasized the potential of online learning to increase access and equity in higher education.”
- **National Education Technology Plan (NETP), United States:** According to U.S Department of Education (2012) “The NETP, developed in 2012, provided

a roadmap for integrating technology into education in the United States. It highlighted the importance of online learning as a tool for personalized learning and professional development.”

1.4.3 Recommendations and Contributions

The committees and commissions mentioned above have made numerous recommendations to promote the efficient utilization of the internet and Traditional learning. Some of their key recommendations include:

- **Investment in infrastructure:** Governments should invest in broadband connectivity, digital devices, and educational software to support online learning.
- **Teacher training:** Teachers should be provided with training for how to use technology effectively in their classrooms.
- **Quality assurance:** Standards and guidelines should be developed to ensure the standard of online learning programs.
- **Equity:** Online learning has to be made accessible to every student, regardless of their socio-economic background or location.
- **Research and evaluation:** Continued investigation and analysis are required to evaluate the effectiveness of online learning and identify best practices.

1.5 LEARNING OUTCOMES

Learning Outcomes act as the cornerstone of education, clearly defining the skills, understanding, and application that students should possess by the end of a course program. They consist of learning theoretical material and developing practical abilities and critical thinking, ethical awareness, and the capacity to apply learning in real-world situations. Learning outcomes provide direction for students, helping them understand the purpose of their learning journey, while also supporting educators in designing effective teaching methods and assessments. Whether in online or Traditional settings, these outcomes ensure that education is purposeful, measurable,

and aligned with both academic standards and professional demands. They ultimately reflect the transformation we hope to see in learners, not only as students but as competent, responsible individuals prepared to face the complexities of the modern world.

1.5.1 Dimensions of Learning Outcomes

1. Knowledge Acquisition: Knowledge acquisition is the foundation of any educational program, and in business education, it encompasses various aspects of intellectual growth. Pupils are not only supposed to acquire business knowledge but also develop critical thinking skills that enable them to analyze complex business situations. Through structured learning, they become proficient in solving problems, making informed decisions, and thinking strategically. This ability to think critically and analyze business situations is vital for formulating effective business strategies that drive organizational goals. The depth of knowledge gained allows students to make high-level decisions that align with long-term business objectives, ensuring they are capable of assuming leadership positions and navigate dynamic business environments.

2. Communication Skills: Effective communication is an essential skill in the business world, and it involves both written and oral abilities. In the context of business education, students refine their written communication skills to craft professional reports, emails, and proposals that convey ideas clearly and persuasively. This ability to write effectively enhances their capacity to engage with colleagues, clients, and stakeholders. Additionally, oral communication skills are honed through activities such as presentations, meetings, and group discussions. Being able to articulate ideas confidently, manage discussions, and negotiate is key to success in the business environment. These communication skills are fundamental in fostering collaboration, presenting ideas clearly, and building relationships in both professional and academic settings.

3. Collaborative Skills: In the linked world of today, the capacity for productive teamwork is critical in any business environment. Students learn how to work in teams,

both physically and virtually, and develop the ability to contribute meaningfully to group efforts. Virtual collaboration, which has become increasingly common, is also a significant focus, especially with the rise of remote work. Students utilize digital platforms, such as online forums, video conferences, and collaborative tools, to converse, exchange concepts, and work together on projects. These abilities are applicable outside of the classroom as well the workplace, where collaboration across time zones and cultures is often required. Networking with peers, faculty, and industry professionals through these digital means allows students to expand their professional connections and exchange valuable insights.

4. Ethical and Social Responsibility: Understanding and applying ethical principles is crucial in business education. Students are taught to navigate the moral and ethical considerations involved in business decision-making. By focusing on ethical issues such as fairness, corporate governance, and corporate social responsibility, students learn how to make decisions that not only benefit the organization but also positively impact society. They gain an understanding of the importance of socially responsible business practices and are empowered to make morally sound decisions in their careers. This outcome ensures that students are prepared to lead businesses that prioritize sustainability, ethical behavior, and community well-being.

5. Digital Literacy: As the business world becomes increasingly dependent on technology, digital literacy has emerged as an essential skill. In business education, students learn how to use various digital tools and technologies that are relevant to the modern business landscape. From project management software to data analysis platforms, students develop proficiency in tools that enable efficient work processes and decision-making. Additionally, understanding the role of digital tools in marketing, communication, and data management allows students to stay competitive in the rapidly evolving digital economy. This proficiency not only enhances their employability but also prepares them for leadership roles in tech-driven business environments.

6. Leadership Skills: Leadership skills are a cornerstone of business education, as they prepare students to take on roles where they will guide teams and organizations toward success. Students begin by developing basic leadership skills, such as motivating others, providing direction, and achieving team goals. These foundational skills evolve into more advanced abilities as students' progress in their education. They learn to manage teams, resolve conflicts, and navigate organizational challenges. For those aiming for senior management positions, the program also emphasizes strategic decision-making, vision building, and change management. These leadership skills are not only about guiding others but also about inspiring, influencing, and driving innovation within organizations.

7. Adaptability: The capacity to adjust to evolving circumstances and learning environments is increasingly important in the modern world. In business education, students are encouraged to embrace different learning formats, whether traditional classroom-based, online, or hybrid learning. This flexibility is essential, as it mirrors the changing landscape of the business world, where adaptability is often the key to success. Students also learn how to navigate online resources effectively, utilizing both asynchronous and synchronous learning tools to enhance their educational experience. By becoming comfortable with various modes of learning, students start to develop the resilience and adaptability required to thrive in fast-paced and ever-changing business environments.

8. Self-Discipline: Self-discipline is crucial to achieve success in both academic pursuits and professional endeavors. In business education, students are taught to manage their time successfully, balance academic responsibilities with personal obligations, and stay focused on long-term goals. Self-discipline involves the ability to remain organized, prioritize tasks, and avoid procrastination, ensuring that students can meet deadlines and perform at their best. Time management, a key component of self-discipline, is particularly emphasized in online learning environments, where students must take more initiative in organizing their study schedules. This skill helps students maintain a high level of performance and prepares them for the independent demands of the business world.

9. Analytical Skills: Analytical skills are critical for making data driven decisions and resolving intricate business issues. Students are trained to think critically, evaluate business situations, and assess various options before making decisions. Through case studies and real-world scenarios, students practice analyzing problems from multiple angles, considering both qualitative and quantitative factors. This outcome enhances their ability to approach challenges methodically and find innovative solutions. Analytical skills are particularly important in fields like finance, marketing, and operations, where understanding trends, interpreting data, and forecasting outcomes are essential for strategic planning and decision-making.

10. Project: Project-based learning effectively enables students to synthesise the knowledge and skills acquired during their education. Through engagement in projects that necessitate the synthesis of information across several business domains, students acquire a holistic comprehension of the interplay among distinct business activities and their contributions to organisational success. These projects enable students to utilise their analytical, technical, and collaborative skills in addressing real-world difficulties, providing significant practical experience. The amalgamation of knowledge and abilities within a project framework guarantees that students are adequately prepared academically and with the practical expertise essential for job success.

1.6 LEARNING SATISFACTION

What is Learning Satisfaction?

Learning satisfaction denotes the overall contentment or sense of fulfilment that students derive from their educational experiences. It indicates the degree to which students' expectations regarding the quality of instruction, course material, educational resources, interactions, and the general learning atmosphere are fulfilled. When students feel satisfied with their education, they are more likely to stay motivated, perform better, and have a favourable attitude towards their education.

Essentially, learning satisfaction is about how happy and fulfilled students feel after engaging in the learning process, whether they are gaining the knowledge and skills they hoped for, feeling supported by their instructors and peers, or finding the course to be relevant and valuable to their personal or professional goals. It's a holistic concept that covers everything from academic substance and quality of instructions to the support and environment students experience during their learning journey.

1.6.1 Dimensions of Learning Satisfaction

1. Classroom Engagement

The degree to which students actively participate in the learning process during class period is referred to as classroom engagement. It comprises behavioral, emotional, and cognitive engagement in both real and virtual classroom situations. Behavioural involvement comprises acts such as attending classes frequently, participating in debates, and contributing to group activities. Emotional engagement displays students' interest, passion, and sense of belonging inside the class. Cognitive engagement requires investment in learning, such as critical thinking and a willingness to apply effort to comprehend complex topics. High levels of classroom involvement are generally related with greater academic achievement, motivation, and overall learning satisfaction. In online contexts, classroom engagement can also be influenced by the design of interactive elements, including as discussion boards, polls, breakout room activities, and real-time feedback mechanisms.

2. Learning Resources

Learning resources are the instructional materials and tools made available to support students' academic progress. These include textbooks, course notes, multimedia content, academic journals, laboratory manuals, library services, and digital platforms offering access to scholarly materials. The quality, accessibility, and alignment of these resources with course objectives significantly influence student satisfaction. Effective learning resources provide clarity, deepen understanding, and accommodate various learning styles. In a virtual classroom environment, this

dimension also covers the usability of e-resources, the availability of recorded lectures, and the integration of multimedia elements that enhance student engagement. Satisfaction in this area is often determined by how well students can use these resources to independently explore and master course content.

3. Assessment & Feedback

Assessment and feedback are essential components of the educational experience that directly affect students' perception of fairness, learning progress, and instructional quality. This dimension evaluates the types of assessment methods used like formative assessment like quizzes, practice exercises etc and summative assessment like final exams, major projects, as well as the clarity of grading criteria and alignment with learning outcomes. Feedback known as the information provided to students about their performance, with the goal of guiding improvement and reinforcing strengths. High-quality good feedback is actionable, constructive, timely, and detailed. Students' satisfaction increases when they perceive assessments as transparent and fair, and when feedback helps them understand their mistakes, develop their skills, and feel motivated to perform better in future tasks.

4. Technology Usage

Technology usage measures students' satisfaction with the technological tools and platforms used to facilitate teaching and learning. This includes Learning Management System and video conferencing applications, online assessment tools, interactive whiteboards, and communication platforms. Critical factors that contribute to satisfaction in this area include ease of access, user interface design, system reliability, technical support, and the extent to which technology enhances the educational encounter. In mixed mode and online education formats, effective technology usage also involves integrating multimedia content, enabling synchronous and asynchronous interactions, and supporting collaboration and personalization. A well-designed technological environment can reduce learning barriers, foster autonomy, and makes more inclusive than engaging educational experiences.

5. Course Satisfaction

It encompasses the whole sense of fulfilment and contentment that students derive from their participation in a specific course. It is a multifaceted construct influenced by several interrelated elements including how well defined the learning objectives are coherence and relevance of course content, instructional quality, assessment practices, workload, and perceived learning gains. When students feel that the course is well-structured, the content is meaningful, and the teaching is effective, so high levels of satisfaction are more likely to be reported by them. Furthermore, it's critical that students' expectations and real experiences line up. Course satisfaction is a crucial measure of educational quality in both modes' environments, and educational institutions frequently utilize it to evaluate and enhance their teaching methods and curriculum design.

When all these dimensions are working well together, students not only learn more effectively, they feel more well about the process. Additionally, students who are happy with their education are more likely to remain involved, continue with the course, and recommend it to others. This kind of satisfaction is what helps students thrive, both academically and personally.

1.7 RATIONALE OF THE STUDY

This comparative study aims to discover online and traditional teaching learning outcomes in the classes. It also attempts to find out the student's academic, academic course completion, student's satisfaction, and compare the satisfaction based on gender, locality and course between the students those who enroll in traditional courses in contrast to those that are offered online. The Study also contribute to the body of research in colleges knowing how successful online learning is in comparison to traditional teaching methods. In Mizoram University courses are offered through online and Traditional methods so this study examines the satisfaction and learning outcomes by comparing the traditional and online methods. And to seek student's opinions and suggestions about the online and traditional teaching-learning process.

The emphasis on measuring and comparing student learning outcomes and satisfaction verify that a high-quality online curriculum is in place across the different teaching modalities. And the result of this investigation can help the stakeholders to take necessary actions for adopting better methods for learning. Based on the above rationale, some research questions arose in the mind of the investigator as follows and based on them, some objectives were formulated for the present study.

1.8 STATEMENT OF THE PROBLEM

This study aims to examine the learning outcomes and student satisfaction in online and traditional courses offered by Mizoram University. Specifically, it seeks to compare the both teaching modalities' efficacy in raising student accomplishment, engagement, and overall satisfaction. The study further explores these factors across different demographic variables, including gender, locality (urban/rural), and various dimensions of learning and satisfaction. Accordingly, the study is titled: "Learning Outcomes and Student Satisfaction in Traditional and Online Courses Offered by Mizoram University."

1.9 RESEARCH QUESTIONS

1. What are the learning outcomes of online learning?
2. What are the learning outcomes of traditional learning?
3. Are there any significant differences in students learning outcomes towards online Vs traditional Learning based on gender and locality?
4. Does a student have satisfaction towards online learning?
5. Does a student have satisfaction towards traditional learning?
6. Are there any significant differences in students' satisfaction towards online Vs traditional learning based on gender and locality?
7. What are the opinions and suggestions of the students towards online and traditional teaching-learning processes?
8. Are there any significant differences in academic performances between online and traditional courses?

1.10 OBJECTIVES

1. To examine the learning outcomes of online learning.
2. To examine the learning outcomes of traditional learning.
3. To compare the learning outcomes of online versus traditional learning based on gender and locality.
4. To assess students' satisfaction with online learning.
5. To assess students' satisfaction with traditional learning.
6. To compare students' satisfaction towards online versus traditional learning based on gender, locality.
7. To understand the opinions and suggestions of students regarding online and traditional teaching-learning processes.
8. To evaluate the academic performance between online and traditional Courses based on grade.

Hypotheses

1. There is no significant difference in learning outcomes across all dimensions between students engaged in online learning and those in traditional learning.
2. There is no significant difference in learning outcomes across all dimensions between online and traditional learning when moderated by gender and locality.
3. There is no significant difference in student satisfaction across all dimensions between online learning and traditional learning.
4. There is no significant difference in student satisfaction across all dimensions for online and traditional learning when moderated by gender and locality.
5. There is no significant difference in academic performance between online and traditional learning based on students' grade levels.

1.11 OPERATIONAL DEFINITIONS OF THE KEY TERMS

Online Learning Students: Refer to students those who are currently enrolled in the Management course at Mizoram University who attend live, scheduled online classes. Unlike distance learning, where students study at their pace using pre-recorded lectures, online learning in this study involves real-time instruction, requiring students to be present at fixed class hours via digital platforms. Course materials, including lecture notes, presentations, and readings, are provided online, and students interact with classmates and teachers via online learning environments. Assessments and assignments are also conducted digitally.

Traditional Learning Students (Traditional Learning Students): Students who are currently enrolled in Mizoram University's Management course and who are physically attend lessons in a classroom. In this manner, Students Communicate with teachers directly ad classmates, participate in classroom discussions, and access printed and library resources. Assessments, examinations, and assignments are conducted on campus under the supervision of faculty.

Learning Outcomes

Conceptual Definition: Learning outcomes refer to the perceived knowledge, skills, and abilities that learners develop as an outcome of taking part in an educational program, such as a management course or secondary school curriculum. These outcomes encompass cognitive, interpersonal, ethical, and practical competencies that contribute to personal and professional growth.

Operational Definition: Learning outcomes are measured as learners' self-reported perceptions of their development in ten specific competencies "Knowledge Acquisition, Communication Skills, Collaborative Skills, Ethical and Social Responsibility, Digital Literacy, Leadership Skills, Adaptability, Self-Discipline, Analytical Skills, and Project skills" using the Learning Outcomes Assessment Scale (LOAS).

Learning Satisfaction

Conceptual Definition: Learning satisfaction refers to learners' overall contentment with their educational experience, encompassing their “engagement, access to resources, assessment processes, technology use, and the perceived value of the course or curriculum in meeting their learning needs.

Operational Definition: Learning satisfaction is measured as learners' self-reported level of contentment with five key dimensions of their educational experience “Classroom Engagement, Learning Resources, Assessment and Feedback, Technology Usage, and Course Satisfaction” using a Learning Satisfaction Scale integrated into or administered alongside the LOAS

1.12 MIZORAM UNIVERSITY: A HUB FOR MANAGEMENT EDUCATION

Mizoram University, a premier institution of higher learning in Northeast India, provides a number of management courses, such as the Master of Business Administration (MBA) and Bachelor of Business Administration (BBA), both in Traditional and online modes. These programs are created to provide students the information, abilities, and attitude they need to succeed in the fast-paced business environment.

MBA Program, Traditional Mode:

- **Duration:** 2 years (4 semesters)
- **Eligibility:** A bachelor's degree with at least 50% marks or equivalent CGPA. Valid score in CAT/MAT/CMAT/XAT.
- **Specializations:** Finance, Marketing, HR, etc.
- **Program Structure:** There are four semesters in the two-year, full time traditional MBA Program. A Carefully chosen combination of core and optional courses are offered each semester.

- **Core Courses:** The core courses cover fundamental areas of management, such as:

Financial Management, Marketing Management, Human Resource Management, Operations Management.

- **Elective Courses:** Students can choose from a variety of elective courses to specialize in specific areas of interest, such as:

- International Business
- E-commerce
- Entrepreneurship
- Healthcare Management
- Supply Chain Management

- **Syllabus:** The syllabus for the MBA program's goal is to provide students a thorough grasp of business concepts and procedures. It covers topics like:

- Financial accounting and analysis
- Cost accounting
- Corporate finance
- Marketing research
- Consumer behaviour
- Organizational behaviour
- Human resource planning and development
- Operations research
- Strategic planning and implementation

- **Aims and Objectives:**

- To develop managerial skills and competencies
- To impart knowledge of business functions and processes
- To foster critical thinking and the problem-solving abilities
- To inculcate ethical values and social responsibility
- To prepare students for leadership roles in organizations

Online Mode

- **Duration:** 2 years
- **Eligibility:** Bachelor's degree with at least 50% marks or equivalent CGPA.
- **Specialization:** Financial Management
- **Program Structure:** The online MBA program is a flexible, distance learning program that can be completed in two years. It offers a similar curriculum to the Traditional program but with an emphasis on virtual education and self-paced study.
- **Syllabus:** To guarantee that students receive the same Caliber of instruction, the online MBA program's syllabus is the same as the traditional programs.
- **Aims and Objectives:** The aims and objectives of the online MBA program are the same as those of the Traditional program.

BBA Program

Traditional Mode

- **Duration:** 3 years (6 semesters)
- **Eligibility:** 10+2 with at least 50% marks.
- **Program Structure:** The Traditional BBA program is a three-year, full-time course, divided into six semesters. Each semester consists of core and elective courses.

- **Core Courses:** The core courses cover foundational areas of business, such as:
 - Principles of Management
 - Financial Accounting
 - Business Economics
 - Marketing Management
 - Human Resource Management
- **Elective Courses:** Students can choose from a variety of elective courses to specialize in certain fields of interest, such as:
 - International Business
 - E-commerce
 - Entrepreneurship
 - Digital Marketing
 - Financial Analysis
- **Syllabus:** The syllabus for the BBA Course is designed to provide a strong foundation in a principle of business and practices. It covers topics like:
 - Business communication
 - Business ethics
 - Business law
 - Financial management
 - Marketing research
 - Operations management
 - Organizational behaviour

- **Aims and Objectives:**

- To develop a comprehensive understanding of business principles
- To equip students with practical skills for business careers
- To foster the critical thinking and problem-solving abilities
- To inculcate ethical values and social responsibility
- To prepare students for higher education or employment

Online Mode

- **Duration:** 3 years (6 semesters)
- **Eligibility:** 10+2 with at least 50% marks.
- **Program Structure:** The online BBA program is a flexible, distance learning program that can be completed in three years. It offers a similar curriculum to the Traditional program, but with a focus on online learning and self-paced study.
- **Syllabus:** The online BBA Program follows the same curriculum as the traditional program, guaranteeing that students get an education of the same Caliber.
- **Aims and Objectives:** The aims and objectives of the online BBA program are the same as those of the Traditional program.

1.12.1 Mizoram University's Commitment to Quality Education

Mizoram University is committed to provide good quality management learning experiences to its students. The university has knowledgeable instructors committed to giving students the greatest learning experience possible who are authorities in their domains. Additionally, the university has cutting-edge resources including libraries, computer labs, and seminar halls, to support student learning.

Whether you choose the Traditional or online mode, Mizoram University's MBA and BBA programs offer a valuable opportunity to gain the knowledge and skills you need to succeed in the business world.

CHAPTER-II

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

“The review of related literature is an essential component of any academic thesis, serving as the foundation upon which the research is built. It involves a comprehensive examination of existing scholarly works, studies, and relevant sources that pertain to the subject matter of the thesis. This critical analysis of the literature not only demonstrates the researcher's understanding of the field but also highlights the gap that the thesis intends to address.

In this chapter, we take a closer look at the work done by other researchers, scholars, and experts in this field. By going through their ideas, methods, and findings, we try to understand how their work connects to our research questions or goals. This review of related literature helps us see what has already been discovered, what gaps still exist, and why our study matters. It acts like a guide, showing us, the path others have taken and helping us shape the direction of our research.

The primary purpose of this chapter is to present a synthesis of the most up-to-date and pertinent literature, showcasing the evolution of ideas and concepts related to the research topic. By examining what has been done in the past, we can identify gaps, inconsistencies, and areas that need further exploration. Additionally, this section enables us to build upon the findings and insights of previous researchers, establishing the theoretical framework and conceptual underpinnings of our thesis.

Throughout this review, we will identify common themes, patterns, and discrepancies in the literature, allowing us to critically evaluate the existing body of knowledge. This process enables us to position our study within the broader academic discourse, emphasizing its novelty and potential contributions to the field.

It is crucial to acknowledge that the review of related literature is not merely a regurgitation of existing studies but rather a synthesis of relevant information and a demonstration of the researcher's ability to analyze and synthesize data. As we explore

the diverse perspectives and methodologies adopted by other researchers, we gain valuable insights that can inform and enrich our own study.

In conclusion, the review of related literature plays a vital role in shaping the direction and significance of our thesis. By examining the work of others, we gain a deeper understanding of the research landscape and identify the unique contributions that our study can offer. This chapter serves as the bedrock upon which the entire thesis stands, setting the stage for a rigorous and insightful investigation into the chosen subject matter.

2.2 LEARNING OUTCOMES

Futrell (2009) has done research on “A Comparative Study of Virtual High School Instruction Versus Traditional Instruction of High School Student Outcomes and Attitudes in Physical Education” This study was meant to compare the performance outcomes and course satisfaction of face-to-face classroom-based education vs online instruction of a Personal Fitness course. The population of this study included 24 students enrolled in an online physical education program and 36 students in a face-to-face physical education class at two high schools in Atlanta, Georgia. The results of the study suggested that, the online physical education students increased effectively with relation to physical performance overall, notably in upper body strength. Additionally, the sample of face-to-face students indicated that 80.7% fell into a “healthy zone” at the end of the course. Course satisfaction between the two groups was not statistically significant.

Sussman & Dutter (2010) examined student learning results in face-to-face versus entirely online course delivery in an undergraduate public policy course at Barry University’s Frank J. Rooney School of Adult and Continuing Education over a four-year period (2005–2009). They employed a quantitative, pre-experimental design analyzing real-time performance indicators including scores on a standardized issue paper assignment (weighted at 24% of the final course grade), overall course GPAs, enrollment figures, and withdrawal rates using t-tests and chi-square goodness-of-fit tests to compare the two modes. Their aggregate results showed no statistically significant differences in mean assessment scores or final grades between face-to-face

and online sections; however, when disaggregated, the data revealed a bimodal distribution in online sections (with a greater frequency of both very low and very high scores) suggesting increased variability that likely reflects selection effects and differing levels of student self-regulation in the online environment.

Somenarain et al. (2010) investigated student perceptions and learning outcomes in asynchronous and synchronous online learning environments in a Medical Terminology course in the Biology Department at Bronx Community College. Using a two-semester, quantitative design, they compared course grades and satisfaction survey responses among three instructional formats an asynchronous online course, a synchronous online course, and a traditional face-to-face control group employing standard descriptive statistics and a one-way ANOVA (95% confidence level) for data analysis. The study found no statistically significant differences in course grades or overall student satisfaction between the two online groups, although the synchronous format yielded slightly higher satisfaction and average grades; overall, the findings suggest that both online modalities provide comparable learning outcomes for biology students.

Salcedo (2010) had done a study on “Comparative Analysis of Learning Outcomes in Face-To-Face Foreign Language Classes Vs. Language Lab and Online”. Action research was undertaken for two consecutive semesters comparing first-level Spanish courses delivered in the traditional classroom and the same class taught only in the language lab. A second semester compared an intermediate class taught in the traditional classroom compared to the same class performed online. Assessment scores were compared for quizzes, exams, oral interview and final exam. Overall course GPA and student opinions were also compared. Identical treatments showed the classroom did much better than the lab class while the following semester showed the lab performing better but not at a significant level. A second study compared a greater number of pupils for classroom vs. online. This study indicated that classroom performance was better in three out of four tests; nonetheless, this difference was not significant.

Sussman and Dutter (2010) examined student learning results between face-to-face and totally online course delivery in an undergraduate public policy course (POS 303 Public Policy and Administration) given by the Frank J. Rooney School of Adult and Continuing Education at Barry University. Analyzing real-time course data collected over four academic years (2005–2009) from 85 sections (67 face-to-face and 18 online), the study employed quantitative methodologies including t-tests and chi-square goodness-of-fit tests to examine multiple performance indicators, such as enrollment figures, scores on a standardized issue paper assignment (weighted as 24% of the final course grade), and final course grade point averages. Although the aggregate measures revealed no statistically significant differences in mean assessment scores or GPAs between the two delivery modes, disaggregated analyses showed a bimodal distribution in the online sections with “extreme” scores (both very low and very high) occurring more frequently than expected compared to the more centralized distribution observed in face-to-face sections. These findings suggest that while overall learning outcomes may be similar regardless of delivery format, online course delivery may generate greater variability in performance, possibly reflecting selection effects or differences in student characteristics such as self-discipline and time management.

Roscoe (2012) conducted a study at the University of Massachusetts Dartmouth, comparing student outcomes in blended and face-to-face courses in a political science setting. The research analyzed two matched sections one taught in a traditional format and the other in a blended format where most coursework was completed online with periodic in-person sessions. Despite identical learning objectives, course content, and assessments, findings showed that academic performance was not significantly influenced by the mode of instruction. However, students in the blended section reported a weaker sense of community and a tendency to disengage from online activities after face-to-face meetings. The study highlighted that while blended learning retains advantages in accessibility and efficiency, maintaining student engagement and fostering a sense of academic belonging remain challenges in hybrid course design.

Stack (2015) conducted a study at Wayne State University comparing student learning outcomes in online versus traditional criminology courses. Addressing common methodological limitations such as self-selection bias and un proctored exams, the study utilized a rare quasi-experimental design in which students were inadvertently randomized into online and traditional sections due to an administrative error. Both sections had identical course materials, assessments, and instructor, and all exams were proctored to eliminate potential cheating disparities. Findings revealed no significant differences in final exam scores or student evaluations between the two formats, suggesting that when selection bias and exam proctoring are controlled, online and traditional students perform equivalently. The study highlighted the need for further research across diverse disciplines and institutional settings to validate these findings.

Cummings et al., (2015) have done a study on “Comparative Analysis of an Online and a Traditional MSW Program: Educational Outcomes”. This study examined the educational outcomes of the University of Tennessee College of Social Work’s online and traditional MSW programs (N = 345). Knowledge, skill, and satisfaction outcomes were compared for online and traditional students in 3 tracks: full-time, part-time, and advanced standing (AS). There were no significant differences between online and traditional students in any track for the majority of educational outcomes. Significant variations were identified, however, in online and traditional students’ grade point averages (GPAs), field competency evaluations, and satisfaction. Traditional AS students had higher GPAs; online part-time students earned significantly higher ratings in 6 of 8 field competency evaluations; and online AS students were more satisfied with faculty accessibility, helpfulness, and advising. Pedagogical and research findings are discussed.

Callister & Love (2016) analyzed "A Comparison of Learning Outcomes in Skills-Based Courses Online Versus Face-to-Face Formats." Using comparative methodology, they examined a sample of 134 master's students split into face-to-face and online groups, randomly paired into 67 negotiation dyads. They employed tools like Excel calculations for negotiation scores and statistical analysis (ANOVA). Findings revealed that face-to-face learners negotiated higher outcomes than online students, even with identical technology. Course grades and final exam scores showed

no significant differences between formats, highlighting the importance of interactive environments for skill-building.

Lin et al. (2016) studied the association between online interactions and learning results in high-school level language classes, utilising data from 466 students in a Midwestern virtual school. Using regression analysis, the study evaluated three types of interactions learner-instructor, learner-learner, and learner-content while controlling for demographic characteristics, motivation, and learning styles. Results found that learner-instructor and learner-content interactions significantly increased student satisfaction, but learner-learner interaction exhibited little effect. Moreover, learner-content interaction was the sole predictor of reported advancement. The study underlined the relevance of structured course design and active instructor interaction in boosting student satisfaction and learning results in online language instruction.

Tseng and Walsh (2016) conducted a study titled "Blended vs. Traditional Course Delivery: Comparing Students' Motivation, Learning Outcomes, and Preferences," which aimed to compare students' experiences, learning motivation, outcomes, and achievement in blended versus traditional undergraduate courses. Using a quasi-experimental design, the study involved 52 students (26 in each group) enrolled in English Literacy courses taught by the same instructors during the same semester. Data were gathered using the Course Interest Survey (based on Keller's ARCS model), a learning outcomes scale, and a perception scale, with additional final grade comparisons. Results showed that students in the blended course reported significantly higher overall learning motivation especially in the Confidence and Satisfaction categories. Although there was no significant difference in final grades or reported learning outcomes, blended learners indicated greater enthusiasm for this delivery method, citing flexibility, convenience, and adequate interaction. The study concluded that blended learning supports higher learner autonomy and motivation, making it a preferred model for many students.

Chingos et al. (2017) examined interactive online learning on campus by comparing student outcomes in hybrid courses redesigned to incorporate MOOC and OLI online materials with reduced face-to-face instruction with those of traditional face-to-face

courses across the University System of Maryland. Employing a quasi-experimental design spanning seven courses in diverse disciplines, they gathered standardized performance data (pass rates, common assessment scores, and course grades) along with student survey responses on satisfaction and study habits, while controlling for baseline academic and demographic characteristics. The study found that hybrid sections produced performance outcomes statistically similar to traditional sections, indicating that reducing in-person class time did not compromise learning; however, students in the hybrid format reported considerably lower satisfaction levels, suggesting that while technology-enhanced delivery may sustain academic achievement, it may also detract from the overall student experience.

Faidley (2018) has done a study on the “Comparison of Learning Outcomes from Online and Face-to-Face Accounting Courses”. The goal of this quasi-experimental ex-post-facto study was to compare student outcomes from two Principles of Accounting courses both provided in two ways of instruction: traditional face-to-face (F2F) and an online asynchronous format. The online content for both courses was prepared with cooperation of academic technology professionals at the participating universities. Student learning was measured as final course grade where all tests were delivered by a testing center in a proctored atmosphere. The sample size includes 124 students from the online sections and 433 students from the traditional face-to-face sections. Eight research topics were explored using independent samples t-test for 6 of the analyses, ANOVA for 1 question, and multiple regressions for predictors of mean final course grade. The results suggested students did considerably better in the face-to-face classes than the online ones. Female students scored much higher than male pupils in both types of education. ACT aggregate score, ACT math score, GPA, gender, and manner of instruction all were strongly associated to final course grade. Age was not a significant predictor of final course grade however in the online sections nontraditional students (age 25 and older) scored significantly higher than students under the age of 25.

2.3 LEARNING SATISFACTION

Allen et al. (2002) conducted a meta-analysis titled “Comparing Student Satisfaction with Distance Education to Traditional Classrooms in Higher Education,” aiming to quantify and compare levels of student satisfaction between distance learning and traditional classroom settings. Using data from 25 studies and a combined sample of 4,702 participants, the study employed meta-analytic techniques to analyze satisfaction outcomes while accounting for factors such as channel of communication (video, audio, written) and level of interactivity. The findings indicated a slight preference for traditional formats (average $r = .031$), although the overall difference in satisfaction was minimal. After removing outliers, the effect size increased modestly ($r = .090$), suggesting that distance education does not significantly diminish student satisfaction. Additionally, the presence of interactive components and richer media channels generally contributed to higher satisfaction, reinforcing the importance of instructional design in online education.

Kirtley (2002) conducted a study at Marshall University examining how student characteristics such as age, gender, marital status, employment status, motivation, expectations, and course experience impact satisfaction in online courses. Using a descriptive research design and a survey of 330 students enrolled in online courses, findings revealed that online learners were typically older, predominantly female, and mostly single working adults. Females were identified as a predictor of student satisfaction, and significant correlations emerged between motivation to enroll, expectations of course delivery, and actual experiences in the online environment. The study emphasized the importance of aligning course design with student expectations to enhance overall satisfaction and engagement in online learning.

Bolliger & Martindale (2004) conducted a study titled "Key Factors for Determining Student Satisfaction in Online Courses," aiming to identify and validate the primary variables that influence student satisfaction in online learning environments. Using a modified version of the Telecourse Evaluation Questionnaire (TEQ), they developed the Online Course Satisfaction Survey (OCSS) and administered it to 105 graduate students in instructional technology at a southeastern U.S. university. The

methodology involved survey-based data collection and confirmatory factor analysis to determine the key dimensions of satisfaction. The findings revealed three primary factors instructor performance, technology, and interactivity as the most significant predictors of student satisfaction. Instructor-related elements such as communication, timely feedback, accessibility, and encouragement were most strongly associated with satisfaction, followed by the reliability of technology and opportunities for active student engagement. The study concluded that while satisfaction is not directly correlated with academic achievement, it significantly influences motivation, which in turn affects student success and retention in online courses.

Johnston et al., (2005) conducted a literature review examining key factors influencing student satisfaction in online learning environments. Their study emphasized the importance of course flexibility and instructor interaction, arguing that well-planned online courses enhance student engagement and retention. They reviewed comparative studies on online and traditional learning, concluding that student satisfaction is largely influenced by instructional quality rather than technological factors. The study highlighted predictors of student satisfaction, including timely feedback, interactive course design, and accessibility to learning resources. Additionally, it provided recommendations for effective online course development, such as structuring modules for student self-navigation, ensuring robust technical support, and fostering both student-instructor and student-student interactions. The authors advocated for thoughtful course planning to maximize satisfaction and encourage continued enrollment in virtual classrooms.

Parkinson et al., (2007) explore student satisfaction in traditional and blended distance learning environments, analyzing how learning preferences influence perceptions of course effectiveness. Their study compares two course delivery formats a fully on-campus section and a blended section integrating remote learning allowing for direct comparisons of student engagement and outcomes. While prior research debates whether distance learning matches traditional education in terms of cognitive achievement, fewer studies have examined satisfaction levels and individual learning preferences. Their findings highlight that while distance education provides accessibility benefits, differences in student experience persist. The authors contribute

to ongoing discussions about optimizing online learning models by balancing flexibility with instructional quality, emphasizing considerations for future course design.

Block et al. (2008) investigated "Achievement and Satisfaction in an Online versus a Traditional Health and Wellness Course." Utilizing a comparative methodology, they studied 18 students in an online health and wellness course and 19 students from a traditional lecture-based course, randomly selected from 372 students, using written exams (pre-and post-tests), three regular course exams, and satisfaction surveys as tools. Findings revealed no significant difference in exam achievement between groups, although online students were older, employed, and had positive perceptions about flexibility and convenience.

Gibson (2008) conducted a comparative study at Nova Southeastern University, Florida, examining student outcomes and satisfaction in three MBA Human Resource Management courses two delivered entirely online and one in a face-to-face, weekend format augmented by WebCT. The research evaluated performance metrics, including midterms, finals, case studies, research papers, and participation, alongside student satisfaction ratings. Findings indicated that while final grades were nearly identical across formats, face-to-face students slightly outperformed online learners in exams and research papers. Satisfaction ratings were marginally higher among traditional learners, particularly regarding interaction and sense of community. The study underscored the growing equivalency between online and traditional learning, while also highlighting the need for thoughtful course design to maintain engagement and mitigate challenges unique to online education.

Giannousi et al. (2009) conducted a study at Democritus University of Thrace, Greece, examining student satisfaction in a blended learning environment for an undergraduate Motor Learning course. The study surveyed 61 students (44.3% male, 55.7% female) and assessed their satisfaction using a questionnaire. Results indicated that perceived e-learner satisfaction was significantly higher than average ($M = 3.61$, $SD = 0.72$, $p < 0.01$), suggesting that students found the blended format effective. Additionally, 54% expressed willingness to enroll in future blended courses,

reinforcing the viability of this instructional approach. The study highlighted that well-structured blended learning can enhance engagement and motivation, supporting student success and retention.

Fahad (2010) at King Saud University examines learner satisfaction with online e-learning implemented in the College of Applied Studies and Community Service in Saudi Arabia. Surveying 201 female university students, the research aimed to assess whether e-learning could replace conventional education while improving knowledge acquisition. Statistical analysis revealed a highly positive student perception of e-learning as an assisted teaching tool, citing flexibility, accessibility, and cost-effectiveness as key advantages. Respondents widely supported the inclusion of e-learning in Saudi Arabia's national education strategy, though concerns remained regarding the lack of direct teacher-student interaction and feelings of isolation compared to face-to-face learning. While the study emphasized the potential for e-learning to complement traditional education, it concluded that complete substitution was unlikely in the near future.

Sampson et al. (2010) conducted a survey-based study at a regional university in East Texas to assess student satisfaction with online courses in principal and superintendent certification programs within an educational leadership department. Comparing two cohorts one from 2005 that experienced a hybrid format, and another from 2009 with a fully online format the study examined satisfaction across seven components: instruction, assessment, leadership, communication, cohort teamwork, professionalism, and respect/diversity. Results indicated strong satisfaction across both cohorts, with instruction ($M = 4.30$) and assessment ($M = 4.48$ for 2005; $M = 4.27$ for 2009) ranking highest. However, cohort teamwork consistently received the lowest satisfaction ratings ($M = 3.79$ for 2005; $M = 3.77$ for 2009), highlighting the challenges of fostering peer collaboration in online environments. While communication was also rated lower, professionalism showed notable improvement in the fully online cohort. The study emphasized the need for maintaining high-quality instruction, rigorous course design, and continuous evaluation to enhance student engagement in online educational leadership programs.

Ali & Ahmad (2011) examined key factors influencing student satisfaction in distance learning courses at Allama Iqbal Open University, Pakistan. Addressing concerns about perceived lower quality of distance education compared to traditional learning, the researchers analyzed the impact of instructor performance, student-instructor interaction, and course evaluation. Using survey data from 245 students, findings revealed that interaction levels, course design, and instructor competence were comparable to conventional education, reinforcing the legitimacy of AIOU's distance learning programs. Correlation and regression analyses confirmed significant positive relationships between student satisfaction and the three independent variables, with instructor performance being the strongest predictor. The study concluded that faculty dedication and course structure effectively meet student needs, challenging the perception that distance learning is inferior. However, the authors recommended expanding AIOU's regional presence to address accessibility challenges, particularly in underdeveloped areas.

Macon (2011) conducted a meta-analysis of 13 studies published between 2000 and 2009, analyzing 59 effect size estimates to compare student satisfaction in online versus traditional classroom courses. The findings indicated that students generally reported higher satisfaction with traditional courses than with distance education, particularly in statistics courses and undergraduate programs, where face-to-face interaction seemed more valued. However, no preference was observed among graduate students or those enrolled in business-related courses, suggesting that subject matter and academic level influence satisfaction levels. The study recommended that universities carefully consider these factors when planning online course offerings, particularly for undergraduate students and technical subjects requiring extensive instructor interaction.

Overbaugh & Nickel (2011) conducted a pre-test/post-test study comparing student satisfaction, perceived learning, and sense of academic community in blended and fully online sections of an educational foundations course at Old Dominion University. The study surveyed 262 students and found that while satisfaction and perceived learning levels were comparable between the two formats, both groups reported neutral scores for sense of community and value of connectedness. Blended students

demonstrated a higher preference for collaborative learning, yet neither group strongly valued academic community or recognized the added academic benefits of collaboration. The findings questioned whether time-intensive community-building strategies were necessary, suggesting that well-structured courses can achieve high student satisfaction without a strong emphasis on fostering academic community.

Martínez & Bolarín (2011) This review assesses the thesis "Factors affecting students' satisfaction in engineering disciplines: traditional vs. blended approaches". The two-year field study, involving 21 engineering courses, found that blended learning environments correlate with higher student satisfaction compared to traditional face-to-face instruction. Using ANOVA and regression analysis, the authors examined the influence of class size, attendance, motivation, teacher interaction, and collaboration on student satisfaction. Sampling graduate and postgraduate engineering students at the Universidad Politécnica de Cartagena, Spain, they used WebCT 4.1 to facilitate blended learning and collect survey data. The study demonstrated that increased class attendance, motivation, and collaboration are significant predictors of student satisfaction in blended learning environments, and emphasized the importance of teacher accessibility. The research offers valuable insights into optimizing engineering education through blended learning, highlighting the role of student engagement and teacher support.

Strong et al. (2012) studied student satisfaction with eLearning courses, focusing on the impact of the learning environment and social presence. Conducted at Texas A&M University, the research was framed using motivational needs theory and social presence theory, analysing how course design, interaction, and participation influenced students' impressions. Using an electronic survey following the Tailored Design Method, data demonstrated that both the learning environment and social presence significantly affected student happiness ($p < .05$), jointly accounting for 26% of the variance in satisfaction levels. The study concluded that adding social media technologies and creating collaborative, authentic learning experiences could boost social presence and happiness in eLearning environments.

Vernadakis et al. (2012) conducted a study at Democritus University of Thrace, Greece, comparing student satisfaction between traditional and blended course delivery in a physical education multimedia class. Forty-six undergraduate students were randomly allocated to either Classroom Lecture Instruction (CLI) or Blended Lecture Instruction (BLI) groups. A satisfaction survey based on the Student Evaluation of Educational Quality (SEEQ) was used to measure students' attitudes. Results demonstrated significantly increased satisfaction among students in the blended learning group, with engagement, flexibility, and interaction being key contributing factors. The study revealed that mixing both face-to-face and asynchronous online features improved student experience and could be a viable technique for increasing course delivery effectiveness in physical education.

Driscoll et al. (2012) did a quasi-experimental study at a large metropolitan university in North Carolina to assess student performance and satisfaction between online and face-to-face (F2F) delivery modalities of an introductory sociology course. The research assessed data from 368 students over six sections of the course taught over three terms by the same instructor with consistent course content and evaluations. Measures comprised students' results on a midterm exam and an integrating data analysis assignment, as well as their happiness assessed by an additive index. Regression analysis found no significant differences in performance or satisfaction once demographic and academic characteristics were adjusted for. Results revealed that online courses structured with pedagogical rigor, such as interaction and clear organisation, can be equally effective learning environments as F2F classrooms. Selection factors associated to student characteristics were identified as important influencers on early variations in academic outcomes.

Wagner et al., (2013) conducted a study titled "An Evaluation of Student Satisfaction with Distance Learning Courses," focusing on student perceptions of online MBA programs at the University of Wisconsin Whitewater. Using a quantitative survey methodology, data were collected from 206 online MBA students between 1998 and 1999 and compared in a later phase with 246 students from traditional MBA courses. Key variables explored included training adequacy, technical access, employment status, course access methods, and full-time/part-time enrolment. Factor analysis

revealed five dimensions of satisfaction: instructor communication, technical support needs, peer interaction, delivery effectiveness, and willingness to recommend the course. Findings showed that sufficient training, fewer access issues, and flexibility particularly for working and part-time students positively influenced satisfaction. In a follow-up study, online courses were rated higher than traditional ones in terms of structure, content, and student interaction, suggesting that well-supported online learning can rival or exceed traditional delivery in student satisfaction.

Wuellner (2013) conducted a one-year study at South Dakota State University to compare student learning and satisfaction in online versus face-to-face (F2F) environments for two undergraduate courses in wildlife and fisheries. Using a pseudo-experimental design where learning materials, instructors, and assessments were consistent across formats, the study evaluated learning through course grades and Bloom's taxonomy categories, and satisfaction through IDEA surveys. Findings showed mixed results: grade distributions were similar overall, but performance varied within specific Bloom's categories for one course. Satisfaction was generally higher in F2F environments for one course, while the other showed no difference. Demographics, learning styles, and student motivation were identified as potential factors influencing outcomes.

Harvey et al., (2014) have done research on “From the Student Perspective Experiences of Middle and High School Students in Online Learning” conducted a study to evaluate the experiences and preferences of middle and high school students in online learning environments. An online questionnaire was sent to administrators of online schools, who subsequently distributed the questionnaire to students registered in their schools. Topics addressed in the questionnaire included involvement in online and traditional school settings, use of special education services, participation in extracurricular activities, actual and preferred interactions with teachers and online peers, bullying, and overall opinions regarding online learning. The findings from this study demonstrate that middle and high school students’ experiences with and preferences in online learning. For the most part, participants reported they loved online classes, were content with their engagement with and assistance from their teachers, and enjoyed the autonomy and flexibility afforded by online sessions.

However, some admitted lacking social chances and extracurricular activities provided in a regular school atmosphere.

Saeler (2015) has explored “The Relationship of Student Satisfaction and Academic Achievement in Online Versus Traditional Education”. The study was meant to evaluate relationships between student satisfaction and academic accomplishment in online and traditional course offerings at a municipal police academy training center. This quantitative correlational study evaluated student happiness and academic accomplishment of students considering delivery modalities online and the traditional classroom environment within a police academy setting. The objective was to investigate if online learning will make a change in the achievement of students boost their practical application of skills and increase their level of happiness. Two study questions were explored is there a substantial difference in student satisfaction when evaluating academic environments within a group of police cadets? And is there a substantial difference in academic achievement when evaluating academic environments within a group of police cadets? Student academic achievement data was acquired using the academic grade book from the training academy. With the consent of Dr. Rick Aman (Appendix C), the study utilized Aman’s Satisfaction Instrumentation (Appendix D). The measure provides a Likert-type range from 1 to 5 with an unbiased midpoint. It was hypothesized, that there is an enhanced level of satisfaction among student participants in the online learning forum compared to traditional education exists. It was further expected that a higher level of academic accomplishment among student participants in the online learning forum compared to traditional education occurs in the study.

Kauffman (2015) conducted a comprehensive literature review titled "A review of predictive factors of student success in and satisfaction with online learning," which explores the multifaceted dimensions influencing outcomes in online education. Utilizing a narrative synthesis of existing empirical studies, the review examined learner characteristics, instructional design, and environmental factors that contribute to academic success and satisfaction in adult online learners. Key findings highlighted that successful online students typically exhibit strong self-regulation, emotional intelligence, motivation, time management, and a preference for visual or reflective

learning styles. Additionally, well-designed courses, those that are structured, interactive, relevant, and aligned with learning objectives, enhance both performance and satisfaction. The study underscores the critical roles of timely instructor feedback and collaborative learning environments, while also recommending further empirical research to validate assessment tools and pedagogical models for online learning.

Dziuban & Hermsdorfer (2015) did a study on “Student Satisfaction with Online Learning: Is it a Psychological Contract” The Aim of this study was to identify a possible association between student satisfaction with online learning and the theory of psychological contracts. The study incorporates latent trait models employing the picture analysis approach and computation of Anderson and Rubin factors scores with contrasts for students who are satisfied, ambivalent, or dissatisfied with their online learning experiences. The findings highlight three fundamental satisfaction components: engaged learning, agency, and assessment. The factor scores comparisons reveal that students in the general satisfaction categories reflect major variations in engaged learning and agency, but not evaluation. These results lead the authors to postulate that preset, but unnamed expectations (i.e., psychological contracts) for online courses by both students and faculty members are significant advance organizers for clarifying student happiness.

Fedynich et al., (2015) have done a study on “Graduate Students' Perceptions of Online Learning”. The goal of this study was to get insights into graduate students' perspectives regarding online learning. Two-hundred forty-nine (249) graduate students were polled to identify positive components that led to their happiness and perceived problems that prevented it. Findings from the study suggested that interaction, between students and with the instructor has a substantial impact on their satisfaction. Other problems noted were sufficient learner support that related to university resources, and the need for changing instructional design and delivery to enhance students' willingness to learn. In contrast, students were highly satisfied with the clarity and arrangement of education using appropriate resources. The instructor's position was identified as being crucially significant to students' satisfaction.

Kane et al. (2016) conducted an ex-post-facto, non-experimental quantitative study at an online public state institution to evaluate the impacts of teacher professional growth, degree status, and longevity on student satisfaction in online higher education. The study evaluated a large archival dataset and applied repeated measures Hierarchical Linear Modelling (HLM) to examine student satisfaction patterns across seven semesters. Findings demonstrated that faculty training and degree level were not significant predictors of student satisfaction; rather, faculty duration was positively connected with greater student satisfaction scores over time. The study concluded that professional development activities should focus on faculty retention rather than directly influencing student happiness and urged for further qualitative research and broader institutional comparisons to refine results on faculty involvement and student outcomes.

Gray & DiLoreto (2016) conducted a comprehensive study at a regional southeastern institution to explore how course structure, learner interaction, student engagement, and instructor presence effect student satisfaction and perceived learning in online graduate courses. Using a survey instrument designed during a pilot study, data from 187 students demonstrated substantial positive correlations among all variables. Key findings demonstrated that course structure and instructor presence had a statistically significant direct effect on both student satisfaction and perceived learning, whereas student engagement mediated the interactions of learner interaction and instructor presence with perceived learning. Learner interaction, however, did not significantly improve student satisfaction. The study underlined the relevance of well-organized courses, active involvement, and instructor presence in increasing learning outcomes and retention in online contexts. Limitations included sample size and context-specific characteristics, indicating the need for broader application and future research in different situations.

Davis (2017) conducted a study at Eastern Kentucky University to measure student satisfaction in online mathematics courses, particularly College Algebra, and its impact on performance. Using a newly developed instrument, Satisfaction of Online Learning (SOL), the study surveyed 300 students of varied demographics, assessing satisfaction based on feedback effectiveness, instructor interaction, and online learning

environment. Findings revealed that younger students expressed higher satisfaction than older students, though performance gains in mathematics were not linked to satisfaction levels. The study concluded that improving instructional communication and structured course design could enhance satisfaction, particularly for older students, while also emphasizing the importance of refining measurement tools for evaluating online education effectiveness.

Tratnik et al., (2017) compares student satisfaction between an online and a face-to-face Business English course in higher education. Conducted at the Faculty of Organizational Sciences, University of Maribor, the research surveyed 183 students, with 110 usable responses (56 from face-to-face and 54 from online learners). Results showed that face-to-face students reported higher satisfaction across multiple dimensions, including course quality, expectations met, motivation, peer interaction, and knowledge acquisition. Online students, however, demonstrated greater self-discipline, time management, and responsibility for learning. The findings highlight that while online learning requires increased learner independence, traditional classroom settings foster greater engagement, interaction, and satisfaction in language acquisition. The study suggests that while fully online Business English courses pose challenges, a blended approach could enhance student experience by combining face-to-face interaction with online flexibility.

Goerke (2018) has done a case study on “Student Satisfaction in Traditional, Online, and Hybrid Continuing Education Courses” The goal of this mixed methods research project was to analyse student satisfaction with traditional, hybrid, and online delivery of two military continuing education courses using research-based approaches. This empirical study was grounded in Malcolm S. Knowles, Elwood F. Holton III, and Richard A. Swanson’s adult learning theory as well as Terry Anderson’s and Gilly Salmon’s online learning theories. Data from 96-course evaluations from students who completed traditional, online, and hybrid versions of two military continuing education courses were evaluated. Kruskal-Wallis analyses of variance tests were employed to analyse student satisfaction ratings for significant differences. Student satisfaction story data were evaluated using thematic analysis and axial coding. There were no significant differences in student satisfaction ratings among course delivery

modalities. Course relevance to employers, instructor quality, interactivity, and student support were recognised as common themes in the student comments. The findings of this study would suggest traditional courses could be transitioned to online and hybrid delivery with particular attention to ensuring the courses contain job-related content, high-quality instructors incorporate interactive activities, and school staff personnel provide robust support. Online and hybrid versions of standard leadership courses may assist DOD soldiers and civilians working abroad or in deployed places to stay up with their professional development.

Ghaderizafreh & Hoover (2018) examined factors influencing student satisfaction in a blended online learning environment using Pekrun's control-value theory of achievement emotions. Conducted with 29 graduate students in a required blended course, the research explored the impact of eight characteristics of online learning understandability, illustration, enthusiasm, fostering attention, level of expectation, difficulty, pace, and lack of clarity on students' emotions and satisfaction. The findings revealed that high understandability and illustration correlated with greater enjoyment and reduced anger, anxiety, and boredom, while increased course expectations, difficulty, fast pace, and lack of clarity heightened negative emotions. Moreover, enthusiasm and fostering attention positively impacted student satisfaction. Ultimately, satisfaction was strongly linked to higher enjoyment and lower anger and boredom, underscoring the importance of well-structured course design in enhancing student experiences in online learning.

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Sheikhaboumasoudi et al. (2018) conducted a two-group post-test experimental study at Isfahan University of Medical Sciences, Iran, to evaluate the effectiveness of blended learning integrating e-learning with traditional instruction vs traditional face-to-face learning in nursing students' clinical skills education. A total of 119 first-year nursing students were separated into control (conventional learning) and experimental (blended learning) groups over two semesters. Both groups performed Objective Structured Clinical Examinations (OSCE) and answered satisfaction questionnaires. Findings indicated that students in the mixed learning group scored considerably higher on midterm and final examinations ($p = 0.04$ and $p = 0.01$, respectively) compared to those in the traditional group. Male students in the experimental group expressed higher satisfaction than females ($p = 0.01$). The study concluded that incorporating e-learning into fundamentals of nursing courses boosts learning outcomes and engagement, suggesting that digital tools serve as helpful complements in clinical skills education.

Guest et al., (2018) conducted a large-scale quantitative study at Griffith University, Australia, analyzing the effects of online course delivery on student satisfaction using a difference-in-differences estimation approach. Examining data from 2,653 courses offered between 2011 and 2014, the study found that transitioning from face-to-face to online learning resulted in a modest but statistically significant decline in student satisfaction. Specifically, course satisfaction decreased by approximately 0.2 points, while instructor satisfaction declined by about 0.15 points on a five-point scale

representing shifts of about 25-30% of a standard deviation. Despite the scalability and convenience of online education, the study highlighted concerns related to reduced student-instructor interaction, potential limitations in engagement, and assessment challenges. The authors concluded that while online learning offers distinct advantages, universities should carefully consider its impact on student experience before expanding digital course offerings.

Tawafak et al. (2019) discusses various e-learning models and their impact on student satisfaction in higher education institutions. It highlights the increasing reliance on digital learning platforms such as MOOCs, UCOM, and blended learning approaches to enhance accessibility and flexibility for students across different locations, cultures, and time constraints. The research reviews studies on e-learning strategies, examining how communication models facilitate interactions between students and faculty. Findings indicate that technologies used in e-learning play a significant role in improving student outcomes and satisfaction, particularly regarding assessment methods and interactive engagement. Additionally, the paper presents an analytical evaluation of various e-learning frameworks and their effectiveness in enhancing learning experiences.

Alqurashi (2019) did a study named "Predicting student satisfaction and perceived learning within online learning environments," attempting to discover key indicators of student satisfaction and perceived learning in higher education online courses. Using a quantitative survey-based methodology, the study collected data from 167 undergraduate and graduate students enrolled in fully online courses at a private university in Pennsylvania. Multiple regression models were utilised to assess the effects of four variables online learning self-efficacy (OLSE), learner–content interaction (LCI), learner–instructor interaction (LII), and learner–learner interaction (LLI). The findings revealed that LCI was the biggest predictor of student satisfaction, whereas OLSE was the strongest predictor of perceived learning. LII also strongly contributed to both outcomes, although LLI had no significant predictive value. The study concluded that increasing OLSE, LCI, and LII can greatly increase the quality of students' online learning experiences.

Gopal & Agarwal (2019) has done research on “Impact of online classes on the satisfaction and performance of students during the pandemic period of COVID 19” The purpose of the study was to investigate the parameters affecting students’ happiness and performance related online classes during the epidemic period of COVID-19 and to establish the relationship between these variables. The study was quantitative in nature, and the data were collected from 544 respondents through online survey who were studying the business management (B.B.A or M.B.A) or hotel management courses in Indian Universities. Structural equation modelling was utilised to investigate the offered theory. The results demonstrate that four independent elements included in the study viz. quality of teacher, course, design, fast feedback, and expectation of students favourably impact students’ satisfaction and further students’ satisfaction positively impacts students’ performance. For educational management, these four characteristics are crucial to have a good degree of satisfaction and performance for online courses. This study is being undertaken during the epidemic period of COVID-19 to check the influence of online education and students’ performance.

Sultana and Khan (2019) conducted a study in Bangladesh examining university students’ perceptions and satisfaction regarding online classes, particularly in response to the sudden transition prompted by the COVID-19 lockdown. Using survey data from 150 students across public and private universities, the study analyzed responses through SPSS and Excel, identifying three key factors influencing online learning experiences: e-platform quality, facilitating conditions, and teachers’ delivery quality. Results indicated that e-platform quality and facilitating conditions were strong predictors of overall satisfaction, though students expressed only moderate satisfaction with platform usability and instructional delivery. However, satisfaction varied significantly between urban and rural students, with rural students facing greater challenges due to limited infrastructure. The study provided theoretical contributions to online learning research while highlighting practical implications for academic institutions and policymakers in enhancing digital education accessibility and effectiveness.

Faize & Nawaz (2020) conducted a study at COMSATS University Islamabad, Pakistan, to evaluate and improve student satisfaction in online learning during the COVID-19 pandemic. The research aimed to address challenges faced by students transitioning from traditional face-to-face instruction to emergency remote learning. Using a collaborative approach, the study gathered student feedback via Google Forms to identify problems and suggest improvements. The university then worked with instructors to modify online instructional practices, including recorded lectures, shorter live sessions, scheduled interactions, and improved technical support. Post-modification results showed a significant increase in student satisfaction, emphasizing the importance of structured online learning environments, faculty engagement, and technological accessibility in enhancing student experience.

Almusharraf & Khahro (2020) conducted a study titled "Students' Satisfaction with Online Learning Experiences during the COVID-19 Pandemic," which evaluated student satisfaction with online teaching methods and platforms in a Saudi Arabian higher education institution during the COVID-19 lockdown. Grounded in transformative learning theory, the study employed a quantitative survey methodology, collecting data from 283 undergraduate students through a structured questionnaire distributed via Google Forms. The survey covered four dimensions: learning environment, institutional support, preferred platforms, and general satisfaction. Data analysis using SPSS included mean scores, standard deviation, skewness, kurtosis, and Cronbach's alpha for reliability ($\alpha = 0.95$). The findings revealed high levels of satisfaction with instructors' support, multimodal delivery methods, active engagement, and alternative assessment strategies. Google Hangouts was rated the most effective platform, followed by Google Classroom and Moodle. The study concluded that, despite initial resistance, students adapted positively to online learning, and recommended blended learning models and continued professional development for sustainable implementation.

He et al., (2020) have done a study on "Synchronous distance education vs traditional education for health science students: A systematic review and meta-analysis". This study assessed the effectiveness and acceptance of SDE compared with traditional education for health science students and explored the various factors that could impact

the aggregated results. A systematic review and meta-analysis were undertaken of randomized controlled trials (RCTs) from January 2000 to March 2020 searched on nine electronic databases, including Web of Science, PubMed, Cochrane Library, Scopus, EMBASE, CINAHL, ERIC, PsycINFO, and ProQuest Dissertations and Theses. The outcomes examined were knowledge, skills with objective assessments and overall satisfaction with subjective evaluations. The pooled results were calculated using random-model effects, and moderators were examined by meta-regression. Therefore, Synchronous remote education was not statistically different from traditional education in efficacy and had greater satisfaction ratings. The findings might provide hints for adoptions of online remote education in health science education institutions.

Tawafak et al., (2020) conducted a comparative study examining learner satisfaction between e-learning and traditional learning models in higher education institutions. This research, carried out at Al Buraimi University College, focused on integrating the Technology Acceptance Model (TAM) with additional factors from Task-Technology Fit (TTF) and Expectation-Confirmation Theory (ECT) models. Key variables included student motivation, interactivity, course content, and technology integration. Findings revealed that e-learning systems enhanced academic performance and satisfaction when features like collaboration, feedback, and evaluation were optimized. The study also highlighted differences in teaching dynamics, such as online flexibility versus traditional engagement, underscoring the need for adaptive course design tailored to student needs for continuous improvement.

Elshami & Abdalla (2021) did a study on “Satisfaction with online learning in the new normal: perspective of students and faculty at medical and health sciences colleges” This study aims to uncover characteristics affecting student and faculty satisfaction with online learning during the new normal. Online surveys were emailed to students (n = 370) and instructors (n = 81) engaging in online learning during the pandemic. The questionnaires included closed- and open-ended questions and were grouped into two parts: socio-demographic information and satisfaction with online learning. Descriptive statistics were employed to examine the responses to the satisfaction scales. Students and faculty's replies to the open-ended questions were

evaluated using the theme analysis method. The response percentage was 97.8% for students and 86.4% for instructors. Overall satisfaction among students was 41.3% compared to 74.3% for staff. The biggest areas of satisfaction for students were communication and flexibility, whilst 92.9% of faculty were delighted with students' passion for online learning. Technical challenges led to decreasing student satisfaction, while faculties were impeded by the additional workload and the required time to produce the teaching and evaluation materials. Study load and workload, improving engagement, and technical issues (SWEET) were the themes that emerged from the thematic analysis as affecting student and faculty satisfaction. Adopting a mix synchronous and asynchronous approach, combining diverse applications to engage students, and timely feedback are crucial to enhancing student satisfaction, while institutional support and organizational policies could enhance teacher satisfaction.

Ngo & Ngadiman (2021) investigated student satisfaction in remote online learning environments during COVID-19 in Indonesia. In their study, 65 undergraduate Informatics students from a private university in Surabaya completed Strachota's Student Satisfaction Survey a 25-item instrument measuring four types of interaction (student-content, student-teacher, student-student, and student-technology) and overall satisfaction while the data were analyzed using descriptive statistics, Spearman's Rho correlations, and multiple regression analysis via SPSS. Their findings demonstrated a strong, statistically significant relationship between overall satisfaction and all interaction types, with student-content interaction emerging as the most powerful predictor; further, factors such as digital learning self-ability, reliable internet connectivity, the presence and timely feedback of the teacher, quality website content, and robust peer feedback were also highlighted as critical in promoting satisfaction and enhancing spoken communication skills, thereby supporting the integration of synchronous and asynchronous learning methods for effective remote education.

Xhomara & Karabina (2021) examines the impact of online learning on academic performance and student satisfaction, using an Analysis of Variance (ANOVA) to assess differences across varying levels of online engagement. Findings indicate that online learning significantly influences academic performance, with approximately 49.7% of the variance explained by online learning differences. Similarly, student

satisfaction is strongly affected, with 78% of its variance attributed to online learning variations. The research underscores that engagement level plays a critical role in shaping learning outcomes, reinforcing the importance of structured online learning environments. The study contributes to ongoing discussions about optimizing online education through pedagogical strategies that improve both performance and satisfaction.

Kocot et al., (2021) conducted a comprehensive study to assess the effectiveness of e-learning and student satisfaction at Polish universities during the COVID-19 pandemic. The study used the CAWI technique, surveying 1,203 students from multiple universities, with statistical methods such as the chi-square test of independence and Pearson's coefficient applied to analyze the relationships between key variables. Results highlighted that student satisfaction with e-learning was significantly influenced by lecturer involvement, ICT system support, and universities' technical and methodological preparedness, while variables like age, study form, and professional activity had minimal impact. The study provided actionable recommendations for improving e-learning systems, emphasizing the importance of clear course structures, interactive engagement, and continual monitoring of these factors to enhance learning outcomes and satisfaction levels.

Limna et al. (2022) examines the relationship between the twenty-first-century learning model (4Cs) communication, creativity, critical thinking, and collaboration and student performance-effectiveness, with student satisfaction as a mediating factor. Using a stratified random sample of 512 Thai students, the research employed PLS-SEM and SPSS to analyze data. Results indicate that student satisfaction significantly mediates the effects of the 4Cs on performance-effectiveness. Communication was found to have the strongest influence on student satisfaction and performance-effectiveness, followed by collaboration and creativity. However, critical thinking did not show a significant direct impact on performance-effectiveness, suggesting the need for improved instructional strategies in this area. The study highlights the importance of integrating the 4Cs model into education to enhance student engagement, satisfaction, and learning outcomes.

Taliaferro & Harger (2022) conducted a study at the University of Western States to compare student satisfaction, perceived learning, and academic performance in blended versus traditional face-to-face instruction for a radiographic technique course. A total of 122 second-year chiropractic students were randomly assigned to either a blended or classroom cohort for the lecture component while both groups attended in-person laboratory sessions. The study utilized anonymous surveys during midterm and final exams to assess satisfaction and expected grades. Findings revealed that students in the blended cohort reported significantly higher satisfaction ($p < .03$) and found the delivery method more enjoyable ($p < .002$) compared to the traditional classroom cohort. However, no differences in exam scores were observed between groups, indicating comparable learning outcomes. The study concluded that blended instruction enhances schedule flexibility, positively impacts perceived learning, and maintains assessment performance equivalent to traditional face-to-face formats.

Eden et al. (2022) investigated the impact of student, instructor, and classroom characteristics on satisfaction, engagement, and motivation in online and traditional learning environments in the U.S., particularly following the widespread shift to online education during the COVID-19 pandemic. With 96% of colleges incorporating online courses, understanding optimal course implementation became crucial. Findings revealed that instructor rapport and credibility were primary factors influencing student satisfaction in online settings, whereas classroom interaction was more significant for face-to-face learning. Additionally, students reported higher levels of motivation, engagement, and satisfaction in traditional classrooms compared to online courses, emphasizing the continued value of in-person education in fostering academic connections and participation.

Abuladas & Xu (2022) Achievement of learning outcomes in non-traditional (online) versus traditional (face-to-face) anatomy education in medical schools: A mixed method systematic review”. In this systematic review, the educational efficiency of online anatomy teaching is compared with traditional (“face-to-face”) teaching techniques, specifically in terms of students' academic achievement and satisfaction. A search of four databases discovered and vetted 162 studies. Subsequently, 31 studies were evaluated, including both (a) teaching outcome measures (test scores) and (b)

student satisfaction ratings. Authors chose studies, gathered data, assessed quality and examined risk of bias. Nineteen research examined students' academic results between online and face-to-face education techniques. Twenty-six studies examined students' levels of satisfaction in both teaching techniques. Both qualitative and quantitative evaluations of the data revealed comparable academic outcomes with no statistical difference between the two teaching techniques, but a higher degree of satisfaction with face-to-face education. The data confirm that students can learn from online teaching but are happier with face-to-face training. The authors conclude that online teaching cannot replace traditional instruction and there is no preference for one sort of modality over the other. Therefore, a multi-modal learning method integrating online with face-to-face teaching modalities for medical students could be efficient and beneficial.

He and Fu (2022) conducted a study titled "Learning Satisfaction of Learners and Curriculum Design Under Different Online Teaching Platforms," which explored how various aspects of online curriculum design influence university students' learning satisfaction. Using a quantitative research methodology, they distributed structured paper-based questionnaires to 178 students from the School of Economics and Management at a university in Wuhan, China. The study focused on four dimensions of curriculum design object design, content design, activity design, and evaluation design alongside the effect of different online platforms. The findings revealed that content design and activity design significantly improved student satisfaction, while object design and evaluation design did not have a notable impact. Moreover, the study found that satisfaction levels varied significantly across different platforms and academic majors, although not by student grade level. The authors emphasized the need for ongoing improvement in content and interactive elements of online teaching, highlighting the value of individualized design and technology integration to enhance the learner experience.

Maemunah Sadiyah (2023) Comparison of Academic Outcomes and Students' Satisfaction in Traditional, Online, and Blended Teaching Models study indicated that Face-to-face learning is one of the recommended learning models in lectures since there is direct connection between lecturers, students, and fellow students. However,

if face-to-face learning cannot be carried out owing to the Covid-19 epidemic, then blended learning is an alternative learning that may be implemented. In general, students feel pretty satisfied with the three types of learning approaches. However, face-to-face and hybrid learning approaches have a higher response than online learning methods. As for learning outcomes, students find it simpler to absorb teachings through face-to-face learning models than blended learning and online learning. This is because the interactions that are carried out are direct, making it easier for students to ask questions to professors and fellow students during lectures. In addition, there are considerably fewer interruptions in the face-to-face learning process than in online learning and blended learning models, boosting the ease of students understanding lecture material. However, it is vital to highlight that face-to-face learning got the highest average proportion of positive student replies, demonstrating a preference for this traditional technique. Nonetheless, it is vital to recognise that finding the ideal teaching approach cannot be exclusively dependent on student choices. Factors such as learning outcomes, engagement, flexibility, and access to resources play key roles in determining the effectiveness of a teaching model. Further study and comparative studies are necessary to go deeper into the multifaceted characteristics of each teaching methodology. A thorough framework that encompasses many indications and considerations is needed to make educated decisions regarding the most suited and effective teaching practices in varied circumstances.

Batool et al. (2023) investigated “Comparing the Impact of Online Learning Platforms and Traditional Classroom Settings on Student Performance and Satisfaction.” Using a cross-sectional, comparative research design, the study gathered quantitative data from 500 undergraduate students selected via stratified random sampling; two predetermined questionnaires employing Likert-scale items were used to assess both student satisfaction and perceived effectiveness of the two modalities. The findings demonstrated that while both online and traditional settings are beneficial in promoting learning, online learning platforms were perceived as more effective in facilitating self-paced, tailored instruction and providing a broader selection of learning materials reflected in an overall student preference of 56% for online learning compared to 44%

for traditional classrooms. These results offer valuable insights for educators and policymakers regarding the potential benefits of integrating online components to enhance educational outcomes.

2.4 LEARNING OUTCOMES AND STUDENTS' SATISFACTION

Johnson et al. (2000) conducted an empirical study titled "Comparative Analysis of Student Satisfaction and Learning Outcomes in Online versus Face-to-Face Learning Environments," examining graduate-level instructional design courses delivered in both formats. Using a quasi-experimental design, the researchers compared 19 students in each group, with both versions taught by the same instructor and including identical content, activities, and assessments. Data were collected through modified versions of validated instruments (e.g., ICES, DOLES, DDE), blind reviews of final projects, course grades, and student self-assessment. The study found that while face-to-face students reported significantly higher satisfaction particularly in areas like instructor interaction, student collaboration, and perceived support there were no significant differences in learning outcomes between the groups. These included the quality of course projects, final grades, and self-reported ability to perform instructional design tasks, indicating that online courses, when well-structured, can be equally effective academically despite lower satisfaction levels.

Carey (2000) conducted a study at a small, urban, upper-division university to compare the learning outcomes and satisfaction between asynchronous online and synchronous face-to-face (F2F) course delivery modes for a management information systems course. The research employed pretests and post-tests to measure gain scores, alongside final grades and satisfaction ratings. Findings indicated no significant difference in learning outcomes between online and F2F modes. However, F2F students were slightly more satisfied overall, and an "Active Experimentation" learning style correlated with higher grades across both modes. The study also noted significantly higher dropout rates in online classes, attributed to less emotional attachment and interaction compared to F2F settings. The research highlighted the need for further studies to explore the interaction between delivery mode, learning styles, and course design for improving outcomes in online education.

Rivera et al., (2002) conducted a comparative study at the University of Alabama at Birmingham and the University of Alabama, evaluating student outcomes and satisfaction across traditional, web-based, and hybrid course formats in an undergraduate Management Information Systems course. The research analyzed exam performance, student satisfaction, and instructor experiences, revealing no significant differences in student performance across formats, with all sections yielding similar exam averages. However, student satisfaction varied, with web-based students reporting lower satisfaction levels compared to traditional and hybrid learners, largely attributed to technological limitations, lack of instructional support, and difficulties in accessing course materials. Instructor feedback highlighted challenges in delivering web-based content, particularly in maintaining engagement and resolving technical issues. The study concluded that while online learning can match traditional instruction in student performance, satisfaction depends heavily on platform stability, instructional support, and clear expectations for digital learning environments.

Hong et al., (2003) examine student satisfaction and perceived learning in a Web-based tertiary statistics course incorporating problem-based learning at a Malaysian university. Using survey responses, the study assesses postgraduate students' experiences in an online learning environment compared to traditional face-to-face instruction. Findings indicate that students achieved comparable learning outcomes, reinforcing the effectiveness of online education. Additionally, high satisfaction levels were reported, particularly regarding flexibility, accessibility, and motivation. Students appreciated the ability to learn at their own pace and engage with course materials anytime and anywhere, while adequate technical support further contributed to positive perceptions. The study highlights the importance of well-structured online courses and affirms that digital learning can provide educational quality comparable to traditional methods.

Salyers (2005) examined the effects of web-enhanced and traditional face-to-face instructional methods on course outcomes and student satisfaction among graduate nursing students. The study compared technical ability, learning styles, learning outcomes, and satisfaction between students enrolled in the two formats. Results showed no significant differences in technical ability or learning outcomes, indicating

that web-enhanced courses can effectively meet learning objectives. However, students in the web-enhanced section reported higher satisfaction, citing greater flexibility, reduced travel, and more self-paced learning as advantages. Traditional students, on the other hand, valued increased interaction with faculty and peers and clearer course structure. The findings suggest that web-enhanced courses offer a viable alternative to traditional classroom formats, particularly for nursing students facing accessibility barriers to advanced education.

Pucel & Stertz (2005) conducted a comparative study at the University of Minnesota to evaluate the effectiveness and student satisfaction of Web-Based Instruction (WBI) versus traditional classroom instruction for in-service career and technical education courses. Using equivalent course objectives, assignments, grading criteria, and faculty expertise in WBI design, the study examined two pedagogical courses. Metrics included student performance on projects, final exams, and overall grades, as well as student satisfaction ratings from standardized evaluations. Findings revealed mixed results: WBI students in one course performed slightly worse on certain measures, while those in another performed better. Satisfaction levels were comparable across modes, although preferences for additional traditional instruction varied by course. The study concluded that WBI can provide effective alternatives, though further research is needed to assess parity across contexts and courses.

Mullen & Runnels (2006) conducted a study comparing online and traditional graduate classrooms, examining student perceptions of instructor support, demands, motivation, self-regulation, satisfaction, and learning outcomes. Surveying 187 students (91 online; 96 traditional) and conducting interviews with seven online students, the researchers found significant differences across most variables except self-efficacy. Traditional students reported higher perceptions of instructor affective and academic support, whereas online students experienced greater instructor demands and engaged in more self-regulated learning. Despite lower reported affective support in online courses, its correlation with student satisfaction was stronger in that format, highlighting its importance in virtual environments. The study emphasized the need for balanced instructional approaches ensuring academic rigor while fostering engagement to optimize student outcomes in both modalities.

Eom et al., (2006) investigated the determinants of students perceived learning outcomes and satisfaction in university online education. Using a cross-sectional survey of 397 students who had completed at least one online course at a Midwestern university, the study employed Partial Least Squares structural equation modeling to test a conceptual model that included six antecedent variables course structure, instructor feedback, self-motivation, learning style, interaction, and instructor knowledge and facilitation. The findings revealed that while all six factors significantly influenced overall user satisfaction, only instructor feedback and learning style had a direct significant impact on perceived learning outcomes, with user satisfaction itself emerging as a strong predictor of learning outcomes.

Wilson (2007) has done a study on An Examination of the Relationships of Interaction, Learner Styles, and Course Content on Student Satisfaction and Outcomes in Online Learning, explores how learner styles, course content, and interaction influence student satisfaction and academic outcomes in online education. Conducted at the University of Southern Queensland, the study surveyed 124 online students and supplemented findings with interviews. Results highlighted that Independent, Collaborative, and Participant learner styles positively impacted engagement, while Avoidant and Competitive styles were less conducive to online learning success. Interaction was found to be valuable, particularly with course content and peer discussions, though direct engagement with instructors varied. The study also found Demonstration, Application, and Analysis of course materials to be key predictors of student interaction, while memorization played a minimal role. Despite differing interaction levels, students across categories achieved high grades, reinforcing the idea that instructional design should prioritize student autonomy and engagement strategies rather than strict interaction mandates. The dissertation emphasizes the importance of flexibility, structured course materials, and instructor involvement, offering insights into optimizing online education for diverse learner profiles.

Futrell (2009) has done research on “A Comparative Study of Virtual High School Instruction Versus Traditional Instruction of High School Student Outcomes and Attitudes in Physical Education” This study was meant to compare the performance outcomes and course satisfaction of face-to-face classroom-based education vs online

instruction of a Personal Fitness course. The population of this study included 24 students enrolled in an online physical education program and 36 students in a face-to-face physical education class at two high schools in Atlanta, Georgia. The results of the study suggested that online physical education students increased effectively with relation to physical performance overall, especially in upper body strength. Additionally, the sample of face-to-face students indicated that 80.7% fell into a “healthy zone” at the end of the course. Course satisfaction between the two groups was not statistically significant.

Hale et al., (2009) “Online vs. Classroom Instruction: Student Satisfaction and Learning Outcomes in an Undergraduate Allied Health Pharmacology Course”. The purpose of this study was to evaluate student satisfaction and objective learning results of an undergraduate allied health online pharmacology course employing streaming media lectures to traditional classroom instruction. The online (n=47) and classroom (n=177) courses for fall 2005 and spring 2006 used the identical teacher, notes, text, learning objectives, and tests. Student characteristics, learning style preferences, and aptitude for distant learning were measured. A statistically reliable, valid poll examined student satisfaction with parts of the course, instructor, and self-perceived knowledge gains. Learning outcomes were examined using withdrawal rates and exam scores. And analysis finds that Mean satisfaction scores for both courses were high, generally > 4.0/5.0. Mean scores from the classroom students were much higher than online students considering students' capacity to share ideas, instructor's ability to develop rapport, self-perceived knowledge gains, fundamental principles and application of material, and overall excellence of course. There were no significant differences in objective exam scores or dropout rates. Overall, both courses earned good student satisfaction scores in all 43 parameters examined. However, students in the online course were less happy with 8 criteria linked to student satisfaction with instructor rapport, course excellence, peer engagement, and self-perceived knowledge gains.

Lee et al. (2011) examined the relationship between student perception of support, course satisfaction, and learning outcomes in online learning at a large southeastern university. The study identified three types of support instructional, peer, and technical

and surveyed 110 undergraduate students in an online public health course. Results showed that perceived support was significantly correlated with overall course satisfaction, with instructional support being the strongest predictor. While course satisfaction was positively related to final scores, direct correlations between individual support types and learning outcomes were not established. The study emphasized the importance of clearly communicating available support and ensuring easy access to assistance, particularly in online environments where transactional distance can impact engagement and performance. Recommendations included enhancing interaction opportunities, promoting application-based learning activities, and supporting self-directed learning approaches to improve student experience.

Jennifer & Michael (2012) This study focuses on examining to what extent online learning environment may affect learning results and/or student satisfaction should continue to be a research priority. This study evaluated if students in an online class performed differently than students in a typical classroom environment on weekly quizzes, and whether their satisfaction with the course and instructor differed from students in a traditional classroom context. Participants were two courses of students in theories of counselling. Results demonstrated no difference between the scores of the two groups on the weekly tests, but students in the online class were less satisfied with the course and instructor overall. These findings reflect prior research demonstrating students may perform as well in an online environment, as their counterparts in a traditional classroom, but their pleasure with the educational experience may deteriorate.

Estelami (2012) explored factors influencing student satisfaction and learning outcomes in hybrid-online and purely online marketing courses. The study was conducted at Fordham University, focusing on two graduate-level marketing courses: one technical (Marketing Research) and one qualitative (Marketing of Financial Services). Using surveys administered to 177 students, the research measured satisfaction with various course components, overall satisfaction, and perceived learning outcomes. The results indicated that hybrid-online formats offered better perceived learning experiences and performance improvements for the qualitative course, while no significant differences were observed for the technical course.

Satisfaction levels, however, remained consistent across both formats, influenced more by instructor quality and course resources than the delivery mode. The study concluded that hybrid delivery might be more suitable for qualitative courses due to the benefits of face-to-face interactions in fostering discussions and deeper engagement, while purely online methods can suffice for technical content.

Wiechowski & Washburn (2014) conducted a comprehensive empirical study at Walsh College of Accountancy and Business Administration, focusing on finance and economics courses delivered across online, blended, and face-to-face learning models. Using data from over 3,000 course evaluations across 171 courses during the 2010-2011 academic year, the study measured student satisfaction and course outcomes, as indicated by aggregate GPA. Active learning constructs were consistently applied across all formats. The findings revealed that online and blended courses elicited higher satisfaction levels compared to face-to-face models, with blended courses achieving the highest satisfaction. However, there was no statistically significant difference in GPA outcomes across the three learning models, suggesting comparable effectiveness in achieving learning goals. Limitations included self-selection bias and the study's focus on non-traditional students, highlighting the need for broader research across different institutions and disciplines.

Roberts & Hummel (2014) has investigated a study on “Online Learning Outcomes and Satisfaction among Underprepared Students in an Upper-Level Psychology Course”. This study evaluated three parts (conventional, online, and 50% hybrid) of the same upper-level psychology course, presented with similar materials by the same lecturer. Although exam scores were marginally higher in the typical course, final grades and written assignments did not differ among parts, nor did student satisfaction. Student engagement predicted results online. Taken together, these data imply that outcomes and satisfaction are equal in online, hybrid, and traditional courses, and that a student's personal diligence and desire might better predict success in online learning.

McDonough et al., (2014) conducted a study at Neumann University comparing student outcomes and satisfaction in online, hybrid, and traditional formats of an upper-level psychology course. Using identical materials and a consistent instructor

across all formats, the study found that while traditional students achieved marginally higher exam scores, final grades and written assignments showed no significant differences across the three delivery modes. Student satisfaction also remained consistent, indicating no preference for any particular format. Additionally, student engagement measured by time logged online was a predictor of success in the online course, with higher engagement correlating with improved case study performance. These findings suggest that online and hybrid learning can be equally effective as traditional courses, particularly when instructional quality and student engagement are maintained.

Nortvig et al., (2018) conducted a systematic literature review to explore factors influencing e-learning and blended learning in higher education, especially in professional bachelor education and teacher training. Based on 44 peer-reviewed articles published between 2014-2017, the authors identified key factors affecting learning outcomes, student satisfaction, and engagement. These included educator presence in online settings, interaction among students, teachers, and content, and deliberate integration of online and Traditional activities. The study argued that teaching and learning experiences are shaped by a complex interplay of contextual factors rather than teaching format alone, emphasizing the need for thoughtful course design and meaningful online learning communities.

Yen et al., (2018) Learning online, Traditional, and in-between: comparing student academic achievements and course satisfaction in face-to-face, online, and mixed teaching modalities”. The goal of this study was to undertake a three-way comparison of face-to-face, online, and blended teaching modalities in an undergraduate Child Development course to discover if there were variations in student academic outcomes and course satisfaction across modalities. Student academic outcomes were judged by three tests, one research paper assignment, and the overall course total grade. Course satisfaction was examined by giving the Student Opinion Questionnaire (SOQ) across the three teaching modes and the Constructivist On-Line Learning Environment Survey (COLLES) to online and mixed modalities. Results demonstrated that students did equally well on all three examinations, research papers, and the overall course total grade across three teaching modalities, allaying traditional misgivings about online

and blended teaching efficacy. The SOQ and COLLES study indicated students from the three modalities were equally happy with their learning experiences.

Harwood, et al (2018) “Comparing student outcomes in traditional vs intensive, online graduate programs in health professional education”. This retrospective, observational study evaluated satisfaction and performance scores of students enrolled in three graduate health sciences programs in a big, metropolitan US university. Descriptive statistics, chi square analysis, and independent t-tests were employed to describe student samples and evaluate differences in student satisfaction and performance. The results indicated no significant differences for four eligible items on the final student course assessments (p values range from 0.127 to 1.00) between semester long and intense course formats. Similarly, student performance scores for final assignment and final grades indicated no significant differences (p = 0.35 and 0.690 respectively) across semester long and intense course styles. Findings from this study demonstrate that 7-week and 15-week online courses can be equally beneficial with regard to student satisfaction and performance outcomes. While further study is necessary, academic programs could examine intensive online course formats as an alternative to semester long online course formats.

Choe et al. (2019) investigated student satisfaction and learning outcomes in asynchronous online lecture videos by comparing eight distinct video styles six didactic (Classic Classroom, Weatherman, Learning Glass, Pen Tablet, Talking Head, and Slides On/Off) and two nondidactic (Demo and Interview) using standardized lecture material. They employed a mixed-methods design: first, undergraduate students from a physiology course at UCLA rated each video style on a Likert-type scale and provided open-ended feedback, which was then rigorously analyzed using an iterative qualitative coding protocol called COAL (Coding Online Asynchronous Lectures) to identify key themes and relative strengths; subsequently, a follow-up summative assessment study was conducted by randomizing students in a related online course into groups that viewed the six highest-rated didactic styles and completed a quiz designed according to Bloom’s taxonomy. The findings revealed that while learning outcomes (as measured by quiz performance) did not significantly differ among the video styles, student satisfaction varied markedly with the Learning

Glass and Demo styles receiving the highest satisfaction ratings due largely to superior user experience and engaging production qualities, thereby confirming that alignment with Mayer's multimedia learning principles can enhance student engagement even when core learning outcomes remain uniform.

Golubovskaya et al., (2019) conducted an experiment at RUDN University in Moscow to assess the impact of e-learning on academic outcomes and student satisfaction in English Language Teaching (ELT). The study compared face-to-face (F2F) learners in conventional English classes with distant learners participating in online education. Using entrance and exit tests, along with Likert-scale rankings and qualitative interviews, the research measured both learning gains and satisfaction levels. Findings revealed that while the experimental group (online learners) exhibited lower academic outcomes compared to the F2F group, their satisfaction levels exceeded those of their counterparts. The study concluded that e-learning enhances motivation but should not be considered a self-sufficient replacement for traditional English instruction, especially given concerns related to procrastination and reduced engagement in online learning.

Ikhsan et al. (2019) conducted a study at Bina Nusantara University, Jakarta, to examine the determinants of students' perceived learning outcomes and satisfaction in BINUS Online Learning. Using Structural Equation Modeling (SEM), the study surveyed 400 online students and evaluated factors such as instructor facilitation, technical support, course structure, instructor feedback, self-motivation, peer support, and interaction. Results indicated that instructor facilitation, technical support, instructor feedback, and self-motivation significantly influenced learning outcomes, while instructor facilitation, technical support, self-motivation, and peer support impacted student satisfaction. Course structure and interaction did not significantly affect either dimension. The study highlighted the need for targeted improvements in instructional support and engagement strategies to enhance students' online learning experiences.

Bailey (2020) has done research on “Comparing Students’ Learning Outcomes and Satisfaction in Online, Hybrid and Face-To-Face Education Courses. Aim of the study was to compare face-to-face, hybrid, and online instructional methods as related to student achievement, persistence, and satisfaction and comparison of key student characteristics including sex, race/ethnicity, and residency status was conducted. The quasi-experimental design was administered in this study. The results reinforce that administrators and instructors should continue to expand access to courses through the flexibility of online and hybrid learning.”

Eleonora (2021) conducted a case study at Ovidius University of Constanta, Romania, to assess student satisfaction and learning outcomes in emergency remote online learning, particularly in English for Special Purposes (ESP) courses during the COVID-19 pandemic. The study examined students' perceptions of the transition from traditional face-to-face instruction to online delivery, highlighting both positive and challenging aspects. Findings indicated that students generally appreciated the efforts made by faculty in adapting to online teaching, though certain limitations were identified that required adjustments for improved effectiveness. The study emphasized the need for continuous refinement of online learning strategies to better accommodate student needs and enhance engagement.

Lakhal et al., (2021) investigate the impact of the Hybrid-Flexible (HyFlex) course design model on student satisfaction and learning outcomes, particularly examining whether different delivery modes face-to-face, online, or a mix affect academic performance. The study involved 376 students enrolled in a HyFlex information systems course, utilizing a one-way ANOVA to compare student satisfaction and exam scores across delivery modes. The results revealed no significant differences in satisfaction, multiple-choice test scores, or written exam performance, suggesting that students achieve similar learning outcomes regardless of their chosen mode of participation. However, continuous assessment scores differed significantly, indicating that certain instructional elements may vary in effectiveness based on delivery method. The study underscores the need for further research into HyFlex models to refine instructional strategies and optimize student engagement across learning formats.

Eleonora (2021) conducted a case study at "Ovidius" University of Constanta, Romania, examining student satisfaction and learning outcomes during emergency remote online learning, specifically in English for Special Purposes (ESP) courses, due to the COVID-19 pandemic. The study assessed students' perspectives on the abrupt transition from traditional face-to-face instruction to online delivery and found a generally positive attitude towards faculty efforts in adapting to digital teaching. However, certain limitations emerged, indicating areas that required improvement to better align with student needs and enhance overall engagement. The study concluded that while online instruction was effective, refinements in course design and instructional strategies were necessary to optimize the learning experience.”

2.5 GIST OF THE REVIEW

The literature reviewed in this chapter highlights a dynamic and evolving field of research on student satisfaction and learning outcomes across different teaching modalities traditional face-to-face, online, and blended learning. As educational institutions increasingly adopt digital platforms, scholarly attention has focused on how these modes influence not only academic performance but also student engagement and satisfaction.

Learning Outcomes in Online vs. Traditional Education

Numerous studies suggest that when online courses are well-designed and effectively delivered, student learning outcomes can be comparable to those of traditional face-to-face instruction. For instance, Stack (2015) and Sussman & Dutter (2010) found no significant differences in final grades between online and Traditional students. Similarly, Tseng & Walsh (2016) reported that while blended learning students demonstrated higher motivation, their academic performance was on par with their traditionally taught peers.

However, other research points to discipline-specific variations. Faidley (2018) found face-to-face accounting students performed better than their online counterparts, while Callister & Love (2016) noted superior negotiation skills in students who learned

face-to-face in skills-based courses. These findings suggest that course content and instructional goals may influence the relative effectiveness of each mode.

Student Satisfaction in Online vs. Traditional Education

Although academic outcomes may be equivalent, satisfaction levels often differ. Multiple studies and meta-analyses (Allen et al., 2002; Macon, 2011; Gibson, 2008; Parkinson et al., 2007) reveal a slight preference for face-to-face instruction, especially in terms of interaction, community, and instructor availability. However, Kauffman (2015) found that well-structured online courses featuring strong instructor presence and timely feedback can match or even exceed traditional formats in terms of student satisfaction particularly for self-motivated learners.

Influence of Gender, Locality, and Course Type

Contextual and demographic factors also influence satisfaction and learning outcomes.

- **Gender:** Faidley (2018) and Kirtley (2002) reported that female students not only performed better but also expressed greater satisfaction with online learning environments.
- **Locality:** Sultana & Khan (2019) found that urban students were generally more satisfied with online education than rural students, largely due to disparities in infrastructure and internet access highlighting the digital divide.
- **Course Type:** Disciplines requiring hands-on or practical skills (e.g., physical education, clinical training) tend to be better suited to face-to-face formats, while content-heavy or theoretical subjects adapt well to online modes (Roscoe, 2012; Salcedo, 2010).

Interplay Between Satisfaction and Learning Outcomes

Studies have also demonstrated a strong correlation between student satisfaction and academic performance. Eom et al. (2006), Lee et al. (2011), and Saeler (2015) all found that satisfaction especially with instructor interaction, feedback, and course design positively impacts engagement and academic success.

Blended Learning and Broader Factors

Blended learning, which combines elements of both online and traditional formats, has emerged as a promising middle ground. Research by Yen et al. (2018) and Maemunah Sadiyah (2023) suggests it offers the advantages of flexibility and autonomy from online platforms alongside the social and interactive benefits of physical classrooms.

Moreover, personal attributes such as self-discipline, communication skills, prior exposure to technology, and psychological expectations significantly influence outcomes (Dziuban & Hermsdorfer, 2015). The COVID-19 pandemic further underscored the importance of instructor support, feedback, and technical infrastructure in maintaining quality learning environments (Gopal & Aggarwal, 2019; Elshami & Abdalla, 2021).

2.6 IDENTIFIED RESEARCH GAPS

Despite a rich body of global research, notable gaps persist particularly within the context of Indian higher education, and more specifically, in institutions such as Mizoram University.

1. **Limited India-centric research:** Most studies are based on Western or urban Indian settings. Very few reflect the unique challenges faced by students in Northeast India, where tribal communities and remote geography create distinct educational conditions.
2. **Lack of a comprehensive evaluation framework:** While many studies assess satisfaction or learning outcomes independently, few adopt an integrated, multidimensional approach. This study addresses this by employing 9 dimensions of learning satisfaction and 10 dimensions of learning outcomes, encompassing academic, technological, emotional, and environmental aspects.
3. **Underrepresentation of marginalized voices:** Students from rural or disadvantaged backgrounds are often left out of mainstream studies. Their experiences shaped by digital inequities, economic challenges, and limited

access to resources are crucial to understanding the full spectrum of student experiences in online and hybrid learning.

4. **Insufficient exploration of post-COVID changes:** Though the pandemic rapidly shifted higher education toward digital platforms, its long-term effects on student behavior, satisfaction, and academic resilience remain underexplored particularly in Indian public universities.

This study, therefore, aims to fill these gaps by offering a comparative analysis of student satisfaction and learning outcomes in online versus traditional settings at Mizoram University. Through a robust analytical framework and a focus on underrepresented student populations, the research seeks to inform both academic discourse and institutional policy.

CHAPTER-III

RESEARCH METHODOLOGY

3.1 INTRODUCTION

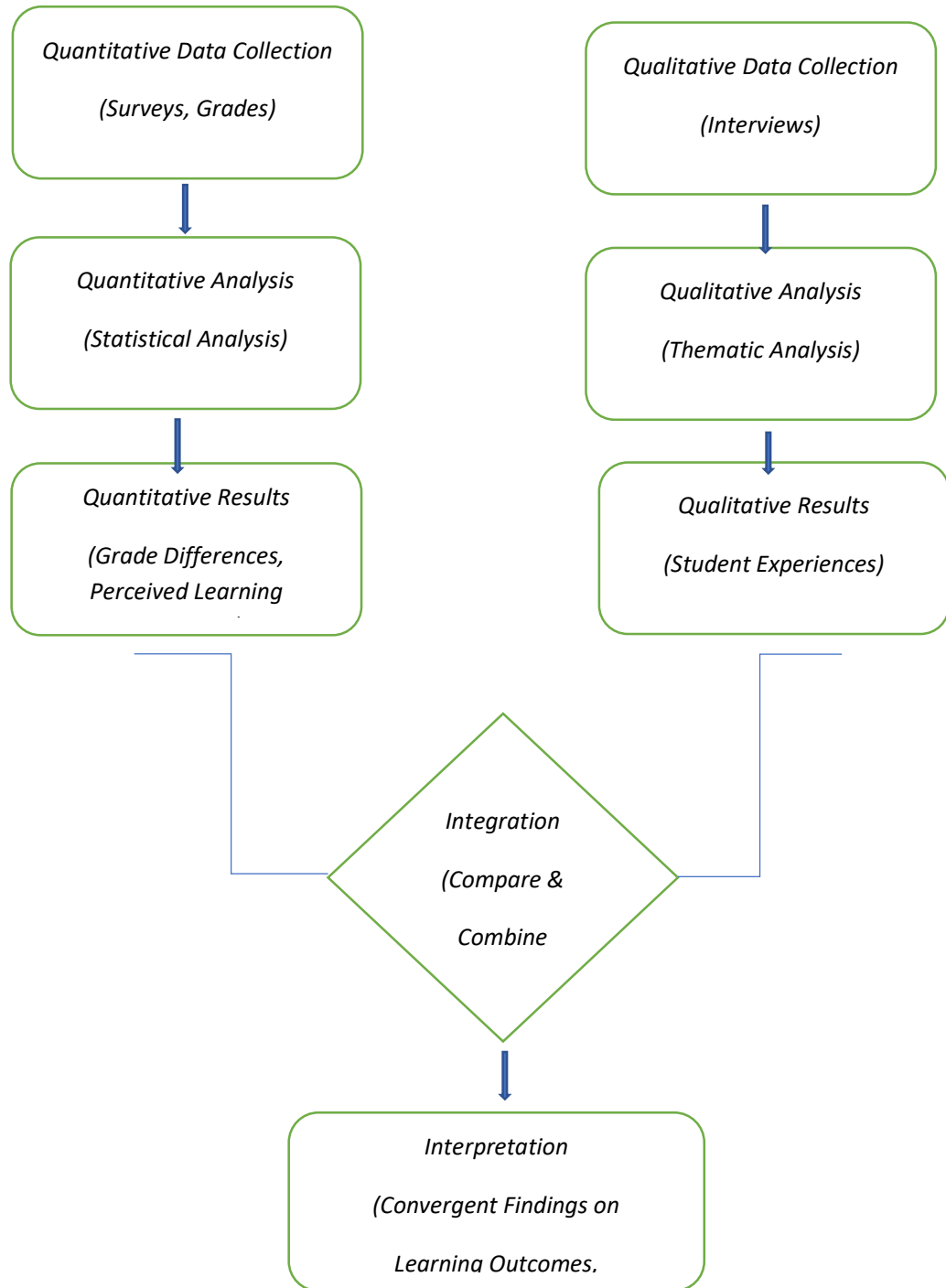
An approach which applies a systematic methodology is known as research which is use to tackle investigation problems, utilizing numerous instruments and procedures to collect and analyze data, information, and resources. This scientific methodology tries to solve recognised problems through thorough study. This chapter explains the many steps of the research process, entailing the design of the study, the methodologies chosen, and the rationale behind their usage. It explains the study population, the nature and selection of the sample, the development of research equipment, and the statistical methodologies utilised. Additionally, it outlines the techniques for data collecting, scoring, and the statistical treatment used to test the formulated hypotheses.

3.2 RESEARCH DESIGN

This present study utilised a mixed Methods of Research Design, namely the Convergent Parallel Design, to evaluate and compare the perceived learning outcomes and student contentment across learners who are enrolled in traditional and online learning. In this approach, quantitative and qualitative interpretation stage to acquire a full picture of students' academic experiences across learning modalities.

The quantitative component utilized survey instruments to measure learning outcomes and student satisfaction, while the qualitative component employed ‘semi-structured interviews’ to get extensive insights into the experiences of students and teachers. This approach allowed for triangulation of data, boosting the validity of conclusions by cross-verification from both numerical and narrative sources. data were collected concurrently, examined individually, then combined at the end.

Table 3.1 Showing Convergent Parallel Research Design



Data for both quantitative and qualitative data are collected concurrently and are analyzed separately, which are integrated to compare traditional vs. online courses.

3.2.1 Research Tools

For the present study the following three research tools were used:

- **Tool 1:** Learning Outcomes Assessment Scale (LOAS) – A standardized questionnaire designed to measure students perceived gains in knowledge and skills.
- **Tool 2:** Satisfaction Scale for Learning (SSL) – A validated scale measuring students' satisfaction with their learning experience, including teaching, course structure, interaction, and content delivery.
- **Tool 3:** Interview Schedule – A semi-structured interview schedule for students and teachers developed to explore qualitative themes related to student engagement, learning challenges, content effectiveness, and overall satisfaction.

3.2.2 Variables of the Study

- **Independent Variables:**
 - Types of Modalities (Online vs. Traditional)
 - Gender (Male/Female)
 - Grade Level
 - Locality (Urban/Rural)
- **Dependent Variables:**
 - Perceived Learning Outcomes
 - Student Satisfaction
 - Perception of Course Content

3.2.3 Sample and Sampling Method

The sample for this study consisted of 600 students, with 300 students varying from traditional classroom settings and 300 students from online learning environments. Stratified random sampling technique was used for selection of samples

to ensure representation across gender, grade level, and locality. Additionally, 20 students and 10 teachers from both modalities were selected purposively for in-depth qualitative interviews.

3.2.4 Data Collection Procedure

The data for quantitative data were collected using the (LOAS) and SSL instruments administered through online and offline formats depending on the group. Simultaneously, qualitative data were gathered through audio-recorded interviews conducted in-person or via video conferencing, depending on participants' availability and modality. Prior information of consent was obtained from all participants, and ethical guidelines which are related to confidentiality and voluntary participation were strictly followed.

3.2.5 Data Analysis

3.2.5.1 Quantitative Data Analysis:

Descriptive Statistics: Statistical techniques such as Standard Deviation (SD) and Mean were calculated for both learning outcomes as well as student's satisfaction scores to assess central tendency and variability.

Inferential Statistics:

t-test for independent samples: Used for comparing the means between online and traditional students.

Analysis of Variance (ANOVA): Employed to analyze the effect of multiple independent variables (i.e. Gender, grade, locality) on the dependent variables.

Graphical Representation: Data trends were visualized using bar charts and histograms for easier interpretation.

3.2.5.2 Qualitative Data Analysis:

- The Thematic Analysis was used to identify and code recurring themes from interview transcripts.
- Transcripts were manually coded and cross-checked to ensure inter-rater reliability.
- Emerging themes included perceived effectiveness of teaching methods, course content quality, peer interaction, and student motivation.

3.2.5.3 Data Integration

The results from both quantitative and qualitative components were combined using triangulation, allowing the investigator to corroborate and contrast results from both data sources. This provided a holistic understanding of the differences and similarities in student experiences across the two learning modalities.

3.3 RESEARCH METHODS

In the study, two primary methods were employed to collect data surveys and interviews. The methods were selected based upon the study's objectives and the type of data required.

3.3.1. Survey Method

The survey method was selected for this study to quantitatively describe specific characteristics of the population under investigation. Surveys are particularly effective for collecting data from a large number of respondents, which makes them the perfect option for effectively obtaining thorough insights. This method can be administered either online or in person, offering flexibility in data collection. The strength of surveys relied upon their ability to assess various pedagogical competencies and understand general perceptions or specific skills among a large sample. As highlighted by Kraemer (1991), survey research is characterized by three distinct traits. Firstly, it has quantitative descriptive capability, meaning that surveys are designed to numerically describe specific characteristics of the population. Secondly, surveys are scalable, allowing researchers to gather data from a sample which is large in size efficiently, which enhances the reliability and generalizability of the findings. Lastly, surveys

exhibit versatility, as they can be tailored to evaluate both specific skills and broader competencies, making them a valuable tool for comprehensive assessment in educational research.

3.3.2 Interview Method

Qualitative interviews were utilized as a complementary method to enhance the depth of data collection in this study. This approach involves direct interaction between the interviewer and the interviewee, allowing for a nuanced exploration of complex topics. Interviews can vary in their level of structure: ‘structured interviews’ follow strict set of questions, that ensures consistency across all participants; semi-structured interviews offer a flexible set of questions with room for follow-up inquiries based on the responses of the interviewees; and unstructured interviews are more informal, resembling a conversational style with minimal pre-set questions. This flexibility makes qualitative interviews particularly valuable for delving into individuals' experiences, opinions, and attitudes, providing insights that might not be captured through surveys alone. By combining the broad quantitative analysis of surveys with the rich, detailed insights from interviews, the study effectively addresses its objectives, capturing both statistical trends and in-depth personal perspectives.

3.4 POPULATION OF THE STUDY

In research, population of the study represents the entire group of individuals or elements sharing specific characteristics from which data or insights are sought. For the present study, the population is defined as all individuals enrolled in undergraduate (UG) Management course and postgraduate (PG) Management programs at Mizoram University, encompassing both online and Traditional students. Online students are those who pursue their courses through digital platforms, utilizing online resources to complete their academic requirements. In contrast, Traditional students attend physical classes and engage in traditional ‘face-to-face learning’ environments. By including both online and Traditional students across undergraduate and postgraduate levels, the study tries to capture a thorough view of the entire students’ body at Mizoram University. This inclusive approach ensures a detailed and representative

understanding of various factors influencing students' experiences and outcomes, reflecting the diverse demographics and educational contexts within the university.

3.5 SAMPLE DISTRIBUTION

Table 3.2 Showing Institution-Wise Sample Distribution

Sampling			
College/University Name	Mode	Population	Sample
Govt. J. Thankima College	Traditional	120	70
Pachhunga University College	Traditional	210	105
Faith College	Traditional	27	14
Mizoram Christian College	Traditional	85	43
Mizoram University	Traditional	155	78
Mizoram University	Online	800	305
Total	1397		615

To achieve a representative sample for the present study, a stratified random sampling technique was employed for both online and Traditional students at Mizoram University. This approach ensures that each subgroup within the population is adequately represented. For the online students, a sample of 310 was selected by dividing the population into homogenous subgroups, or strata, which are based on specific characteristics. Random samples were then drawn from each stratum, accurately reflecting the diversity within the online student population. Similarly, for the Traditional students, another sample of 305 was chosen using the same stratified

random sampling method. By dividing the Traditional student population into strata and performing random sampling within these subgroups, the study ensured a representative and balanced sample that captures a wide range of experiences and characteristics. This method enhances the validity and reliability of the study findings by providing a comprehensive view of both online and Traditional student groups, accounting for their inherent diversity. After data cleaning process final sample consider as 300 Traditional and 300 Online students

3.6 QUANTITATIVE DATA SAMPLING (DESCRIPTION)

The table 3.3 provided summarizes the distribution of students by type (Traditional vs. Online) in the study sample. Here's a detailed analysis:

Table 3.3 Distribution of the Sample by type of the study

Type of study		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Traditional	300	50.0	50.0	50.0
	Online	300	50.0	50.0	100.0
	Total	600	100.0	100.0	

The total sample consists of 600 students or respondents. These are comprised of 300 Traditional students and 300 Online students, each representing 50% of the sample. The Valid Percent column reflects the proportion of each type of student relative to the total number of students in the sample. Both Traditional and Online students have a valid percent of 50.0%, indicating an equal representation of both groups within the sample. The cumulative proportion of students up to and including each category is displayed in the Cumulative Percent column. For Traditional students, the cumulative percent is 50.0%, meaning that 50% of the sample is composed of Traditional students. For Online students, the cumulative percent reaches 100.0%, which reflects the inclusion of all students in the sample (both Traditional and Online).

This data indicates that sample is evenly divided between Traditional students and Online students, with each group comprising exactly 50% of the total sample. A comparison examination between the two student types is made possible by this balanced representation, guaranteeing that the conclusions and insights are equally representative of the two student groups.

3.7 GENDER DISTRIBUTION IN THE SAMPLE

The table given below summarizes the distribution of students by gender in the study sample.

Table 3.4 Gender Distribution in the Sample

Gender		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	328	54.7	54.7	54.7
	Female	272	45.3	45.3	100.0
	Total	600	100.0	100.0	

The sample consists of a total of 600 students. There are 328 Male students and 272 Female students. Males constitute 54.7% of the sample, while Females make up 45.3%. The Valid Percent column reflects the proportion of each gender relative to the total sample of 600 students. Males account for 54.7% of the sample, and Females account for 45.3%, confirming the overall distribution within the sample. The column of Cumulative Percent shows the running total of the percentage of students up to and including each gender category. For Male students, the cumulative percent is 54.7%, meaning that 54.7% of the sample is Male. For Female students, the cumulative percent reaches 100.0%, indicating that Female students, combined with Male students, make up the entire sample. The data shows that the sample is predominantly male, with 54.7% of the students identified as Male and 45.3% as Female. This distribution provides a slightly higher representation of Male students compared to

Female students. Although there are more men in this sample than women, the breakdown guarantees that the study's conclusions will represent the opinions of both the genders.

3.8 GRADE DISTRIBUTION IN THE SAMPLE

The table provided summarizes the distribution of students by their grades in the study sample.

Table 3.5 Grade Distribution in the Sample

Grade		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A++	107	17.8	17.8	17.8
	A+	214	35.7	35.7	53.5
	A	146	24.3	24.3	77.8
	B++	62	10.3	10.3	88.2
	B	15	2.5	2.5	90.7
	F	56	9.3	9.3	100.0
	Total	600	100.0	100.0	

The number of samples for the study comprises a total of 600 students, each categorized according to their grades. The grade distribution is detailed as follows: 107 students (17.8%) received an A++, 214 students (35.7%) earned an A+, 146 students (24.3%) achieved an A, 62 students (10.3%) were graded B++, 15 students (2.5%) received a B, and 56 students (9.3%) obtained an F. The percentages in the Valid Percent column reflect the proportion of each grade category relative to the entire sample size, and they align with the overall percentage distribution.

The column of Cumulative Percent provides a running total of the percentage of students up to and including each grade category. For example, the cumulative percent for A++ students stand at 17.8%, indicating that this percentage of the sample achieved an A++ grade. The cumulative percent for A+ students reaches 53.5%, meaning that 53.5% of the students attained an A+ grade or higher. As for A students, the cumulative percent is 77.8%, showing that this proportion of the sample achieved an A grade or better. The cumulative percent for B++ students is 88.2%, which includes those with B++ grades or higher. For B students, the cumulative percent is 90.7%, representing those with B grades or better. Finally, the cumulative percent for F students is 100.0%, encompassing the entire sample.

This distribution highlights that a significant majority of students fall into the higher-grade categories. Specifically, the largest proportion of students received an A+ (35.7%), and a substantial percentage achieved an A (24.3%). Lower proportions are found in the B++ (10.3%), B (2.5%), and F (9.3%) categories. Overall, this distribution reflects a generally strong performance among the sample, with a notable concentration of students attaining higher grades.

3.9. LOCALITY DISTRIBUTION IN THE SAMPLE

The table 3.6. provided summarizes the distribution of students by locality in the sample.

Table 3.6 Locality Distribution in the Sample

Locality		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rural	342	57.0	57.0	57.0
	Urban	258	43.0	43.0	100.0
	Total	600	100.0	100.0	

The sample for the study comprises a total of 600 students, categorized by their locality. Among them, 342 students, or 57.0%, come from rural areas. In contrast, 258 students, representing 43.0% of the sample, are from urban areas. The Valid Percent column in the data indicates that a majority of the students, 57.0%, are from rural localities, while 43.0% hail from urban areas. This breakdown highlights a higher representation of students from rural regions compared to their urban counterparts. The Cumulative Percent column further details this distribution: the cumulative percent for rural students stands at 57.0%, reflecting that this percentage of the sample is composed of students from rural areas. For urban students, the cumulative percent reaches 100.0%, demonstrating that the combined total of rural and urban students encompasses the entire sample.

This distribution reveals a skew towards rural students, who constitute a majority of the sample. With 57.0% of students coming from rural areas compared to 43.0% from urban locales, this imbalance may affect the overall findings and interpretations, particularly in relation to locality-based differences or experiences. The higher representation of rural students may influence the study's outcomes and insights into locality-related factors.

3.10 DEVELOPMENT OF THE TOOLS

Keeping in view of nature of the research, researcher constructed two tools to collect the data. Those are Tool-1: Tool for Learning Outcomes Assessment Scale (LOAS) and Tool-2: Satisfaction Scale for Learning (SSL).

This study assesses learning outcomes, student satisfaction, and academic performance of management students (Management programs) at Mizoram University in traditional and online courses. It focuses on comparing Perceived learning outcomes, Satisfaction and Academic performance based on grade between these modalities. The selection of specific program learning outcomes (PLOs), Learning Outcomes, student satisfaction metrics, and academic performance indicators (grades) was guided by their alignment with course learning outcomes mapping, relevance to Mizoram University's management courses, and suitability for both 'traditional' and 'online learning' contexts.

The following Learning Outcomes were selected to assess the effectiveness of learning outcomes in management courses. Each Learning Outcome is justified based on its prevalence in the PLO mapping tables, its relevance to management education, and its suitability for evaluating communication skills and other critical competencies in traditional and online settings.

3.10.1 Tool-1: Learning Outcomes Assessment Scale (LOAS)

Based on in-depth review of related literature, management curriculum and consultations with subject experts, a preliminary draft for measuring online students' learning outcomes was developed. This process involved identifying and defining ten key learning outcomes to comprehensively assess the effectiveness of learning outcomes. The draft, consisting of 100 items, was refined with expert feedback to ensure its relevance and accuracy. The measurement scale covers a broad spectrum of learning outcomes, providing a comprehensive evaluation of students' skills and knowledge in learning context. The Learning outcomes and their specific areas of focus are detailed below.

Table 3.7: Learning Outcomes Assessment Scale (LOAS)

S. No	Learning Outcomes	Key areas
1	Knowledge Acquisition	• Critical thinking • Analyze business situation • Solve problems and make decisions • Business knowledge • In depth knowledge • Ability to think strategically • Formulate business strategies • High level decisions to achieve organizational goal
2	Skills of Communication	• Written Skills • Oral Skills

3	Collaborative Skills	• Collaborate effectively in a business environment • Virtual collaboration • Utilizing virtual forums • Discussion and networking with peers and faculty • Industry professionals
4	Ethical and Social Responsibility	• Understanding ethical consideration in business • Ability to make morally responsible decisions
5	Digital Literacy	• Proficiency in using technology • Digital tools relevant to the business world
6	Leadership Skills	• Basic leadership skills • Ability to motivate • Ability to manage teams • Advanced skills for senior management and executive positions
7	Adaptability	• Adapt various learning formats • Navigate online resources effectively (asynchronous and synchronous)
8	Self- Discipline	• Self-discipline • Time management
9	Analytical skills	• Problem solving • Case studies • Real world scenarios
10	Project	• Integration of knowledge • Skills acquired

The tool designed for assessing online students' learning outcomes encompasses ten each focusing on critical aspects of student development. Knowledge Acquisition evaluates the ability to acquire and apply knowledge in a business context, emphasizing different skills such as critical thinking, business analysis, ability to solve problems, and high-level decision-making to achieve organizational goals. Communication Skills measure proficiency in both written and oral communication, essential for effective professional interactions. Collaborative Skills assess the capability to work effectively in business settings, including virtual collaboration and the use of online forums for discussion and networking with peers, faculty, and industry professionals. Ethical and Social Responsibility examines understanding of ethical considerations in business and the ability to make morally responsible decisions. Digital Literacy gauges proficiency in utilizing technology and digital tools pertinent to the business world. Leadership Skills evaluate basic leadership abilities, including motivation and team management, as well as advanced skills required for senior management and executive roles. Adaptability focuses on the ability to adjust to various learning formats and effectively navigate online resources, both asynchronously and synchronously. Self-Discipline measures the skills of self-discipline and time management, which are crucial for the success of an online learning environment. Analytical Skills assess problem-solving capabilities through case studies and real-world scenarios, highlighting the importance of analytical thinking and decision-making. Finally, Project evaluates the ability to integrate and application of knowledge and skills gained throughout the course in practical projects.

3.10.1.1 Pilot Study

The draft of the measurement scale, consisting of 100 items, was initially administered to a sample of 20 students. This preliminary phase aimed to evaluate whether each item accurately described the Learning Outcomes it was intended to measure. Following this initial trial, a larger sample of 100 students from Mizoram University participated in the second round of testing to further assess the scale's effectiveness.

3.10.1.2 Item Analysis

A statistical technique called item analysis is used to assess test item quality and improve measuring instruments by locating and removing items that are useless or deceptive. The primary goal is to find out the reliability and validity of the scale. The purpose of Item Analysis is to assess item quality and test difficulty, to determine which items effectively differentiate between high and low scorers and to improve the overall effectiveness of the measurement tool. Scores from the 200 respondents were organized in descending order. The top 27% (27 respondents) and bottom 27% (27 respondents) of the scores were selected for further analysis. The middle 46% of scores (46 respondents) were excluded from the t-value calculation. The t-value was computed for comparison of the scores of the top and bottom groups. This helps to identify which items best distinguish between high and low performers.

Formula for t-value Calculation:

$$t = (M_1 - M_2) / \sqrt{\sigma_1^2 / N_1 + \sigma_2^2 / N_2}$$

Here,

M_1 = Score of the top 27% of the obtained scores

M_2 = Score of the bottom 27% of the obtained scores

σ_1^2 = The square of the standard deviation of the top 27% of the obtained scores

σ_2^2 = The square of the standard deviation of the bottom 27% of the obtained scores

N_1 = The number of respondents in the top 27% of the total scores

N_2 = The number of respondents in the bottom 27% of the total scores

Items with higher t-values are considered more effective in distinguishing between high and low scorers. Items with low t-values may be considered for removal. The

calculated t-values, level of significance ($\alpha = 0.01$), and decisions regarding the inclusion or exclusion of items are presented in Table 3.8. The significance level (0.01) indicates a 1% possibility of rejecting a true null hypothesis. Items with t-values above the critical value at this significance level are retained, while those below are rejected

Table 3.8 Item analysis for the Learning Outcomes Assessment Scale (N=100)

Item. No	Group	N	Mean	Std. Deviation	t-value	p-value	Remarks
Q1	High Group	27	3.32	.711	1.06	0.29	Deleted
	Low Group	27	3.11	.743			
Q2	High Group	27	4.019	.7395	4.16	0.000	Retained
	Low Group	27	3.222	.6635			
Q3	High Group	27	4.037	.7761	4.83	0.000	Retained
	Low Group	27	3.000	.8009			
Q4	High Group	27	3.44	.8233	1.63	0.11	Deleted
	Low Group	27	3.11	.6564			
Q5	High Group	27	3.363	.7761	0.31	0.76	Deleted
	Low Group	27	3.293	.8746			
Q6	High Group	27	4.130	.7280	4.38	0.000	Retained
	Low Group	27	3.222	.7931			
Q7	High Group	27	4.167	.7950	4.55	0.000	Retained
	Low Group	27	3.167	.8184			
Q8	High Group	27	3.804	.7949	0.82	0.42	Deleted
	Low Group	27	3.622	.8393			

Q9	High Group	27	4.093	.7338	5.25	0.000	Retained
	Low Group	27	2.796	1.0529			
Q10	High Group	27	4.296	.6625	6.07	0.000	Retained
	Low Group	27	2.926	.9684			
Q11	High Group	27	4.148	.6561	4.45	0.000	Retained
	Low Group	27	3.185	.9127			
Q12	High Group	27	4.241	.6424	4.81	0.000	Retained
	Low Group	27	3.296	.7922			
Q13	High Group	27	3.222	.6040	0.91	0.37	Deleted
	Low Group	27	3.407	.8582			
Q14	High Group	27	4.185	.6750	6.02	0.000	Retained
	Low Group	27	2.981	.7889	6.02		
Q15	High Group	27	4.111	.6040	1.48	0.14	Deleted
	Low Group	27	3.830	.7782			
Q16	High Group	27	4.296	.6333	5.96	0.000	Retained
	Low Group	27	3.111	.8165			
Q17	High Group	27	4.130	.6157	5.20	0.000	Retained
	Low Group	27	3.148	.7625			
Q18	High Group	27	4.167	.6066	6.53	0.000	Retained
	Low Group	27	2.889	.8165			
Q19	High Group	27	3.963	.7514	1.48	0.14	Deleted

	Low Group	27	3.633	.9316			
Q20	High Group	27	4.056	.8107	0.72	0.47	Deleted
	Low Group	27	3.890	.8777			
Q21	High Group	27	4.204	.6553	5.89	0.000	Retained
	Low Group	27	3.167	.6369			
Q22	High Group	27	4.278	.5636	6.04	0.000	Retained
	Low Group	27	3.167	.7709			
Q23	High Group	27	4.296	.5002	8.80	0.000	Retained
	Low Group	27	2.889	.6635			
Q24	High Group	27	4.148	.6267	6.62	0.000	Retained
	Low Group	27	2.796	.8552			
Q25	High Group	27	4.130	.7280	5.80	0.000	Retained
	Low Group	27	2.889	.8393			
Q26	High Group	27	4.111	.6344	5.93	0.000	Retained
	Low Group	27	2.926	.8208			
Q27	High Group	27	4.185	.6750	1.49	0.14	Deleted
	Low Group	27	3.881	.8182			
Q28	High Group	27	4.222	.5719	1.49	0.14	Deleted
	Low Group	27	3.915	.9075			
Q29	High Group	27	3.285	.5852	0.64	0.53	Deleted
	Low Group	27	3.407	.8131			

Q30	High Group	27	4.111	.7181	1.17	0.25	Deleted
	Low Group	27	3.867	.8184			
Q31	High Group	27	4.222	.5379	5.49	0.000	Retained
	Low Group	27	3.111	.9042			
Q32	High Group	27	4.259	.6200	1.41	0.16	Deleted
	Low Group	27	3.978	.8336			
Q33	High Group	27	4.278	.6270	5.70	0.000	Retained
	Low Group	27	3.167	.7950			
Q34	High Group	27	4.278	.6270	5.89	0.000	Retained
	Low Group	27	3.204	.7106			
Q35	High Group	27	4.015	.6680	0.58	0.56	Deleted
	Low Group	27	3.922	.5131			
Q36	High Group	27	4.315	.6089	5.93	0.000	Retained
	Low Group	27	3.111	.8615			
Q37	High Group	27	4.167	.6936	5.39	0.000	Retained
	Low Group	27	3.111	.7439			
Q38	High Group	27	4.037	.5816	0.66	0.51	Deleted
	Low Group	27	3.907	.8359			
Q39	High Group	27	4.130	.5510	0.86	0.39	Deleted
	Low Group	27	3.967	.8184			
Q40	High Group	27	4.222	.6040	4.65	0.000	Retained

	Low Group	27	3.370	.7345			
Q41	High Group	27	4.296	.6028	6.12	0.000	Retained
	Low Group	27	3.074	.8434			
Q42	High Group	27	4.222	.5719	7.19	0.000	Retained
	Low Group	27	3.000	.6729			
Q43	High Group	27	4.185	.7288	4.98	0.000	Retained
	Low Group	27	3.130	.8252			
Q44	High Group	27	4.296	.7172	5.48	0.000	Retained
	Low Group	27	3.167	.7950			
Q45	High Group	27	4.037	.5816	0.66	0.51	Deleted
	Low Group	27	3.907	.8359			
Q46	High Group	27	4.130	.5510	0.86	0.39	Deleted
	Low Group	27	3.967	.8184			
Q47	High Group	27	4.222	.5719	7.09	0.000	Retained
	Low Group	27	2.833	.8412			
Q48	High Group	27	4.315	.6089	6.06	0.000	Retained
	Low Group	27	3.037	.9104			
Q49	High Group	27	4.100	.7500	0.80	0.428	Deleted
	Low Group	27	3.804	.6835			
Q50	High Group	27	4.296	.5366	.75	.460	Deleted
	Low Group	27	3.900	.8000			

Q51	High Group	27	4.333	.5494	6.40	0.000	Retained
	Low Group	27	3.167	.7709			
Q52	High Group	27	4.100	0.62	0.78	0.412	Deleted
	Low Group	27	3.370	.8533			
Q53	High Group	27	4.352	.5197	8.37	0.000	Retained
	Low Group	27	2.889	.7439			
Q54	High Group	27	4.241	.6424	7.45	0.000	Retained
	Low Group	27	2.778	.7931			
Q55	High Group	27	4.100	0.600	0.77	0.448	Deleted
	Low Group	27	3.950	0.7900			
Q56	High Group	27	4.370	.6812	4.73	0.000	Retained
	Low Group	27	3.296	.9641			
Q57	High Group	27	4.148	.6561	5.22	0.000	Retained
	Low Group	27	3.074	.8434			
Q58	High Group	27	4.222	.6040	5.36	0.000	Retained
	Low Group	27	3.185	.8027			
Q59	High Group	27	4.100	.6200	0.452	0.000	Deleted
	Low Group	27	3.950	.8000			
Q60	High Group	27	4.101	0.6300	0.78	0.440	Deleted
	Low Group	27	3.890	0.7800			
Q61	High Group	27	4.315	.5770	5.72	0.000	Retained

	Low Group	27	3.185	.8484			
Q62	High Group	27	4.333	.5494	6.13	0.000	Retained
	Low Group	27	3.037	.9509			
Q63	High Group	27	4.352	.6773	5.89	0.000	Retained
	Low Group	27	3.056	.9197			
Q64	High Group	27	4.100	0.6000	0.75	0.460	Deleted
	Low Group	27	3.890	0.7700			
Q65	High Group	27	4.185	.6166	6.46	0.000	Retained
	Low Group	27	3.000	.7268			
Q66	High Group	27	4.167	.6659	6.60	0.000	Retained
	Low Group	27	2.907	.7338			
Q67	High Group	27	4.148	.6267	6.02	0.000	Retained
	Low Group	27	2.981	.7889			
Q68	High Group	27	4.222	.5719	1.49	0.14	Deleted
	Low Group	27	3.915	.9075			
Q69	High Group	27	3.285	.5852	0.64	0.53	Deleted
	Low Group	27	3.407	.8131			
Q70	High Group	27	4.222	.5719	1.49	0.14	Deleted
	Low Group	27	3.915	.9075			
Q71	High Group	27	4.204	.6553	6.73	0.000	Retained
	Low Group	27	2.778	.8831			

Q72	High Group	27	4.222	.5719	1.49	0.14	Deleted
	Low Group	27	3.915	.9075			
Q73	High Group	27	3.285	.5852	0.64	0.53	Deleted
	Low Group	27	3.407	.8131			
Q74	High Group	27	4.222	.5719	1.49	0.14	Deleted
	Low Group	27	3.915	.9075			
Q75	High Group	27	3.285	.5852	0.64	0.53	Deleted
	Low Group	27	3.407	.8131			
Q76	High Group	27	4.241	.6123	6.03	0.000	Retained
	Low Group	27	3.074	.7974			
Q77	High Group	27	4.259	.6200	5.56	0.000	Retained
	Low Group	27	3.148	.8334			
Q78	High Group	27	4.333	.5494	7.37	0.000	Retained
	Low Group	27	3.093	.6804			
Q79	High Group	27	4.444	.5016	7.07	0.000	Retained
	Low Group	27	3.204	.7618			
Q80	High Group	27	4.278	.7376	7.41	0.000	Retained
	Low Group	27	2.648	.8722			
Q81	High Group	27	4.222	.5719	1.49	0.14	Deleted
	Low Group	27	3.915	.9075			
Q82	High Group	27	3.285	.5852	0.64	0.53	Deleted

	Low Group	27	3.074	.8208			
Q83	High Group	27	4.370	.5247	6.63	0.000	Retained
	Low Group	27	3.093	.8527			
Q84	High Group	27	4.296	.6028	6.79	0.000	Retained
	Low Group	27	3.037	.7514			
Q85	High Group	27	4.370	.5247	7.38	0.000	Retained
	Low Group	27	3.056	.7627			
Q86	High Group	27	4.259	.6497	6.38	0.000	Retained
	Low Group	27	3.185	.5852			
Q87	High Group	27	4.278	.5290	5.72	0.000	Retained
	Low Group	27	3.093	.9370			
Q88	High Group	27	4.222	.6344	5.08	0.000	Retained
	Low Group	27	3.185	.8484			
Q89	High Group	27	4.222	.5719	1.49	0.14	Deleted
	Low Group	27	3.915	.9075			
Q90	High Group	27	3.285	.5852	0.64	0.53	Deleted
	Low Group	27	3.407	.8131			
Q91	High Group	27	4.204	.6553	5.45	0.000	Retained
	Low Group	27	3.148	.7625			
Q92	High Group	27	3.963	.7514	1.48	0.14	Deleted
	Low Group	27	3.633	.9316			

Q93	High Group	27	4.056	.8107	0.72	0.47	Deleted
	Low Group	27	3.890	.8777			
Q94	High Group	27	4.352	.6191	6.93	0.000	Retained
	Low Group	27	3.148	.6561			
Q95	High Group	27	3.963	.7514	1.48	0.14	Deleted
	Low Group	27	3.633	.9316			
Q96	High Group	27	4.056	.8107	0.72	0.47	Deleted
	Low Group	27	3.278	.7115			
Q97	High Group	27	4.296	.7172	4.81	0.000	Retained
	Low Group	27	3.333	.7524			
Q98	High Group	27	4.333	.5828	5.70	0.000	Retained
	Low Group	27	3.352	.6773			
Q99	High Group	27	4.259	.6200	4.57	0.000	Retained
	Low Group	27	3.426	.7164			
Q100	High Group	27	4.315	.6391	5.07	0.000	Retained
	Low Group	27	3.333	.7770			

For each Learning Outcomes of the scale designed to assess online students' learning outcomes, certain items have been removed to enhance the effectiveness and focus of the instrument. Knowledge Acquisition (Learning Outcome) saw the removal of items 1, 4, 5, and 8, likely streamlining the Learning Outcome to emphasize the most impactful questions for assessing knowledge acquisition. This refinement aims to improve clarity and focus but may risk reducing

the breadth of coverage if the deleted items were significant. In Communication Skills (Learning Outcome), items 13, 15, 19, and 20 were deleted, suggesting a fine-tuning of the Learning Outcome to better capture essential communication abilities. It is crucial to ensure that the remaining items adequately address both written and oral communication skills. For Collaborative Skills (Learning Outcome), the removal of items 27, 28, 29, and 30 likely aims to eliminate less relevant or redundant questions, focusing the scale on the most pertinent aspects of collaboration. The revised Learning Outcome should still comprehensively cover both physical and virtual collaboration contexts. In Ethical and Social Responsibility (Learning Outcome), items 32, 35, 38, and 39 were deleted to streamline the assessment of ethical decision-making and social responsibilities, ensuring that the remaining items provide a robust evaluation of these concepts. Digital Literacy (Learning Outcome) saw the removal of items 45, 46, 49, and 50, which might help concentrate on the most critical aspects of digital proficiency. It is important to verify that the remaining items effectively cover essential digital tools and skills. Leadership Skills (Learning Outcome) had items 52, 55, 59, and 60 removed, aiming to focus the Learning Outcome more clearly on leadership competencies. The revised items should comprehensively measure both basic and advanced leadership skills. For Adaptability (Learning Outcome), the deletions of items 64, 68, 69, and 70 suggest a focus on the most relevant aspects of adapting to various learning formats and online resources. It is important to confirm that the remaining items adequately assess this adaptability. Self-Discipline (Learning Outcome) saw the removal of items 72, 73, 74, and 75, likely concentrating on the critical aspects of self-discipline and time management, ensuring that all essential facets are still covered. In Analytical Skills (Learning Outcome), the removal of items 81, 82, 89, and 90 aimed to refine the Learning Outcome's focus on problem-solving and real-world scenarios, ensuring comprehensive coverage of analytical abilities. Finally, for Project (Learning Outcome), items 92, 93, 95, and 96 were deleted to enhance the focus on the integration and application of acquired knowledge and skills in practical projects, ensuring that the remaining items effectively assess this Learning Outcomes.

3.10.2 Tool-2: Satisfaction Scale for Learning (SSL)

After consulting with subject matter experts and reviewing of related literature, the researcher identified and defined five Learning Outcomes to measure Learning Satisfaction among students. Each Learning Experiences represents a key aspect of the overall educational experience and is intended to capture different elements that contribute to students' perceptions of their learning environment. Here's a detailed explanation of each Learning Experiences:

The degree to which students actively participate in and are inspired by classroom interactions and activities is known as classroom engagement. This Learning Experiences evaluates the effectiveness of teaching methods, classroom dynamics, and student participation in contributing to a meaningful learning experience. Key specifications include Active Participation, which measures how engaged students are in discussions, group work, and other interactive elements of the classroom. Additionally, Interest in Material assesses how well the subject matter captures and maintains students' attention. Lastly, interaction with their Peers and Instructor evaluates the level of engagement between the teacher and the pupils as well as peer-to-peer interactions, providing insights into the overall classroom environment and engagement.

Learning Resources encompasses the availability, quality, and accessibility of materials and tools that support students' learning. This Learning Experiences evaluates how effectively the provided resources aid in understanding and applying course content. Specifications for this Learning Experiences include the Quality of Materials, which assesses the relevance and usefulness of textbooks, online resources, and supplementary materials. Accessibility measures how easily students can access these resources, whether digital or physical. Lastly, Variety of Resources evaluates the range of materials available, ensuring they cater to different learning styles and needs, thus supporting a diverse learning experience.

Assessment & Feedback pertains to the methods and effectiveness of evaluating student performance and providing constructive feedback. This learning Experiences focuses on how assessments are designed and how feedback aids in

students' learning and improvement. Key specifications include the Clarity of Assessments, which assesses how clearly assessment criteria and expectations are communicated to students. Timeliness of Feedback measures how promptly feedback is provided following assessments. Constructiveness of Feedback evaluates the usefulness of feedback that help the students to understand their strengths and areas for improvement, which is crucial for their academic growth.

Technology Usage involves the integration and effectiveness of technological tools and platforms in the learning process. This learning Experience assesses how technology supports or enhances students' learning experiences. The specifications for this learning Experience include the Effectiveness of Educational Technologies, which measures how well digital tools and platforms facilitate learning and engagement. Ease of Use assesses how user-friendly and accessible the technology is for students. Finally, Support for Learning Activities evaluates how technology supports various learning activities, including assignments, discussions, and access to resources, ensuring it contributes positively to the educational process.

Course Satisfaction refers to the overall contentment and approval students have regarding their entire course experience. This learning experiences captures students' general impressions and satisfaction with various aspects of the course. Specifications include Overall Enjoyment, which measures how much students enjoy the course and find it rewarding. Alignment with Expectations assesses how well the course meets students' expectations and goals. Lastly, Value of Learning Experience evaluates students' perceptions of the relevance and value of the course content to their academic and professional development, providing a comprehensive view of their overall satisfaction Each learning Experiences of the Learning Satisfaction scale captures different aspects of the student experience: Classroom Engagement focuses on active participation and interaction. Learning Resources examines the quality and accessibility of materials. Assessment & Feedback evaluates the effectiveness of evaluations and feedback. Technology Usage assesses the integration and impact of technological tools. Course Satisfaction measures overall contentment and alignment with expectations. Together, these Learning Outcomes provide a comprehensive framework for understanding students' satisfaction with their learning experience,

helping educators and institutions locate their strengths and areas for improvement in their educational practices.

Table 3.9: Satisfaction Scale for Learning and Their Key Areas

Sl. No.	Learning Satisfaction	Key Areas / Specifications
1	Academic Engagement	- Active participation- Motivation to learn- Involvement in class activities and discussions
2	Interaction with Teacher/Instructor	- Availability and accessibility- Clarity of communication- Constructive engagement with students
3	Quality of Instruction	- Teaching methodology- Clarity of concepts- Subject knowledge and organization
4	Learning Resources and Materials	- Availability and accessibility- Relevance and quality- Variety of formats (texts, videos, etc.)
5	Assessment and Feedback	- Transparency of evaluation criteria- Timeliness and usefulness of feedback- Alignment with outcomes
6	Student Support Services	- Availability of academic and administrative help- Counselling and career guidance
7	Physical/Virtual Learning Environment	- Classroom/Platform accessibility- Comfort, cleanliness, or interface usability- Learning atmosphere

8	Technology Satisfaction	- Ease of use of platforms- Reliability and performance- Technical support availability
9	Course Satisfaction	- Overall course enjoyment- Alignment with expectations- Perceived value of learning

3.10.2.1 Item Generation

After a comprehensive review of related literature and consultations with subject experts, five critical Learning Experiences were defined to measure Learning Satisfaction among students. These Classroom “Engagement, Learning Resources, Assessment & Feedback, Technology Usage, and Course Satisfaction” provide a structured framework for evaluating students' overall satisfaction with their learning experiences.

Classroom Engagement pertains to the extent of students' active involvement and motivation within the learning environment. To capture their learning outcomes, items are developed to assess the effectiveness of classroom activities, the level of student participation, and the quality of interactions between students and both peers and instructors. This learning Outcomes aims to evaluate how well students are engaged and motivated by their classroom experiences, reflecting their involvement in discussions, group work, and other interactive elements.

Learning Resources covers the availability, quality, and accessibility of educational materials that support students' learning. Items for this learning Outcomes address the relevance and usefulness of textbooks, online resources, and supplementary materials. Additionally, the accessibility of these resources, including both digital platforms and physical materials, as well as the variety of resources provided to utilize the different learning styles and needs, are assessed.

Assessment & Feedback examines the methods and effectiveness of evaluating student performance and providing constructive feedback. Questions in this learning Outcomes focus on the clarity of assessment criteria and expectations, the timeliness of feedback, and the usefulness of feedback in helping students understand their strengths and areas for improvement. This learning Outcome aims to ensure that assessments and feedback are clear, prompt, and supportive of students' learning and development.

Technology Usage involves evaluating how well technological tools and platforms support the learning process. Items designed for this learning Outcomes assess the effectiveness of educational technologies, the ease of use for students, and how well technology supports various activities in learning, such as home-assignments, classroom discussions, and access to resources. This learning Outcomes aims to measure the impact of technology on students' learning experiences and its role in facilitating engagement and accessibility.

Course Satisfaction reflects students' overall contentment with their course experience. Items in this Learning Experiences measure students' enjoyment of the course, how well the course aligns with their expectations and goals, and their perceptions of the course's value for their academic and professional development. This Learning Outcome aims to capture students' general impressions and satisfaction with various aspects of the course, providing insights into their overall learning experience.

In the item generation phase, a preliminary draft of the scale was created, incorporating specific questions or statements that reflect each of these Learning Outcomes. This draft was designed to comprehensively cover all aspects of learning satisfaction, ensuring that the final tool would provide a thorough and accurate measure of students' experiences and perceptions.

3.10.2.2 Pilot Study

The pilot study was conducted to test the initial version of the scale, which included the draft items for all five Learning Outcomes. A small sample of students (20 students) for first tryout was chosen to complete the draft scale. The scale was administered to the selected sample to gather initial responses and feedback. Responses were collected to assess how well the items were understood and whether they effectively measured the intended Learning Experiences of learning satisfaction. Purpose of the Pilot Study is to determine if the items are clear and easily understood by students, identify any issues with the items, such as ambiguity, redundancy, or misalignment with the learning Outcomes, and Gather feedback from participants on the relevance and comprehensiveness of the items.

3.10.2.3 Item Analysis

Following the pilot study, item analysis was performed to refine the scale based on the collected data. Purpose of Item Analysis is to assess item quality and test difficulty, to determine which items effectively differentiate between high and low scorers and to improve the overall effectiveness of the measurement tool. Scores from the 100 respondents were organized in descending order. The top 27% (27 respondents) and bottom 27% (27 respondents) of the scores were selected for further analysis. The middle 46% of scores (46 respondents) were excluded from the t-value calculation. The t-value was computed to compare the scores of the top and bottom groups. This helps to identify which items best distinguish between high and low performers.

Formula for t-value Calculation:

$$t = (M_1 - M_2) / \sqrt{\sigma_1^2 / N_1 + \sigma_2^2 / N_2}$$

Here,

M_1 = Score of the top 27% of the obtained scores

M_2 = Score of the bottom 27% of the obtained scores

σ_1^2 = The square of the standard deviation of the top 27% of the obtained scores

σ_2^2 = The square of the standard deviation of the bottom 27% of the obtained scores

N_1 = The number of respondents in the top 27% of the total scores

N_2 = The number of respondents in the bottom 27% of the total scores

Items with higher t-values are considered more effective in distinguishing between high and low scorers. Items with low t-values may be considered for removal. The calculated t-values, level of significance ($\alpha = 0.01$), and decisions regarding the inclusion or exclusion of items are presented in Table 3.9. The significance level (0.01) indicates a 1% probability of rejecting a true null hypothesis. Items with t-values above the critical value at this significance level are retained, while those below are rejected.

In summary, the item generation, pilot study, and item analysis processes are crucial for developing a robust and reliable Learning Satisfaction scale. By systematically creating, testing, and refining the items, researchers ensure that the scale accurately measures students' satisfaction with their learning experiences.

Table-3.10: Item analysis of Tool -2 Satisfaction Scale for Learning (SSL)

Item. No	Group	N	Mean	Std. Deviation	t-value	p-value	Remarks
Q1	High Group	27	4.130	.6157	6.41	0.000	Retained
	Low Group	27	2.852	.8334			
Q2	High Group	27	4.241	.6987	6.29	0.000	Retained
	Low Group	27	2.907	.8527			
Q3	High Group	27	4.204	.5949	6.28	0.000	Retained
	Low Group	27	2.944	.8560			
Q4	High Group	27	4.000	.8687	1.19	0.24	Deleted
	Low Group	27	3.704	.9641			
Q5	High Group	27	4.019	.7135	0.62	0.54	Deleted
	Low Group	27	3.874	.9877			
Q6	High Group	27	4.204	.6258	5.94	0.000	Retained
	Low Group	27	3.000	.8467			
Q7	High Group	27	4.407	.5670	6.62	0.000	Retained
	Low Group	27	3.148	.8105			
Q8	High Group	27	4.041	.7252	0.86	0.39	Deleted
	Low Group	27	3.870	.7345			
Q9	High Group	27	4.074	.6964	0.49	0.62	Deleted
	Low Group	27	3.963	.9309			
Q10	High Group	27	4.204	.6258	6.37	0.000	Retained

	Low Group	27	2.907	.8527			
Q11	High Group	27	4.278	.6564	7.19	0.000	Retained
	Low Group	27	2.926	.7230			
Q12	High Group	27	4.352	.5548	6.94	0.000	Retained
	Low Group	27	3.130	.7280			
Q13	High Group	27	4.333	.6143	6.14	0.000	Retained
	Low Group	27	3.185	.7542			
Q14	High Group	27	4.056	.8777	5.91	0.000	Retained
	Low Group	27	2.630	.8965			
Q15	High Group	27	54	4.000	1.19	0.24	Deleted
	Low Group	27	54	3.704			
Q16	High Group	27	4.259	.5887	6.07	0.000	Retained
	Low Group	27	3.241	.6424			
Q17	High Group	27	4.074	.6964	0.49	0.62	Deleted
	Low Group	27	3.963	.9309			
Q18	High Group	27	4.259	.5558	5.94	0.000	Retained
	Low Group	27	3.222	.7181			
Q19	High Group	27	4.130	.7782	6.63	0.000	Retained
	Low Group	27	2.815	.6750			
Q20	High Group	27	4.130	.5843	5.95	0.000	Retained
	Low Group	27	2.870	.9326			

Q21	High Group	27	4.204	.6553	5.96	0.000	Retained
	Low Group	27	3.111	.6914			
Q22	High Group	27	4.241	.5807	7.37	0.000	Retained
	Low Group	27	2.926	.7230			
Q23	High Group	27	4.296	.5707	6.22	0.000	Retained
	Low Group	27	3.222	.6914			
Q24	High Group	27	4.111	.8393	5.80	0.000	Retained
	Low Group	27	2.870	.7280			
Q25	High Group	27	4.222	.6344	8.01	0.000	Retained
	Low Group	27	2.722	.7376			
Q26	High Group	27	54	4.000	1.19	0.24	Deleted
	Low Group	27	54	3.704			
Q27	High Group	27	4.148	.6267	5.75	0.000	Retained
	Low Group	27	3.056	.7627			
Q28	High Group	27	4.185	.6750	5.99	0.000	Retained
	Low Group	27	3.056	.7115			
Q29	High Group	27	4.204	.6258	7.84	0.000	Retained
	Low Group	27	2.815	.6750			
Q30	High Group	27	4.074	.6964	0.49	0.62	Deleted
	Low Group	27	3.963	.9309			
Q31	High Group	27	4.056	.8107	0.72	0.47	Deleted

	Low Group	27	3.890	.8777			
Q32	High Group	27	4.407	.4960	6.77	0.000	Retained
	Low Group	27	3.278	.7115			
Q33	High Group	27	4.204	.7618	6.00	0.000	Retained
	Low Group	27	3.019	.6865			
Q34	High Group	27	4.093	.8746	6.19	0.000	Retained
	Low Group	27	2.759	.6987			
Q35	High Group	27	4.148	.8334	7.53	0.000	Retained
	Low Group	27	2.611	.6564			
Q36	High Group	27	4.130	.7017	5.81	0.000	Retained
	Low Group	27	3.000	.7268			
Q37	High Group	27	4.185	.4788	6.45	0.000	Retained
	Low Group	27	3.167	.6659			
Q38	High Group	27	4.130	.6742	5.82	0.000	Retained
	Low Group	27	3.130	.5843			
Q39	High Group	27	4.100	0.6300	0.76	0.454	Deleted
	Low Group	27	3.800	0.7900			
Q40	High Group	27	4.074	.6964	0.49	0.62	Deleted
	Low Group	27	3.963	.9309			
Q41	High Group	27	4.333	.5140	8.00	0.000	Retained
	Low Group	27	2.796	.8552			

Q42	High Group	27	4.056	.8107	0.72	0.47	Deleted
	Low Group	27	3.890	.8777			
Q43	High Group	27	4.222	.7181	6.63	0.000	Retained
	Low Group	27	2.796	.8552			
Q44	High Group	27	4.278	.6270	6.97	0.000	Retained
	Low Group	27	3.093	.6225			
Q45	High Group	27	4.389	.5636	6.71	0.000	Retained
	Low Group	27	3.093	.8303			
Q46	High Group	27	4.259	.5887	6.31	0.000	Retained
	Low Group	27	2.852	.9983			
Q47	High Group	27	4.241	.7252	6.51	0.000	Retained
	Low Group	27	2.944	.7376			
Q48	High Group	27	4.041	.7252	0.86	0.39	Deleted
	Low Group	27	3.870	.7345			
Q49	High Group	27	4.074	.6964	0.49	0.62	Deleted
	Low Group	27	3.963	.9309			
Q50	High Group	27	4.056	.8107	0.72	0.47	Deleted
	Low Group	27	3.890	.8777			

Tool-2, the Student Satisfaction Scale, was meticulously refined based on expert feedback and an initial draft review to better assess various Learning Experiences of student satisfaction among students. Each Learning Experiences of the

scale was analyzed, and specific items were identified for deletion to enhance the tool's effectiveness and focus. For the Classroom Engagement Learning Outcome, items 4, 5, 8, and 9 were removed. These items were likely eliminated because they either did not adequately capture the nuances of classroom engagement or were deemed redundant. The removal of these items was aimed at streamlining the Learning Outcome to better reflect students' active participation and interaction in the classroom, thus enhancing its accuracy in measuring engagement. In the Learning Resources Learning Outcome, items 15 and 17 were deleted. These items may have been considered less relevant or less reliable in assessing the quality and accessibility of learning resources provided to students. Their removal helps to concentrate on the most impactful aspects of resources, ensuring that the Learning Outcome effectively evaluates the adequacy and accessibility of learning materials.

The Assessment & Feedback Learning Outcome saw the removal of items 26 and 30. These items were likely removed because they did not align well with the core aspects of assessment and feedback, such as clarity, relevance, or effectiveness. By eliminating these items, the Learning Outcome is expected to better measure students' perceptions of the assessment process and the quality of feedback they receive.

In the Technology Usage Learning Outcome, items 31, 39, and 40 were deleted. The removed items may not have accurately reflected students' experiences with technology or may have overlapped with other items. The goal of these deletions was to refine the Learning Outcome to more accurately capture students' usage, familiarity, and satisfaction with technology in their learning environments.

Lastly, for the Course Satisfaction Learning Outcome, items 42, 48, 49, and 50 were removed. These items might have been either too specific, not sufficiently measuring course satisfaction, or lacking in clarity. The deletion aimed to focus on the essential aspects of overall satisfaction with the course, ensuring that the remaining items accurately capture students' general impressions and satisfaction.

3.11 Validity of the Tools

Validity is essential in research to ensure that the data collected accurately represents the intended area of measurement. According to Ghauri and Gronhaug (2005), validity evaluates how well data reflects the specific area of study, while Field (2005) describes it as the measure's ability to "measure what it is intended to measure." In this study, validity was primarily assessed through expert judgment to evaluate the content validity of the tools used.

For Tool-1: Online Students Learning Outcomes Assessment Scale, content validity was meticulously assessed by involving eleven experts in education and psychology. The process began with a thorough examination of how well each test item aligned with the instructional objectives and the subject matter related to online students' learning outcomes. The experts reviewed the relevance of each Learning Outcome and item to ensure that they comprehensively covered all aspects of the learning outcomes. The goal was to confirm that the tool addressed all necessary components of the subject without omitting any critical aspects.

In the validation procedure, ten experts were recruited to review and validate the content of Tool-Each item was discussed in detail to evaluate its relevance and its alignment with the instructional objectives. Based on the feedback received, adjustments were made to the items to better represent the intended traits and ensure that no important concepts were excluded. This iterative process helped refine the tool and enhance its accuracy. As a result, the tool demonstrated high content validity. Experts confirmed that Tool-1 accurately reflected the Learning Outcomes and key areas related to online students' learning outcomes. The feedback from the expert review process affirmed that the items effectively represented the content universe related to the traits being measured, validating the tool's ability to capture the intended constructs.

Tool-2: Student Satisfaction Scale underwent a rigorous content validity assessment to ensure its effectiveness in measuring various Learning Experiences of student satisfaction among students. The evaluation involved ten experts specializing in education and psychology, who played a critical role in validating the scale. The

content validity was assessed by examining how well the scale's items aligned with the specific Learning Outcomes of student satisfaction, which include “classroom engagement, learning resources, assessment & feedback, technology usage, and course satisfaction.” The experts scrutinized each item to ensure that it comprehensively covered all relevant aspects of student satisfaction. This process was essential for confirming that the scale did not overlook any significant areas related to students' overall well-being and satisfaction.

During the review procedure, the experts evaluated the relevance and representation of each item within the context of the content areas. Their feedback focused on whether the items effectively captured the various facets of student satisfaction and whether any important concepts were missing. Based on this feedback, adjustments were made to enhance the scale's relevance and coverage, ensuring that it accurately reflected the intended Learning Outcomes.

As a result of the expert review, the Student Satisfaction Scale demonstrated strong content validity. The experts confirmed that the items were appropriately measured and adequately represented the key areas of interest. This validation process affirmed that the scale was well-designed to capture the essential Learning Outcomes of student satisfaction, making it a reliable tool for assessing students' experiences and satisfaction.

For both tools, content validity was rigorously assessed through expert judgment to ensure that all relevant aspects of the respective content areas were covered. The feedback from experts led to the refinement of items to enhance their relevance and comprehensiveness, thus ensuring that the tools accurately measure the intended constructs. The systematic evaluation process confirmed that both tools possessed high content validity, making them reliable for assessing online students' learning outcomes and student satisfaction.

3.12 Reliability of the Tools

Reliability refers to the consistency and stability of an assessment tool. A reliable instrument should yield consistent results regardless of when or where it is administered, assuming other conditions are similar. In this study, reliability was assessed using Cronbach's Alpha, a widely accepted measure for evaluating internal consistency, particularly suited for Likert scale instruments. This coefficient measures the extent to which items within a tool are correlated, thereby indicating the overall consistency of the tool.

Table 3.11 Reliability statistics of the tools

Name of the Tool	N	Cronbach's Alpha	No. of Items
Tool-1	100	0.968	60
Tool-2		0.945	35

3.12.1 Tool-1: Learning Outcomes Assessment Scale (LOAS)

The reliability of Tool-1, designed to assess online students' learning outcomes, is supported by a Cronbach's Alpha coefficient of 0.968. This high value reflects excellent internal consistency, indicating that the 60 items within the tool are highly correlated and collectively measure a unified construct related to learning outcomes. A Cronbach's Alpha of 0.968 suggests that Tool-1 provides reliable and consistent results across different instances of administration. This level of reliability demonstrates that the scale effectively captures the various Learning Outcomes of online learning outcomes and assures that the tool is robust and dependable. Consequently, the high consistency in responses across different administrations implies that Tool-1 is well-designed and accurately measures the intended constructs related to online students' learning experiences.

3.12.2 Tool-2: Satisfaction Scale for Learning (SSL)

Tool-2, which measures student satisfaction among students, has a Cronbach's Alpha coefficient of 0.945. This value signifies very high internal consistency, indicating that the 35 items in the scale reliably measure the construct of student satisfaction. The coefficient reflects strong agreement among the items, demonstrating that they collectively capture different aspects of student satisfaction effectively. The high reliability of Tool-2 ensures that the scale is a dependable instrument for assessing students' student satisfaction. The consistency of results across various administrations highlights the tool's accuracy and alignment with the intended learning Outcomes of student satisfaction. This robustness in reliability underscores the effectiveness of

Tool-2 in providing accurate assessments of students' overall student satisfaction. The reliability of the measurement tools used in this study was assessed using Cronbach's Alpha coefficients, which indicate the internal consistency of each tool. Tool-1, the Online Students Learning Outcomes Measurement Scale, achieved a Cronbach's Alpha of 0.968. This exceptionally high value demonstrates that the 60 items within Tool-1 are highly consistent and effectively measure the construct of online students' learning outcomes. Such a high coefficient suggests that the scale is well-designed, with items that are closely related and reliably capture the intended learning Outcomes of online learning.

Similarly, Tool-2, the Student Satisfaction Scale, reported a Cronbach's Alpha of 0.945. This also represents a very high level of internal consistency, reflecting that the 35 items in Tool-2 consistently measure the construct of student satisfaction among students. The strong reliability of Tool-2 indicates that it is a robust instrument, with items that accurately and reliably assess various aspects of student satisfaction.

Both tools, with their respective high Cronbach's Alpha values, exhibit strong internal consistency. This suggests that the items within each tool are effective in measuring their specific constructs. The high reliability scores affirm that both Tool-1 and Tool-2 are well-crafted instruments, providing stable and consistent results. Their reliability underscores their suitability for use in both research settings and practical

applications, ensuring that they can deliver accurate and dependable measurements of students' learning outcomes and student satisfaction.

3.12.3 Description of the Final Version of Tool-1

Tool-1 is specifically designed to measure students' learning outcomes across various learning Outcomes. This measurement scale employs a Likert-type response format, where respondents rate their agreement with each statement on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The tool includes a total of 60 questions, distributed across ten distinct Learning Outcomes. Each learning Outcome is evaluated through six questions, ensuring a comprehensive assessment of different aspects of learning outcomes.

For positive statements, the scoring is straightforward: a response of "Strongly Agree" earns 5 points, "Agree" earns 4 points, "Undecided" earns 3 points, "Disagree" earns 2 points, and "Strongly Disagree" earns 1 point. Conversely, for negative statements, the scoring is reversed to maintain consistency in interpreting the responses. This approach helps in standardizing the data collection process and enhances the accuracy of the measurement.

The scale's total score ranges from a minimum of 60 to a maximum of 300. A higher score indicates a greater level of engagement or satisfaction with the learning outcomes, while a lower score reflects reduced engagement or satisfaction. The detailed breakdown of the Learning Outcomes and corresponding question numbers is provided in Table 3.11, which outlines the final version of Tool-1.

Table 3.12 Shows final version of Tool-1: Learning Outcomes Assessment Scale

S. No.	Learning Outcomes	Question Numbers	Number of Questions
1	Knowledge Acquisition	1 –6	6
2	Communication skills	7-12	6
3	Collaborative Skills	13-18	6
4	Ethical and Social Responsibility	19-24	6
5	Digital Literacy	25-30	6
6	Leadership Skills	31-36	6
7	Adaptability	37-42	6
8	Self- Discipline	43-48	6
9	Analytical skills	49-54	6
10	Project Work	55-60	6

Table 3.11 Displays the ten Learning Outcomes covered by the tool, along with the specific question numbers associated with each learning Outcome. This table serves as a comprehensive guide to understanding the distribution of questions across the various Learning Outcomes of learning outcomes. The final version of Tool-1 is designed to provide a thorough evaluation of students' learning outcomes. It encompasses key areas such as Knowledge Acquisition, Communication Skills, Collaborative Skills, Ethical and Social Responsibility, Digital Literacy, Leadership Skills, Adaptability, Self-Discipline, Analytical Skills, and Project Work. Each Learning Outcome is measured with six carefully crafted questions, ensuring that all

relevant aspects of the learning outcomes are addressed effectively. The complete version of Tool-1, including all questions, is available in Appendix-1.

3.12.4 Description of the Final Version of Tool-2

Tool-1 is meticulously designed to assess various aspects of learning outcomes among students. The scale utilizes a Likert-type response format, where respondents evaluate their agreement with each statement on a scale from 1 to 5. Specifically, responses are rated as follows: "Strongly Agree" corresponds to 5 points, "Agree" to 4 points, "Undecided" to 3 points, "Disagree" to 2 points, and "Strongly Disagree" to 1 point. This scoring system is applied to positive statements, while negative statements have their scoring reversed to maintain consistency in interpretation.

The tool's scoring range spans from a minimum of 35 to a maximum of 175 points. A higher total score indicates a greater level of satisfaction or engagement with the learning outcomes, while a lower score reflects less satisfaction or engagement. The detailed structure of the final version of Tool-1 is outlined in Table 3.11

Table 3.13 Shows Final Version of Tool-2

S. No.	Learner Experience	Question Numbers	Number of Questions
1	Classroom Engagement	1 to 6	6
2	Learning Resources	7 to 14	8
3	Assessment & Feedback	15 to 22	8
4	Technology Usage	23 to 29	7
5	Course Satisfaction	30 to 35	6

Table 3.12 provides a comprehensive overview of the Learning Outcomes covered in the final version of Tool-1. Each learning Outcome is represented by a specific set of questions: "Classroom Engagement, Learning Resources, Assessment

& Feedback, Technology Usage, and Course Satisfaction.” The learning Outcomes are distributed as follows: Classroom Engagement includes 6 questions (questions 1 to 6), Learning Resources consists of 8 questions (questions 7 to 14), and Assessment & Feedback comprises 8 questions (questions 15 to 22). Technology Usage is covered by 7 questions (questions 23 to 29), and Course Satisfaction is addressed with 6 questions (questions 30 to 35).

The final version of Tool-2, as detailed in Appendix-2, is designed to provide a thorough evaluation of students' experiences and satisfaction across these key Learning Experience. This structured approach ensures that all relevant aspects of learning outcomes are effectively measured, offering valuable insights into students' educational experiences.

3.13 DATA COLLECTION PROCEDURE

The data collection process for this study was meticulously planned and executed to ensure accuracy and reliability. The first step involved obtaining permission from the Principals or Heads of the selected institutions. This was a crucial part of the process, as it established formal approval for conducting the research within these institutions and ensured that all necessary ethical guidelines were followed. Once permission was secured, the investigator reached out to the students for their participation. The cooperation and willingness of the students were sought to ensure that the data collection process proceeded smoothly. A total of 310 Online and 305 Traditional students were randomly selected from participating institutions to form a representative sample for the study. After data cleaning, the final sample consisted of 300 Online and 300 Traditional students.

The data collection itself was conducted personally by the investigator. Prior to administering the research tools, each student received a set of instructions outlining how to complete the instruments. These instructions included guidance on how to fill out the tools and emphasized the importance of responding to every item. Each student was provided with two research tools along with a personal data sheet. The tools were designed to capture a range of information relevant to the study, and the personal data sheet collected demographic details. To facilitate accurate responses, the investigator

took time to explain each statement on the tools in simple terms, ensuring that all students fully understood the questions. This step was particularly important for clarifying any complex or ambiguous items, which helped to minimize misunderstandings and improve the quality of the data collected.

Students were instructed to complete their responses in the designated spaces or columns provided in the tools. The investigator closely monitored this process to ensure that all items were addressed. In cases where students needed further clarification, the investigator provided additional explanations as needed, helping them to accurately complete the tools. After the students finished responding to the tools, the completed instruments were collected by the investigator. This process was carried out systematically to ensure that all data was gathered efficiently and securely. The same procedure was uniformly followed across all institutions involved in the study, maintaining consistency in the data collection process. By following these detailed procedures, the investigator ensured that the data collected was comprehensive, reliable, and valid, providing a solid foundation for the research findings.

3.14 STATISTICAL TECHNIQUES USED IN THE STUDY

In the study, a range of statistical techniques was employed to analyze the data and derive meaningful insights, tailored to the nature of the data and research objectives. Descriptive analysis, differential analysis, and correlation analysis were the primary techniques used. Descriptive analysis involved calculating the mean and standard deviation to summarize the central tendency and dispersion of the data. The mean provided an average score, offering a general summary of the data's central value, while the standard deviation measured the variation or spread of the data points around the mean. This helped in understanding the consistency and variability in students' learning outcomes and student satisfaction scores.

For differential analysis, the t-test and F-ratio were utilized to compare different groups and identify statistically significant differences. The t-test assessed whether there were significant differences in means between two groups, such as male and female students or online versus traditional learners. The F-ratio, used in Analysis of Variance (ANOVA), compared variances between multiple groups to determine if

significant differences existed across more than two groups or conditions, such as different courses or student demographics.

Correlation analysis, specifically Pearson's Product Moment Correlation, measured the strength and direction of linear relationships between continuous variables. This analysis explored how changes in one variable, like learning outcomes, related to changes in another, such as student satisfaction. The correlation coefficient ranged from -1 to +1, indicating the degree of linear relationship, helping to uncover significant patterns and relationships within the data.

Together, these statistical techniques provided a comprehensive analysis of the data, enabling the study to uncover significant patterns, relationships, and differences in students' learning outcomes and student satisfaction, and to draw robust conclusions based on the collected data.

3.15 DISCUSSION ON DEVELOPMENT OF RESEARCH TOOLS

The development of the research tools, namely Tool-1: Learning Outcomes Assessment Scale (LOAS) and Tool-2: learning Satisfaction Assessment Scale (LSAL), was a critical step in ensuring the validity and reliability of data collection for assessing learning outcomes, student satisfaction, and academic performance among management students at Mizoram University. These tools were meticulously designed to align with the study's objectives, which focused on comparing perceived learning outcomes, satisfaction, and academic performance (based on grades) between traditional and online learning modalities in management programs. The following discussion elaborates on the rationale, construction, and alignment of these tools with the research objectives, emphasizing their relevance to the selected program learning outcomes (PLOs), learning experiences, and the unique contexts of traditional and online learning environments.

3.16 RATIONALE FOR TOOL DEVELOPMENT

The nature of the research necessitated tools that could quantitatively capture the multifaceted dimensions of learning outcomes and student satisfaction. Management education, as offered at Mizoram University, emphasizes a blend of

theoretical knowledge, practical skills, and professional competencies, which are reflected in the PLOs mapped across courses such as Business Organization & Management, Business Communication, and Project Work. To address this complexity, two distinct tools were constructed:

1. **Learning Outcomes Assessment Scale (LOAS):** This tool was developed to measure the attainment of specific learning outcomes critical to management education, including knowledge acquisition, communication skills, collaborative skills, ethical and social responsibility, digital literacy, leadership skills, adaptability, self-discipline, analytical skills, and project management. These outcomes were selected based on their prevalence in PLO mapping tables, their relevance to management education, and their applicability to both traditional and online learning contexts.
2. **Satisfaction Scale for Learning (SSL):** This tool was designed to assess student satisfaction with various learning experiences, including “classroom engagement, learning resources, assessment and feedback, technology usage, and overall course satisfaction.” These dimensions were chosen for their direct influence on students’ perceptions of learning quality and their alignment with course delivery in both modalities.

The selection of these tools was guided by their ability to provide comprehensive, reliable, and contextually relevant data. The LOAS focused on cognitive, behavioral, and professional competencies, while the SSL captured affective and experiential aspects of learning, ensuring a holistic evaluation of the educational process.

CHAPTER-IV

DATA ANALYSIS AND INTERPRETATIONS

4.1 INTRODUCTION

Data analysis is a substantial phase in research process that involves an inquiry into the data systematically to find essential patterns, informed conclusions, and support for decision-making processes. This is an important stage in the research journey, beginning from data collection that flows through cleaning, deep into analysis, and finally interpretation of findings. The primary aim of data analysis is to transfer raw data into insights that can be the better understanding of the research question or problem in hand. In this chapter, a detailed analysis of the data collected for this study will then give way to an interpretation of the findings and extensive discussion of their implications. Statistical techniques and analytical tools are used in this analysis to generate a detailed overview of the trends and patterns that emerge from the data. The results are, therefore, the basis of making meaningful conclusions and providing evidence-based recommendations.

PART-A

4.2 DESCRIPTIVE ANALYSIS OF LEARNING OUTCOMES

It may be remembered that one of the objectives of the current study is to examine the Learning outcomes of Traditional and Online students. The mean and Standard deviation for all the dimensions of Students learning outcomes has given in Table 4.1.

Table 4.1: Mean and Standard Deviation of Learning outcomes among Traditional and Online students

Dimension	Online Students' Mean	Online Students' SD	Traditional Students' Mean	Traditional Students' SD
Knowledge Acquisition	20.4433	3.16335	20.9167	3.9962
Communication Skills	20.48	3.26883	21.5133	3.57666
Collaborative Skills	20.6767	3.31795	21.05	4.23485
Ethical and Social Responsibility	21.5167	2.93572	21.6233	3.54165
Digital Literacy	20.9133	4.27474	19.3533	3.69332
Leadership Skills	21.11	3.10215	21.48	3.85996

Adaptability	20.71	3.32809	21.1367	4.10049
Self-Discipline	20.9667	3.58819	21.38	4.13593
Analytical Skills	21.3233	3.61418	21.5867	3.87805
Project	21.7067	3.13049	21.8067	3.90557
Overall Learning Outcomes	209.7793	23.33527	213.8467	32.73829

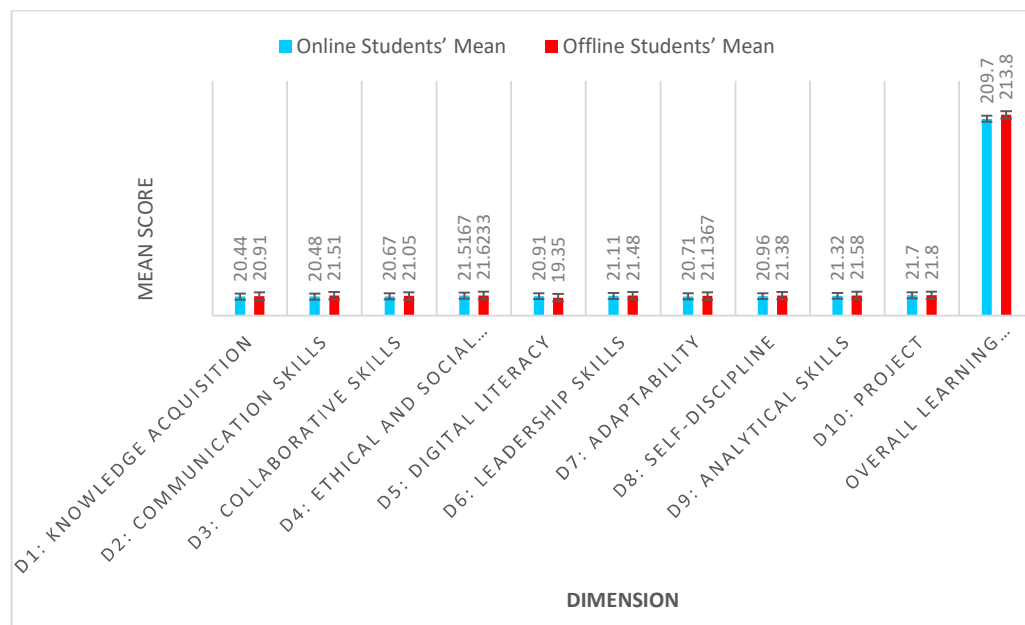
Table 4.1 shows there is a Comparison of the Average Scores and Standard Deviations of the Learning Achievement between the online and the traditional students in Different Respect. The average score for knowledge obtained by the online and traditional students' learner was nearly the same, while the Traditional students had an average score higher than that of the online students (20.92 vs. 20.44). However, the standard deviation for Traditional students is greater (3.99 compared to 3.16), which therefore suggests that their performance is more variable. That this is a general tendency within other dimensions as well - the communication skills and collaborative skills, where again Traditional students are endowed with a slightly higher mean score but greater spread in the data is intriguing. For instance, in communication skills, Traditional students scored a mean of 21.51 compared to 20.48 for online students, with similarly increased variation as reflected by the larger standard deviation for Traditional students (3.58 vs. 3.27). However, the growth pattern reverses when we examine digital literacy. In this skill area, online students scored with a higher mean, at 20.91 compared to 19.35 for Traditional students, and showed the larger standard deviation (SD = 4.27 vs. 3.69). This may reflect the fact that online students are generally more engaged with digital tools and technologies, which could partly explain their better performance in this dimension. Leadership skills and adaptability show similar results, where Traditional students scored slightly higher in both areas, but the differences are minimal, and the variability remains higher for Traditional students in both dimensions.

For self-discipline and analytical skills, the scores remain close between the two groups. In these areas, Traditional students slightly outperform online students, though at such low difference levels that the differences are not significant. For project work, both groups perform similarly, with a mean difference of just 0.1, but again Traditional students display higher variability in their scores.

When considering overall learning outcomes, Traditional students have a mean of 213.85, compared to 209.78 for online students. While this indicates a slight overall advantage for Traditional students, the larger standard deviation for Traditional students (32.74 vs. 23.34) suggests that there is more variability in their overall performance. In contrast, online students have more consistent outcomes, as evidenced by the smaller standard deviation. Remarkably throughout the data, however, this kind of consistency exists only in the online group but not in the group Traditional where it is spread instead.

Overall, online students tend to score lower than Traditional students in virtually all dimensions, but their higher variability suggests that Traditional learning may produce more mixed outcomes. On the other hand, online learning seems to result in a more consistent performance, yet the difference in the results of total learning is not huge. This analysis shows that both have their strengths: whereas some aspects may offer Traditional learning higher potential, results from online learning are more stable and predictable overall.

Figure.4.1 showing the comparison of learning outcomes of Online Vs Traditional student



4.3. TYPE OF STUDENTS (TRADITIONAL AND ONLINE) VERSUS LEARNING OUTCOMES

This section presents the analysis and interpretation of differences between Online and Traditional learning across ten dimensions: Knowledge Acquisition, Communication Skills, collaborative skills, ethical and social Responsibility, Digital Literacy, Leadership skills Adaptability, Self-Discipline, Analytical Skills, Project, and Overall Learning Outcomes. For each dimension, the analysis focuses on the mean values, standard deviation, t-values, and p-values to determine whether significant differences exist between online and Traditional learners. Results pertain this object has been presented in the table 4.2 to 4.12.

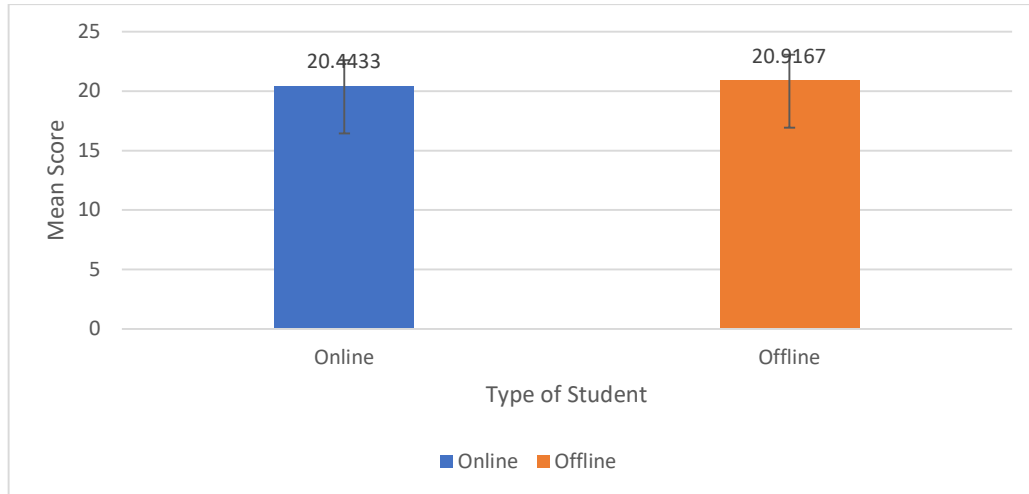
Hypothesis 1. There is no significant difference in Knowledge Acquisition between online and traditional learners.

**Table 4.2 Differences between Online & Traditional Learning Outcomes
(Knowledge Acquisition)**

Type of Student	N	Mean	SD	t-value	p-value
Online	300	20.4433	3.16335	-1.609	0.108
Traditional	300	20.9167	3.9962		

The mean score for online is 20.4433, while Traditional students reported a mean of 20.9167. The standard deviations for both groups are 3.16335 for online students and 3.99620 for Traditional students. The t-value for the comparison is -1.609, and the p-value is $0.108 > 0.05$. This implies that the difference in knowledge acquisition between online and Traditional students is insignificant. Although the mean of the Traditional students is a little higher, it is not statistically significant, which suggests that the mode of learning does not significantly impact knowledge acquisition.

Figure 4.2 Showing the Comparison Online Vs Traditional Learning Outcomes (Knowledge Acquisition)



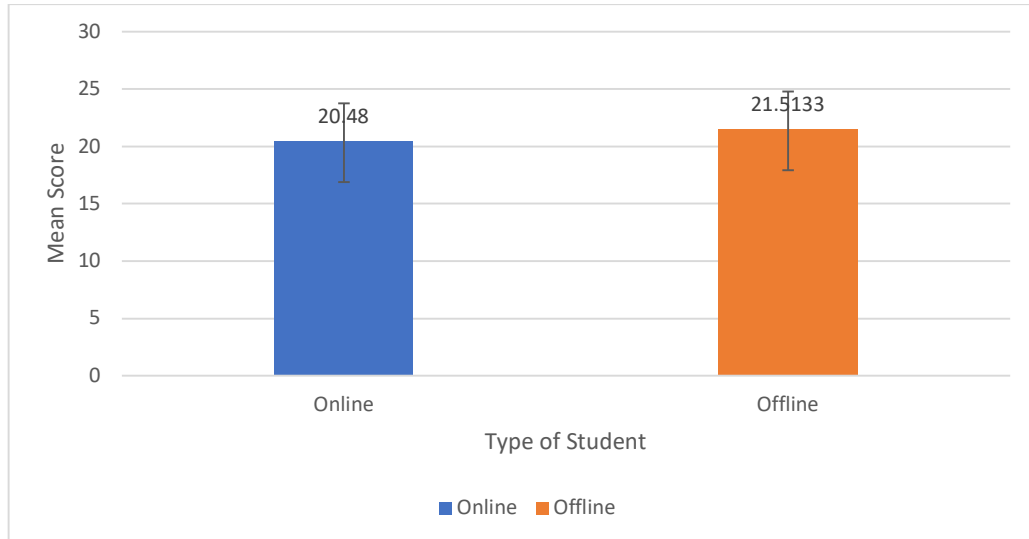
Hypothesis 1. There is no significant difference in Communication Skills between online and traditional learners.

Table 4.3: Differences between Online and Traditional learning Outcomes (Communication Skills)

Type of Student	N	Mean	SD	t-value	p-value
Online	300	20.48	3.26883	-3.694	0.000
Traditional	300	21.5133	3.57666		

The analysis of communication skills shows a great difference for online and Traditional students. The mean here for the former is 20.4800 while that of the latter is 21.5133. Standard deviations are 3.26883 for the former and 3.57666 for the latter. This is statistically significant because the t-value was -3.694 with a p-value of 0.000, which went way below the 0.05 level of significance. Students studying Traditional report higher levels of communication skills compared to their online counterparts, suggesting that Traditional learning might foster better communication abilities, perhaps because they tend to use digital platforms and virtual collaboration more frequently.

**Figure.4.3 Showing the Comparison Online Vs Traditional Learning Outcomes
(Communication Skills)**



Hypothesis 1. There is no significant difference in Collaborative Skills between online and traditional learners.

**Table 4.4: Differences between Online & Traditional learning
(Collaborative Skills)**

Type of Student	N	Mean	SD	t-value	p-value
Online	300	19.05	4.23	5.24	0.000
Traditional	300	20.6767	3.32		

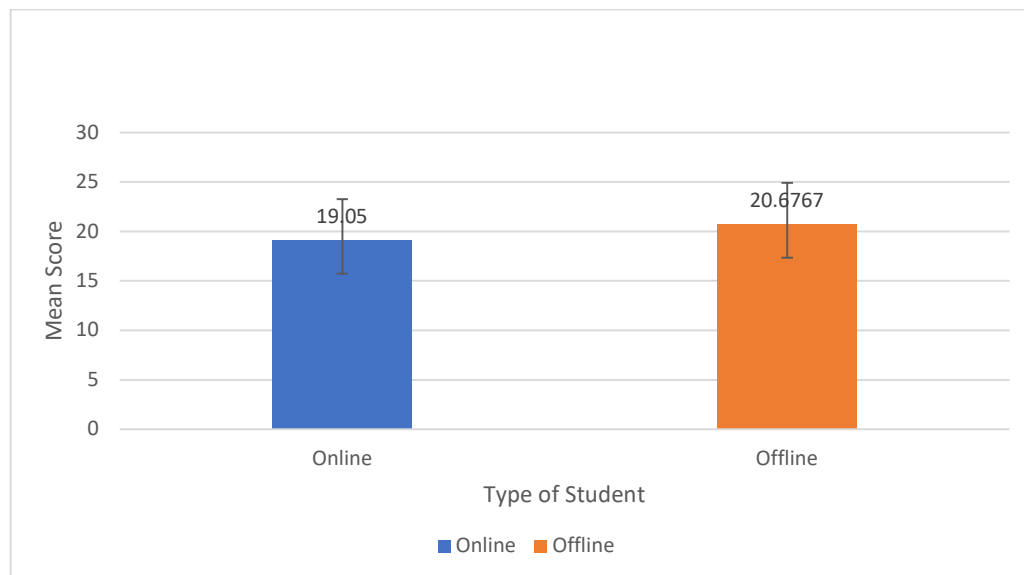
Table 4.4 Collaborative skills (D3) Comparison of online and off-line students Mean score 19.05 Average which is relatively lower than that found for off-line students, as their mean score is 20.68 SD 4.23 Higher, this indicates more variability of collaborative skills for online students. The students with off-line access have lower SD of 3.32, which indicates more consistency of collaboration skills.

A test was administered to examine whether the difference in students between both modes have statistically significant or not. The computed t-value is t.24, with an associated p-value of 0.000. The value of the p-value is significantly less than the

threshold of 0.05, therefore it displays the difference between groups as statistically significant. The findings unequivocally demonstrate that the mean scores of traditional students significantly exceeded those of online students. Even though mean score of online students is lower the difference is statistically significant as its p-value is far below the threshold level of 0.005.

Furthermore, the larger standard deviation for the online students' scores implies that a few online students face difficulties with collaborative activities, but a more uniform profile with fewer fluctuations exists in Traditional students for their collaborative skills. The analysis shows that online and Traditional students differ statistically in the collaborative skills developed. Traditional students registered higher scores on average. The greater variability in the scores of online students suggests that online learning may lead to more varied experiences in collaborative skills development.

**Figure 4.4 Showing the Comparison Online Vs Traditional learning
(Collaborative Skills)**



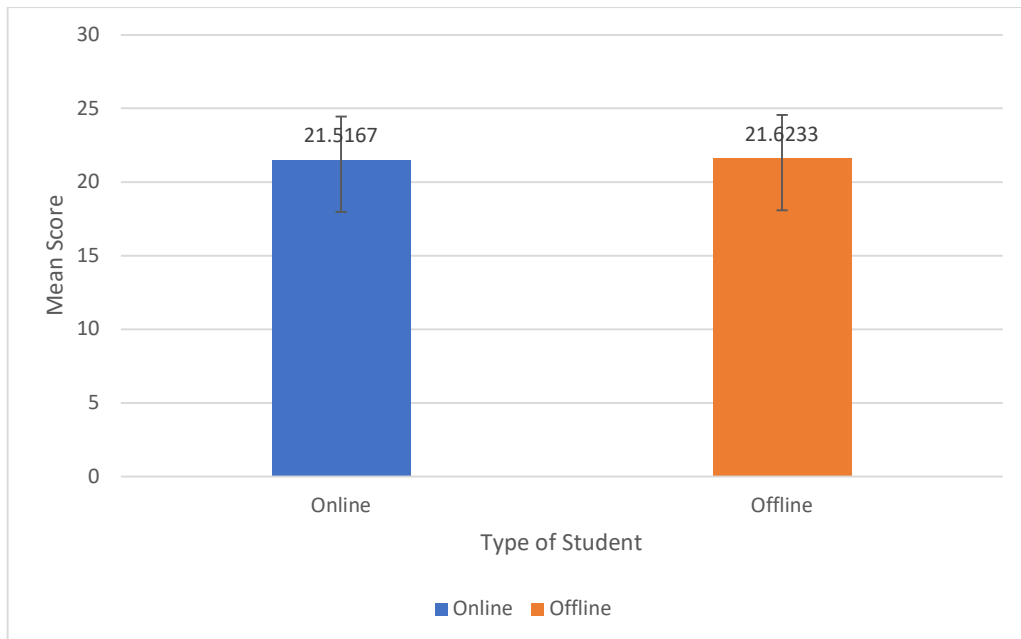
Hypothesis 1. There is no significant difference in Ethical and Social Responsibility between online and traditional learners.

**Table 4.5: Differences between Online & Traditional learning Outcomes
(Ethical & Social Responsibility)**

Type of Student	N	Mean	SD	t-value	p-value
Online	300	21.5167	2.93572	-0.402	0.688
Traditional	300	21.6233	3.54165		

Ethical and social responsibility was reported with a mean score for online students at 21.5167, and Traditional students reported a mean of 21.6233. The two groups also have different standard deviations -2.93572 for online and 3.54165 for Traditional learners. The t-value is -0.402, while the p-value is 0.688, which is larger than 0.05, meaning no significance in the difference between online and Traditional learners. Both groups share similar levels of ethical and social responsibility, which presumably means that the mode of learning does not have a considerable influence on the students' perceptions of their ethical or social obligations.

**Figure 4.5 Showing the Comparison Online Vs Traditional learning
(Ethical & Social Responsibility)**



Hypothesis 1. There is no significant difference in Digital Literacy between online and traditional learners.

**Table 4.6: Differences between Online & Traditional learning Outcomes
(Digital Literacy)**

Type of Student	N	Mean	SD	t-value	p-value
Online	300	20.9133	4.27474	7.85	0.000
Traditional	300	18.3533	3.69332		

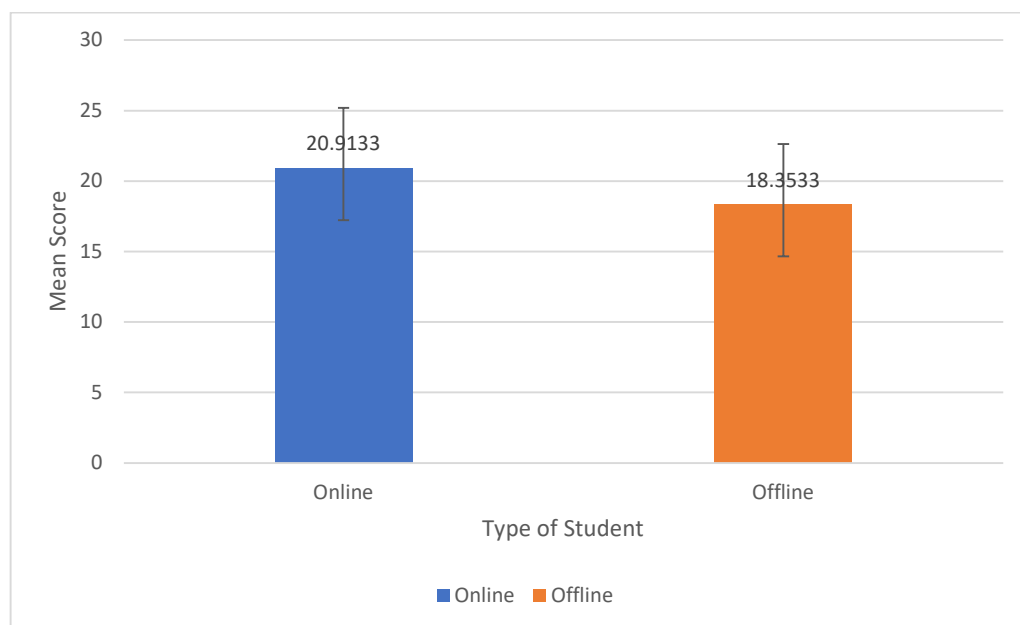
Table 4.6 Comparison of (D5) digital literacy between students accessing the course online and Traditional. The mean score on digital literacy issues for online students is 20.9133, which is higher than the mean score of 18.3533 for Traditional students. Online students have a greater standard deviation of 4.27474 than Traditional students 3.69332, and their scores on the issues of digital literacy are much more spread out with greater variability. This suggests that some online students may have much higher digital literacy levels than others, while Traditional students tend to have more consistent scores.

To determine the difference of the digital literacy between online and traditional students is significantly large, an independent sample t-test has been performed. The calculated t-value is 7.85 with a corresponding p-value of 0.000 Based on this result, since the computed p-value is substantially smaller than the traditional cutoff point of 0.05, then it was concluded that the difference of digital literacy between online and traditional students is significant. The result shows that online students have a much greater digital literacy than their counterparts. The considerable t-value of 7.85 suggests that the two groups differ by quite a stretch, and the absolutely negligible p-value of 0.000 confirms that this difference is certainly not by chance.

A higher variability of digital literacy scores for online students means that even though the average level of digital literacy is higher for online students, the range of their skills is wider. Traditional students are more uniform in their levels of digital literacy, though they average lower.

The data shows that online students have an average greater level of digital literacy than Traditional students. The difference is statistically significant, and online education has the potential to contribute to an increase in digital skills. Still, the greater spread of scores for online students also suggests that levels of digital literacy can be very diverse among online students, perhaps reflecting differing experiences or access to technology.

**Figure 4.6 Showing the Comparison Online Vs Traditional learning
(Digital Literacy)**



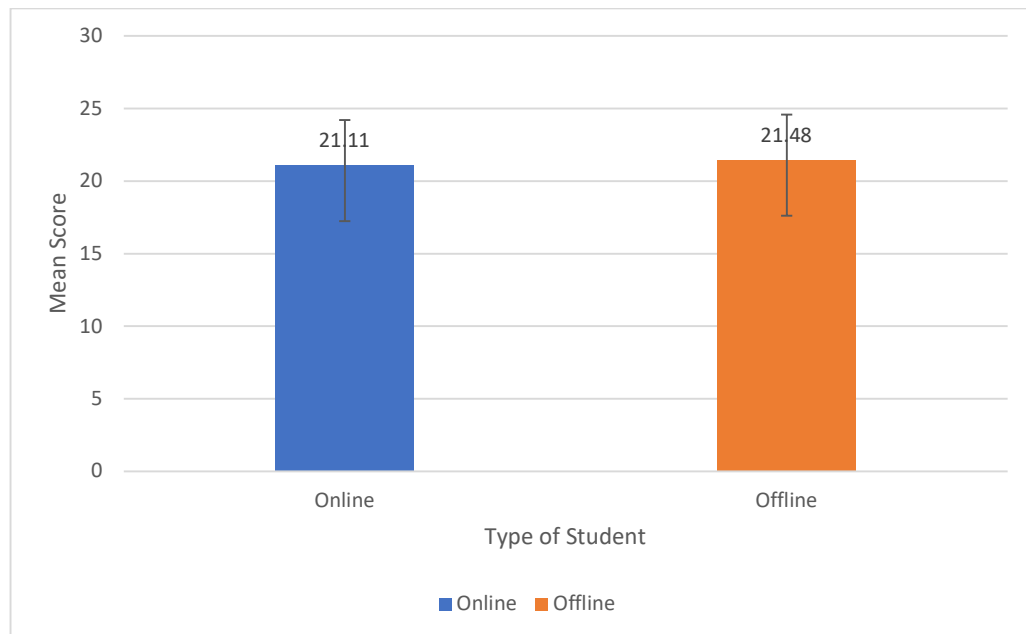
Hypothesis 1. There is no significant difference in Leadership Skills between online and traditional learners.

**Table 4.7: Differences Between Online and Traditional Learning
(Leadership Skills)**

Type of Student	N	Mean	SD	t-value	p-value
Online	300	21.11	3.10215	-1.294	0.196
Traditional	300	21.48	3.85996		

For leadership skills, online students score the mean score of 21.1100, while the Traditional students have a mean of 21.4800. The standard deviations are 3.10215 for online and 3.85996 for Traditional students. The t-value is -1.294 and the p-value is 0.196, thus passing the 0.05 significance level and showing no difference between the two types of students. Both groups report similar leadership skill levels, which means the mode of learning does not have a significant impact on students' leadership abilities.

**Figure 4.7 Showing the Comparison Online Vs Traditional learning
(Leadership Skills)**



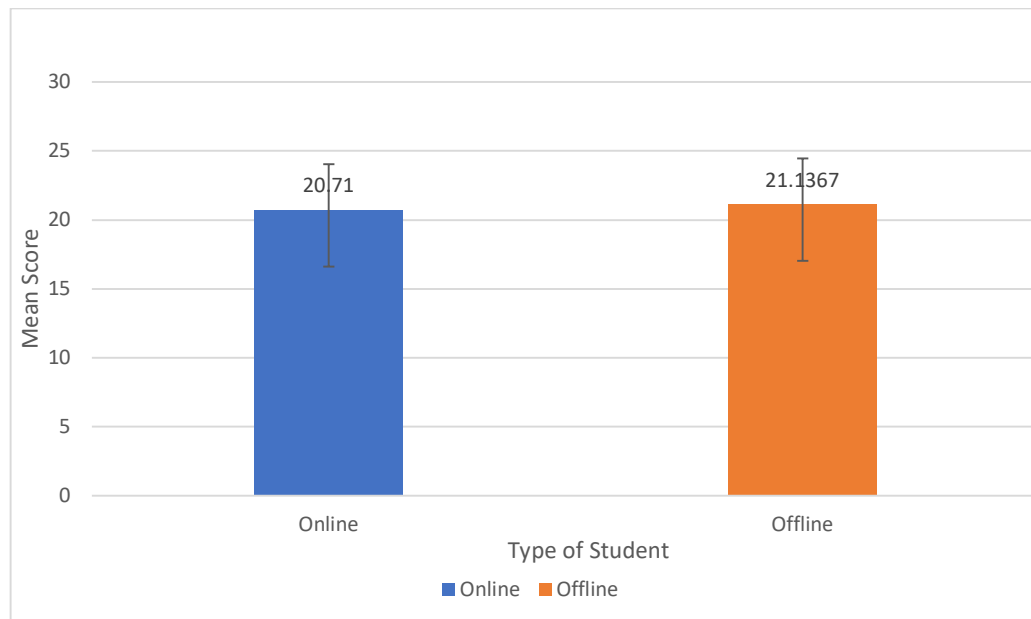
Hypothesis 1. There is no significant difference in Adaptability between online and traditional learners.

Table 4.8 Differences Between Online and Traditional (Learning Adaptability)

Type of Student	N	Mean	SD	t-value	p-value
Online	300	20.71	3.32809	-1.399	0.162
Traditional	300	21.1367	4.10049		

Online students' mean score is 20.7100, and Traditional students scored a mean of 21.1367. The standard deviation is 3.32809 for the online group and 4.10049 for the Traditional students. The calculated t-value is -1.399 and the p-value is 0.162, which is greater than 0.05. Therefore, it indicates that there are no significant differences between the two groups in adaptability. Despite the small difference in means, online and Traditional learners do not show a marked difference in adaptability, which is suggestive that this attribute is not significantly changed by the mode of learning.

**Figure 4.8 Showing the Comparison Online Vs Traditional learning
(Adaptability)**



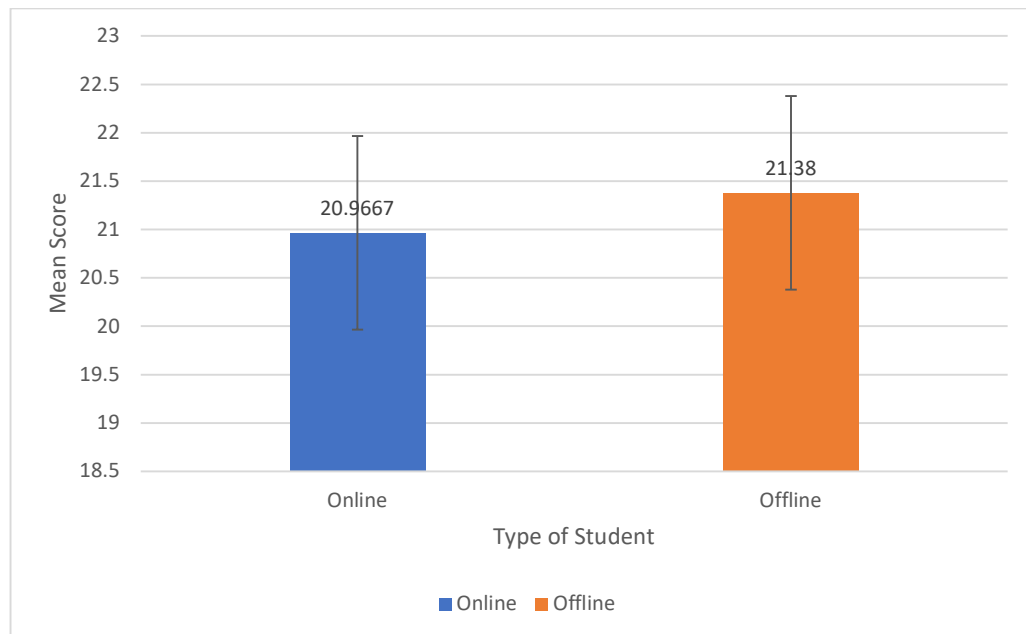
Hypothesis 1. There is no significant difference in Self-Discipline between online and traditional learners.

**Table 4.9: Differences Between Online and Traditional Learning
(Self-Discipline)**

Type of Student	N	Mean	SD	t-value	p-value
Online	300	20.9667	3.58819	-1.307	0.192
Traditional	300	21.3800	4.13593		

For self-discipline, the mean score is 20.9667 for online students, while Traditional students scored a mean of 21.3800. Standard deviations show that it is 3.58819 for online and 4.13593 for Traditional students. The t-value is -1.307, and the p-value is 0.192, meaning more than the 0.05 threshold for significance. Thus, there is no significant difference between the two groups: online and Traditional students regarding self-discipline. Both groups of persons seem to embody the same level of self-control irrespective of their way of learning.

**Figure 4.9 Showing the Comparison Online Vs Traditional learning
(Self-Discipline)**



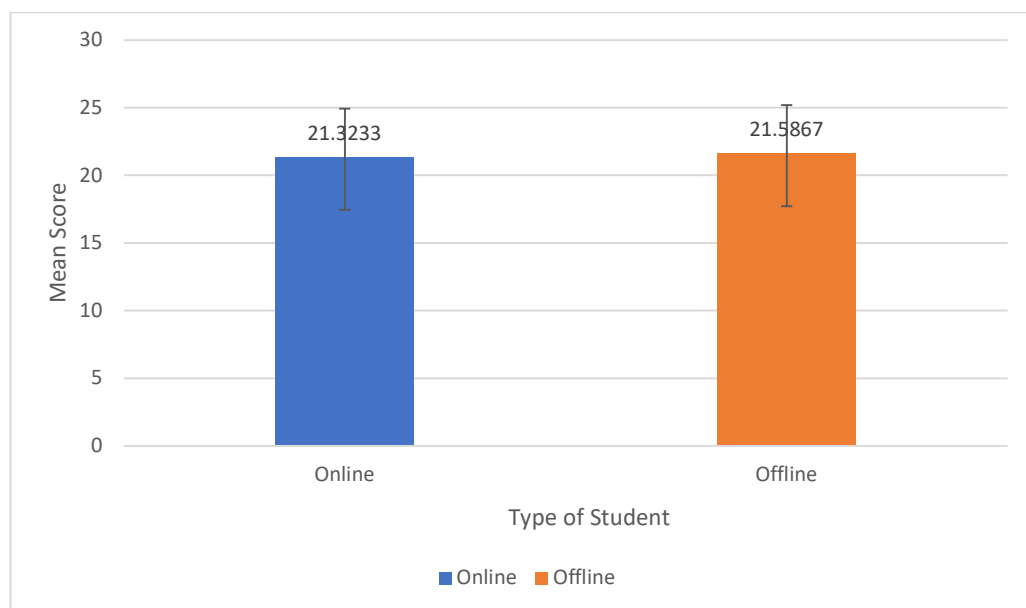
Hypothesis 1. There is no significant difference in Analytical Skills between online and traditional learners.

**Table 4.10: Differences Between Online and Traditional Learning
(Analytical Skills)**

Type of Student	N	Mean	SD	t-value	p-value
Online	300	21.3233	3.61418	-0.86	0.39
Traditional	300	21.5867	3.87805		

In terms of analytical skills, the mean for online students is set at 21.3233, while Traditional students reported a mean score of 21.5867. The standard deviations are 3.61418 for online and 3.87805 for Traditional learners. The t-value is -0.860, and the p-value is 0.390, meaning that the groups are not significantly different. Thus, both online and Traditional learners exhibit the same analytical skill level. This should mean that the mode through which learning is conducted does not impact analytical thinking development since both would be the same.

**Figure 4.10 Showing the Comparison Online Vs Traditional learning
(Analytical Skills)**



Hypothesis 1. There is no significant difference in Project Skills between online and traditional learners.

Table 4.11: Differences Between Online and Traditional Learning (Project)

Type of Student	N	Mean	SD	t-value	p-value
Online	300	21.7067	3.13049	-0.346	0.729
Traditional	300	21.8067	3.90557		

Online students have a mean score of 21.7067 for project work, while Traditional students have a mean of 21.8067. The standard deviations are 3.13049 for online and 3.90557 for Traditional students. The t-value is -0.346, and the p-value is 0.729. This is far above the 0.05 significant level. Thus, there is no significant difference in project work between online and Traditional students. The two groups have equal performance in the project-related tasks for both learning modes.

Figure 4.11 Showing the Comparison Online Vs Traditional learning (Project)

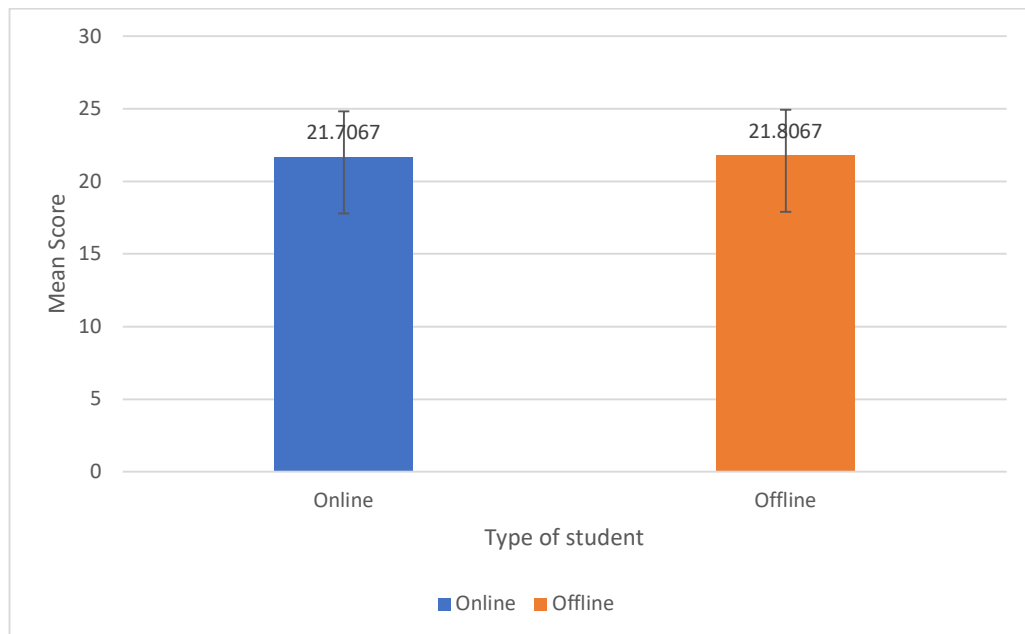


Table 4.12: Differences Between Online and Traditional Overall Learning Outcomes

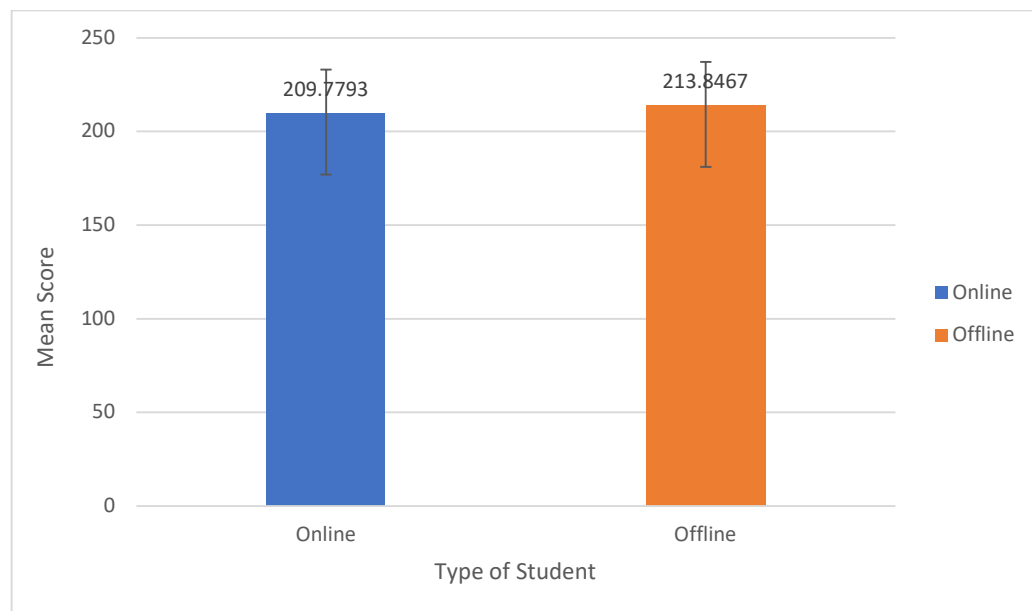
Type of Student	N	Mean	SD	t-value	p-value
Online	300	209.7793	23.33527	-1.75	0.081
Traditional	300	213.8467	32.73829		

In terms of overall learning outcomes, the mean score reported by online students stands at 209.7793, and Traditional students reported a mean of 213.8467. The standard deviations for online and Traditional learners stand at 23.33527 and

32.73829, respectively. The t-value is -1.750, and the p-value is 0.081, which is slightly higher than the threshold of 0.05. While the difference in means is marginally significant, the p-value suggests that the difference is not statistically significant. Thus, there seems to be no significant difference between learning outcomes for students who engaged in Traditional and online learning modes.

The analysis reveals that for communication skills, there is a significant difference that matters only in the case of Traditional students who post the highest scores. For other dimensions such as knowledge acquisition, collaborative skills, ethical and social responsibility, self-discipline, analytical skills, project work, and overall learning outcomes, there were no significant differences between the online and Traditional groups of students. This implies that Traditional learning might improve communication skills but may not significantly affect other factors of learning against online training. The students for both online and Traditional studies portray mostly equivalent degrees of satisfaction and performance across most of the dimensions. In this case, it means that the mode of training appears not to be as influential as other factors in affecting the outcomes for students.

**Figure 4.12 Showing the Comparison Online Vs Traditional learning
(Overall Learning Outcomes)**



4.4 LEARNING OUTCOMES AND GENDER

This section explores the differences in learning outcomes between male and female students across various competencies. A t-test was applied to compare the groups. The analysis aims to identify any significant disparities in performance and to understand how gender may influence educational achievements. The influence of Gender on each dimension is presented in tables from 4.13 to 4.23

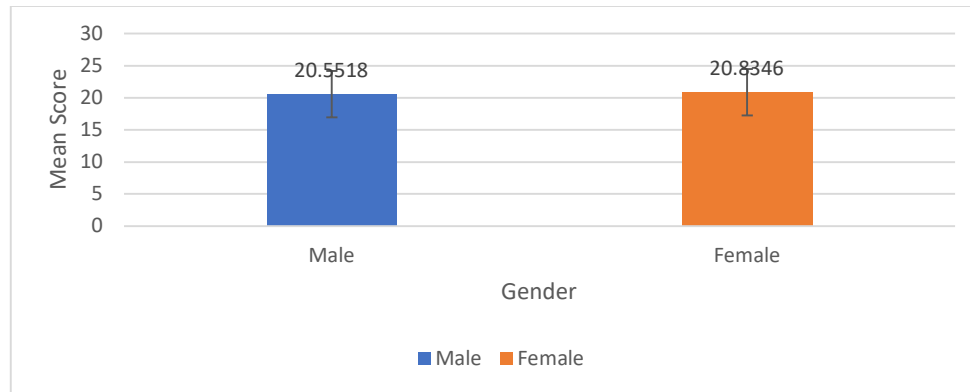
Hypothesis 2. There is no significant difference in Knowledge Acquisition between online and traditional learners, moderated by gender.

**Table 4.13. Learning Outcomes Comparison: Male vs Female Students
(Knowledge Acquisition)**

Gender	N	Mean	Std. Deviation	t-value	p-value
Male	328	20.5518	3.63517	0.955	0.34
Female	272	20.8346	3.57707		

Findings from the table, indicate that the mean scores for males (20.5518) and females (20.8346) are very close, indicating minimal gender difference in knowledge acquisition. With the t-value of -0.955 and the p-value of 0.340, we conclude that the difference in means is not statistically significant. Since the p-value is larger than 0.05, generally used as significance level, we fail to reject the null hypothesis. No significant difference exists between gender groups regarding knowledge acquisition, and both males and females exhibited the same amount of knowledge acquisition.

**Figure 4.13 Showing the Comparison of Male Vs Female Learning Outcomes
(Knowledge Acquisition)**



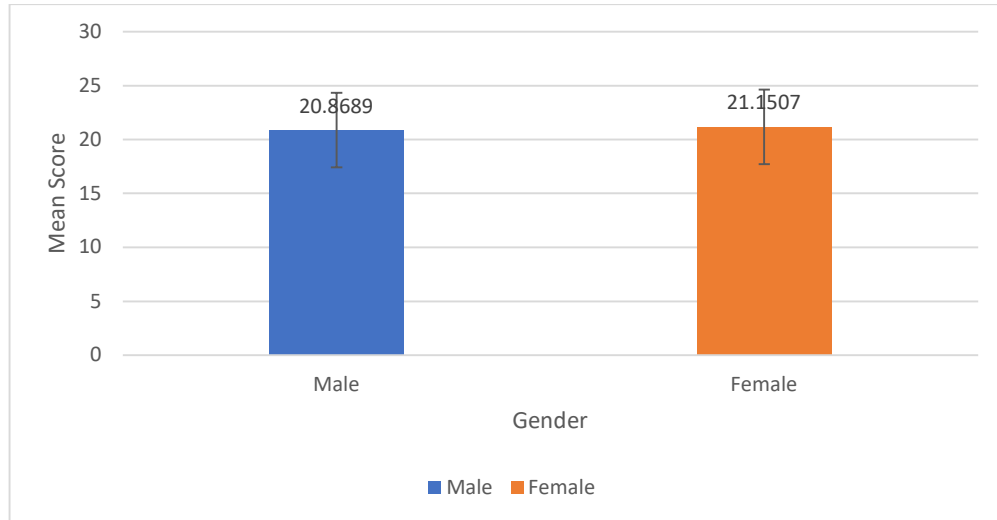
Hypothesis 2. There is no significance difference in Communication Skills between online and traditional learners, moderated by gender.

**Table 4.14 Learning Outcomes Comparison: Male vs Female Students
(Communication Skills)**

Gender	N	Mean	Std. Deviation	t-value	p-value
Male	328	20.8689	3.47792	0.993	0.321
Female	272	21.1507	3.44317		

The means for communication skills are also tight: 20.8689 for males and 21.1507 for females. The t-value is at -0.993, and the p-value is 0.321. This means that the observed difference is not statistically significant because the p-value was larger than 0.05. There is no extreme difference in communication skills among males and females, meaning males and females are not significantly different in this aspect.

**Figure 4.14 Showing the Comparison of Male Vs Female Learning Outcomes
(Communication Skills)**



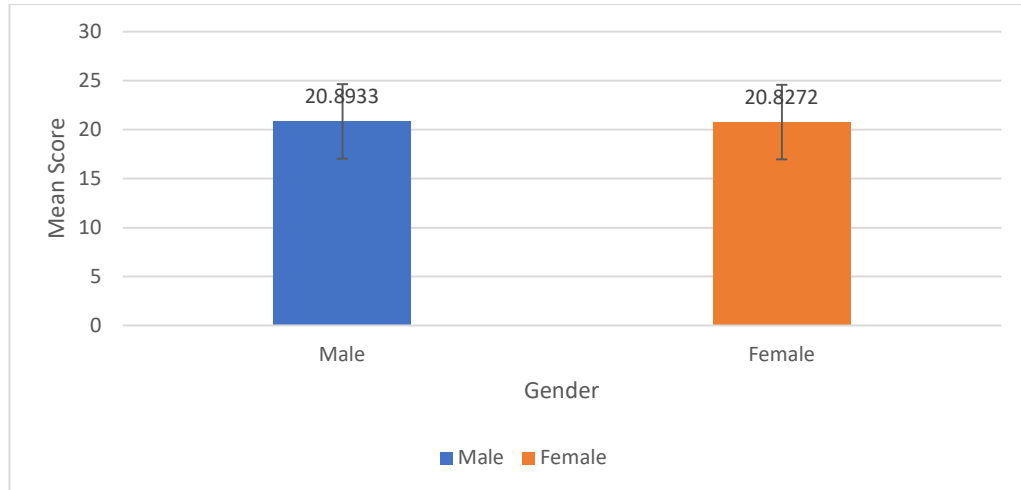
Hypothesis 2. There is no significant difference in Collaborative Skills between online and traditional learners, moderated by gender.

**Table 4.15: Learning Outcomes Comparison: Male vs Female Students
(Collaborative Skills)**

Gender	N	Mean	Std. Deviation	t-value	p-value
Male	328	20.8933	3.77229	0.212	0.832
Female	272	20.8272	3.85191		

The average scores of both genders are very similar: 20.8933 for men and 20.8272 for women. Since the t-value is 0.212 and the p-value is 0.832, the difference is not statistically significant, meaning gender has no practical impact on skills in group work. It can be concluded that collaboration skills are independent of gender, and both genders perform at par.

**Figure 4.15 Showing the Comparison of Male Vs Female Learning Outcomes
(Collaborative Skills)**



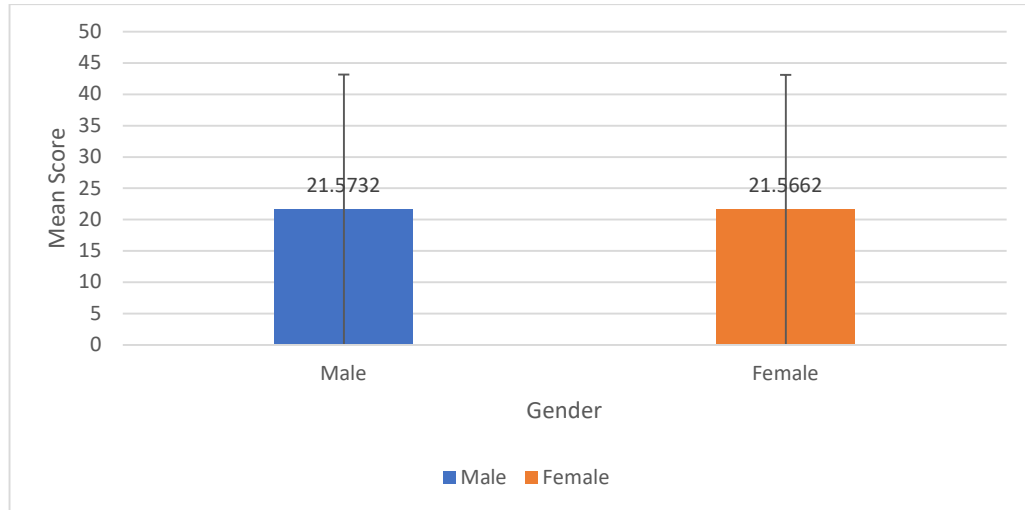
Hypothesis 2. There is no significant difference in Ethical and Social Responsibility between online and traditional learners, moderated by gender

**Table 4.16: Learning Outcomes Comparison: Male vs Female Students
(Ethical and Social Responsibility)**

Gender	N	Mean	Std. Deviation	t-value	p-value
Male	328	21.5732	3.236	0.026	0.979
Female	272	21.5662	3.27397		

The mean scores of both males (21.5732) and females (21.5662) are approximately equal for ethical and social responsibility. With a t-value of 0.026 and a p-value of 0.979, it is confirmed that the difference is not statistically significant. The p-value far exceeds 0.05, so it can be concluded that there is no significant gender difference. Gender has no significant effect on both ethical and social responsibility, and their performance is nearly identical.

**Figure 4.16. Showing the Comparison of Male Vs Female Learning Outcomes
(Ethical & Social Responsibility)**



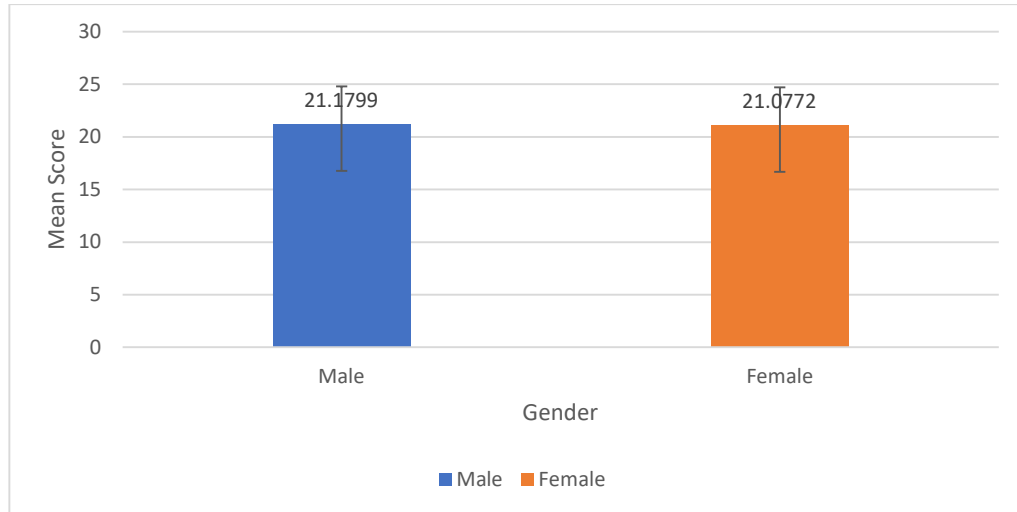
Hypothesis 2. There is no significant difference in Digital Literacy between online and traditional learners, moderated by gender

**Table 4.17: Learning Outcomes Comparison: Male vs Female Students
(Digital Literacy)**

Gender	N	Mean	Std. Deviation	t-value	p-value
Male	328	21.1799	3.63065	0.313	0.754
Female	272	21.0772	4.40537		

Digital literacy is marginally higher in males with a score of 21.1799, while the score stands at 21.0772 for females. The variation is small. The t-value is 0.313 while the p-value is found to be 0.754. Thus, this difference is statistically negligible and holds well as the p-value is much greater than 0.05. There is no gender variation difference as regards the digital skills efficiency. Males and females possess the same level of abilities.

**Figure 4.17 Showing the Comparison of Male Vs Female Learning Outcomes
(Digital Literacy)**



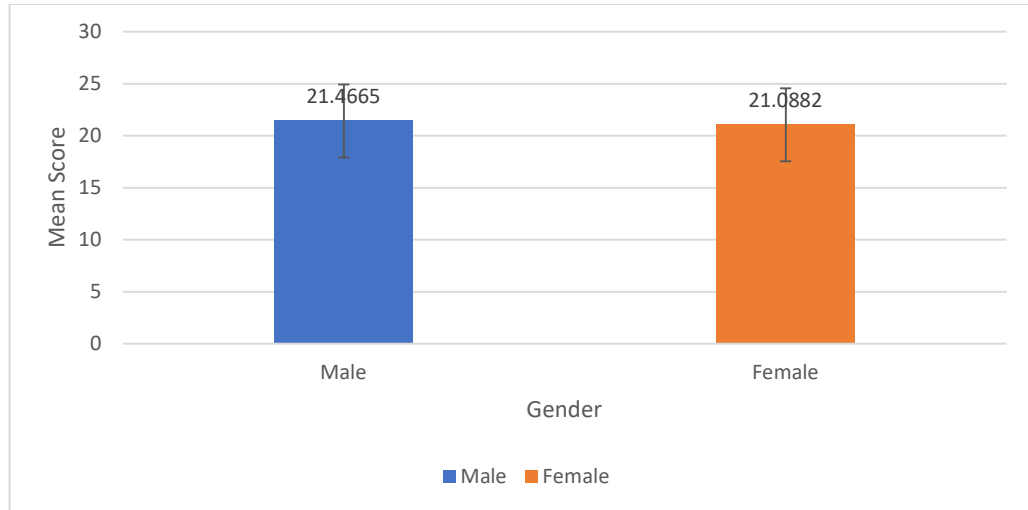
Hypothesis 2. There is no significant difference in Leadership Skills between online and traditional learners, moderated by gender

**Table 4.18: Learning Outcomes Comparison: Male vs Female Students
(Leadership Skills)**

Gender	N	Mean	Std. Deviation	t-value	p-value
Male	328	21.4665	3.47188	1.317	0.188
Female	272	21.0882	3.53678		

In terms of leadership skills, males are marginally higher with a mean score of 21.4665 and females is lower with 21.0882. t-value =1.317 and p-value =0.188. This shows that the difference is not statistically significant since the p-value > threshold value of 0.05, signifies that the null hypothesis is not rejected. Gender does not have a significant effect on leadership skills as both males and females are identical.

**Figure 4.18 Showing the Comparison of Male Vs Female Learning Outcomes
(Leadership Skills)**



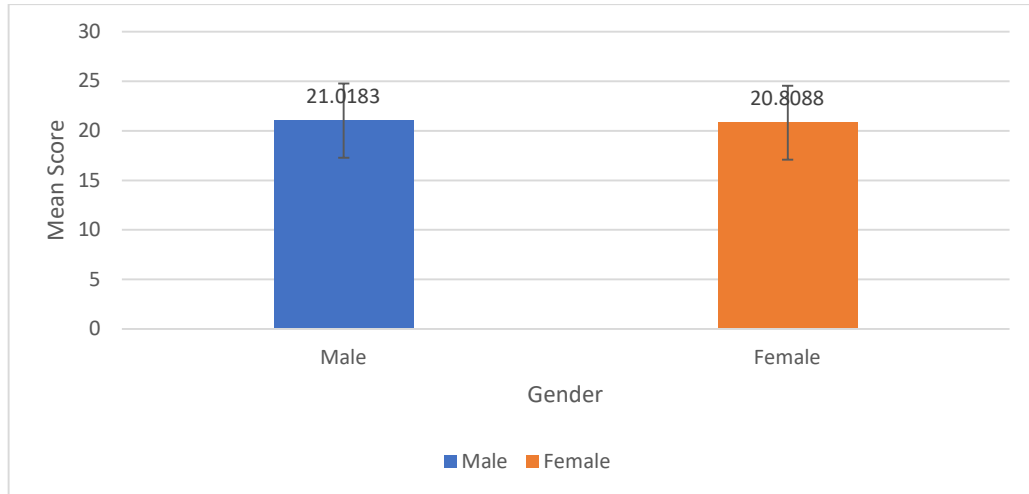
Hypothesis 2. There is no significant difference in Adaptability between online and traditional learners, moderated by gender

**Table 4.19: Learning Outcomes Comparison: Male vs Female Students
(Adaptability)**

Gender	N	Mean	Std. Deviation	t-value	p-value
Male	328	21.0183	3.75141	0.683	0.495
Female	272	20.8088	3.72389		

The mean scores for adaptability are almost alike: 21.0183 by males and 20.8088 by females. Since the difference is not statistically significant with a t-value of 0.683 and a p-value of 0.495. The p-value is significantly larger than 0.05. It can be stated that gender has no significant effect on adaptability as males, and females are similar in their level of adaptability.

**Figure 4.19 Showing the Comparison of Male Vs Female Learning Outcomes
(Adaptability)**



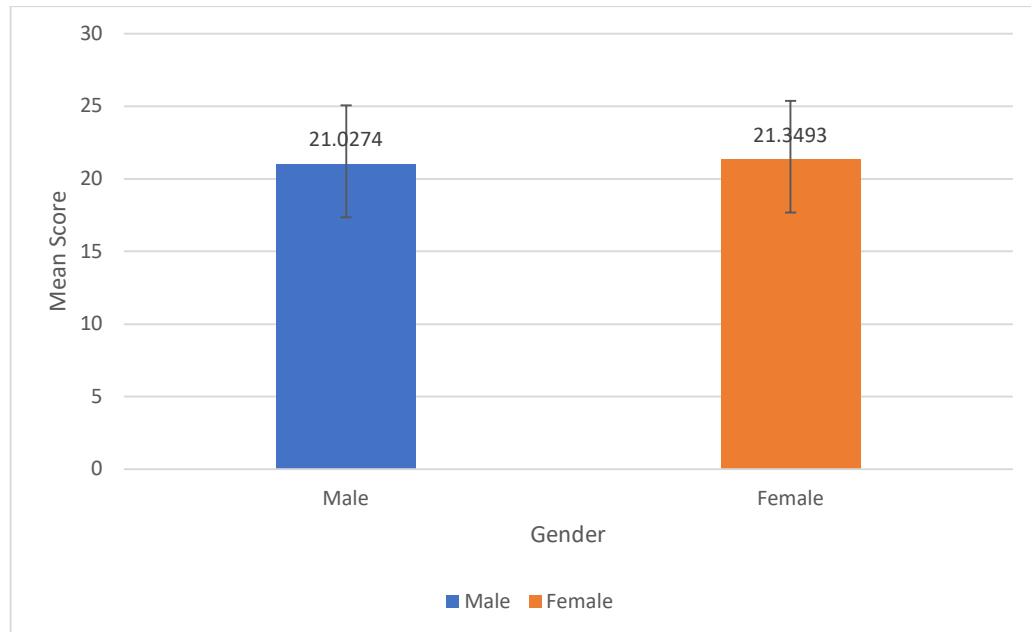
Hypothesis 2. There is no significant difference in Self-Discipline between online and traditional learners, moderated by gender

**Table 4.20: Learning Outcomes Comparison: Male vs Female Students
(Self-Discipline)**

Gender	N	Mean	Std. Deviation	t-value	p-value
Male	328	21.0274	4.03378	1.013	0.311
Female	272	21.3493	3.67188		

The above Table: 4.20 shows that the mean score for females is marginally greater than that for males. It is 21.3493 for females and 21.0274 for males. The difference is statistically not significant since the t-value is -1.013 and the p-value is .311, which is greater than 0.05. There is no gender difference at all when it comes to self-discipline. Both perform about equally on this skill.

**Figure 4.20 Showing the Comparison of Male Vs Female Learning Outcomes
(Self-Discipline)**



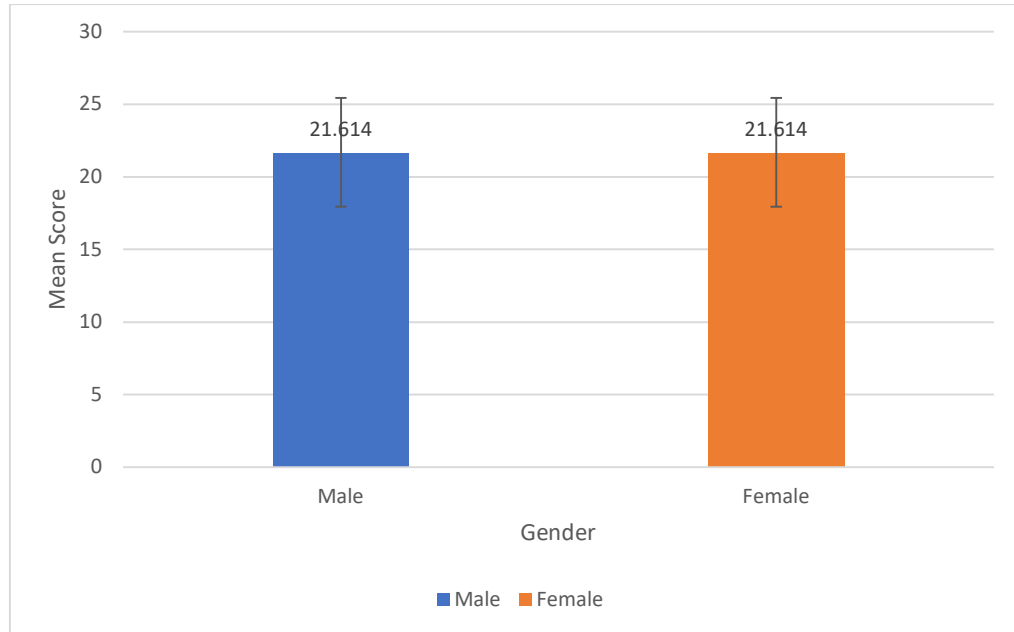
Hypothesis 2. There is no significant difference in Analytical Skills between online and traditional learners, moderated by gender

**Table 4.21: Learning Outcomes Comparison: Male vs Female Students
(Analytical Skills)**

Gender	N	Mean	Std. Deviation	t-value	p-value
Male	328	21.3232	3.82081	0.946	0.344
Female	272	21.614	3.65811		

On average, females have analytical skills with a slightly higher mean of 21.6140 compared to males at 21.3232. The difference is negligible. The t-value is -0.946 and the p-value is 0.344, which means that the difference is not statistically significant. The p-value is more than 0.05. Gender doesn't have an effect on analytical skills. Since it has a similar proficiency, then both groups are of the same level.

**Figure 4.21 Showing the Comparison of Male Vs Female Learning Outcomes
(Analytical Skills)**



Hypothesis 2. There is no significant difference in Project Skills between online and traditional learners, moderated by gender

**Table 4.22: Learning Outcomes Comparison: Male vs Female Students
(Project)**

Gender	N	Mean	Std. Deviation	t-value	p-value
Male	328	21.7256	3.45938	-0.236	0.813
Female	272	21.7941	3.63383		

The mean values of the project skills are almost similar: 21.7256 for males and 21.7941 for females, the t-value is -0.236, and the p-value is 0.813. Hence the difference is not significant as the value is much greater than 0.05. Project-related skills among males and females have no significant difference.

Figure 4.22 Showing the Comparison of Male Vs Female Learning Outcomes (Project)

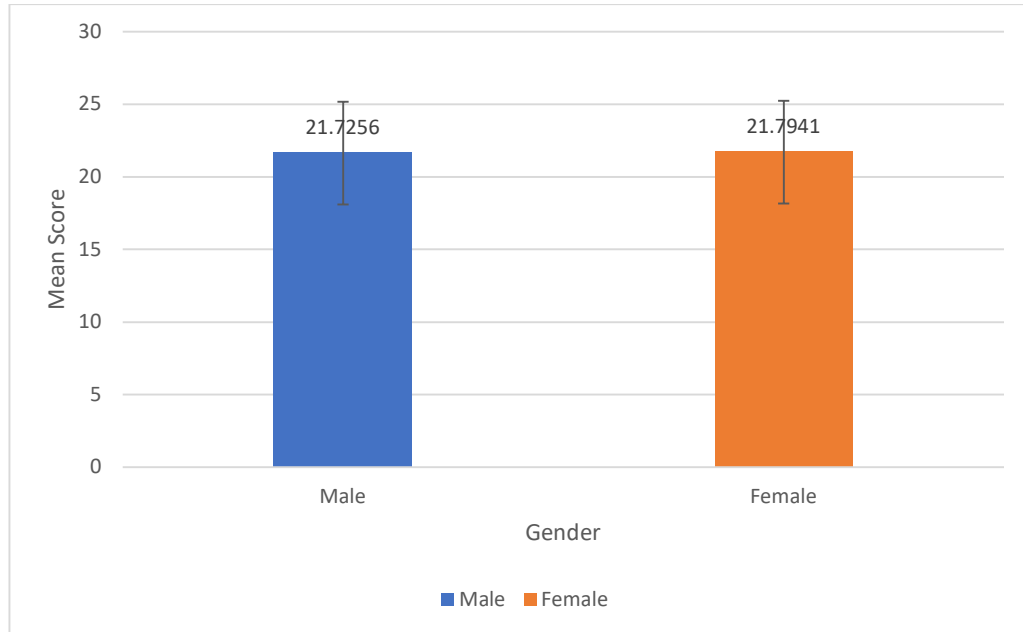


Table 4.23: Learning Outcomes Comparison: Male vs Female Students (Overall Learning Outcomes)

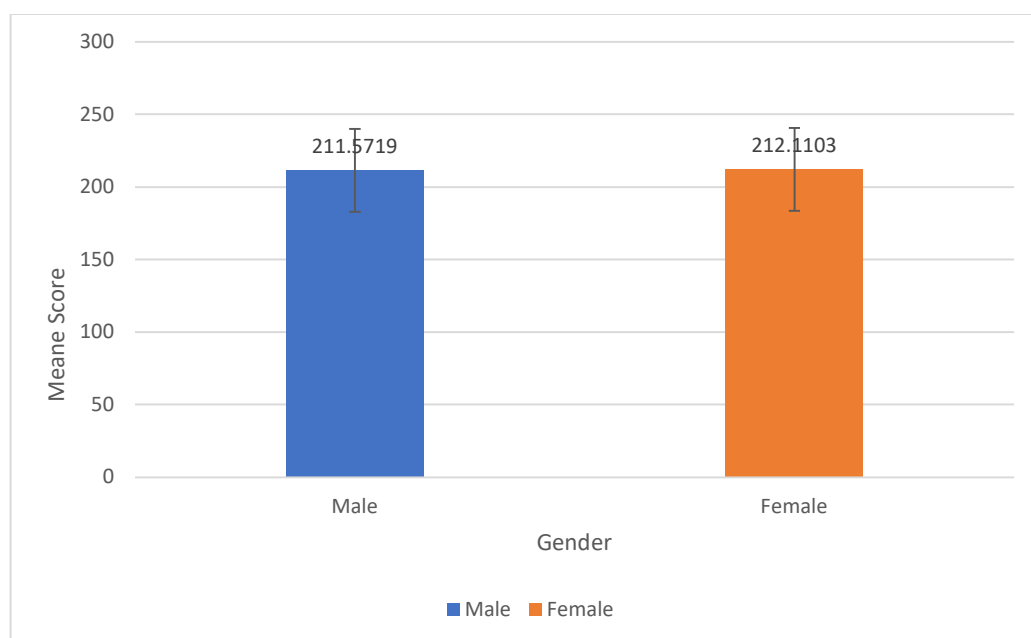
Gender	N	Mean	Std. Deviation	t-value	p-value
Male	327	211.5719	28.41131	-0.23	0.818
Female	272	212.1103	28.62306		

The total learning outcomes are therefore remarkably similar for both means, i.e. 211.5719 for males and 212.1103 for females. Based on the t-value of -0.230 and p-value of 0.818, there is no significant statistical difference between the two genders for the overall outcomes of learning. There is no influence on general learning outcomes by gender. Overall, they have relatively similar performance.

The findings in all the dimensions (D1-D10) and the general learning outcomes reveal no consistent significance across genders. Generally, all the p-values across the dimensions are bigger than the typical cutoff of 0.05, revealing that no gender effect is statistically significant on any of the tested skills or general outcomes. This indicates

that males and females would have the same performance levels in all fields, such as knowledge acquired, communicating, teamwork, leading, flexibility, self-control, analytical competencies, and project skills. The fact that there are few differences between gender groups may indicate a condition where the learning environment or techniques used to evaluate these areas are evenly balanced for men and women. In essence, it would thus appear that gender has little significance in influencing results for the dimensions under study, while both males and females perform about the same for the rest.

**Figure 4.23 Showing the Comparison of Male Vs Female Learning Outcomes
(Overall Learning Outcomes)**



4.5 LEARNING OUTCOMES AND LOCALITY

The tables from 4.24 to 4.34. represent the findings of an independent samples t-test comparing different aspects of learning outcomes of students between Rural and Urban populations. The analysis refers to classroom engagement, learning resources, assessment and feedback, and overall course satisfaction. Ultimately, locality, whether it is rural or urban, has a significant effect on the students' learning experience. Tables for each dimension are presented regarding mean scores, standard deviations, t-values,

and p-values that could explain whether or not the differences are statistically significant, leading to implications in educational practice.

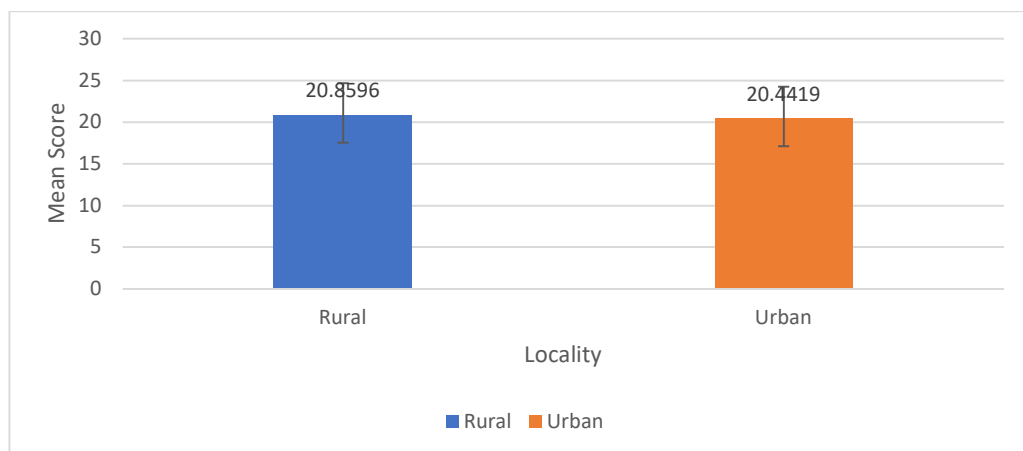
Hypothesis 3. There is no significant difference in Knowledge Acquisition between online and traditional learners, moderated by locality.

**Table-4.24. Learning Outcomes Comparison: Rural vs. Urban Students
(Knowledge Acquisition)**

Group	N	Mean	SD	t-value	p-value
Rural	342	20.8596	3.81357	1.405	0.161
Urban	258	20.4419	3.30995		

The t-value is 1.405 with a p-value of 0.161. This indicates that the difference in Knowledge Acquisition between Rural (M = 20.8596) and urban (M = 20.4419) students is not statistically significant. Both rural and urban students show a comparable level of Knowledge Acquisition, with no significant difference between them. The p-value exceeds the 0.05 significance threshold, suggesting that the location (rural vs. urban) does not play a significant role in classroom engagement.

Figure 4.24. Showing Comparison of Rural vs. Urban Students Learning Outcomes (Knowledge Acquisition)



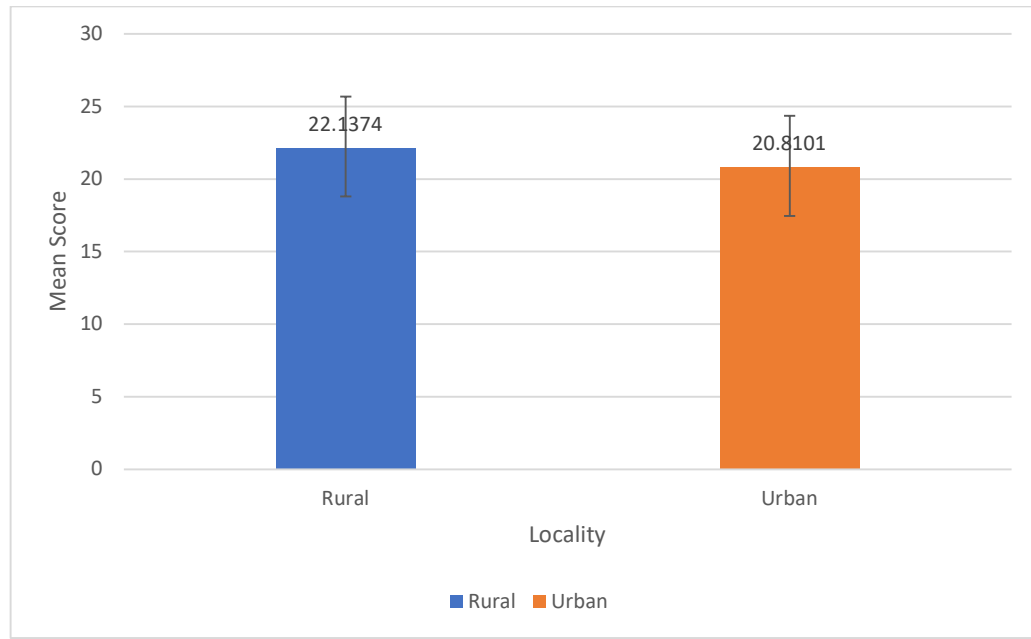
Hypothesis 3. There is no significant difference in Communication Skills between online and traditional learners, moderated by locality.

**Table-4.25. Learning Satisfaction Comparison: Rural vs. Urban Students
(Communication Skills)**

Group	N	Mean	SD	t-value	p-value
Rural	342	22.1374	3.54632	4.69	0.00
Urban	258	20.8101	3.34507		

Table 4.25 shows the Comparison of Communication Skills (D2) between Rural and Urban students. The mean score for Rural = 22.1374 was significantly higher than the mean score for Urban = 20.8101. The standard deviation for Rural, 3.54632, is only slightly higher than the corresponding figure for Urban, 3.34507. Scores for the former show a bit of variability more than the latter. The t-value is 4.69, and the p-value is 0.00. This tells us that the difference between the two groups in the sources used for learning is statistically significant. Since the p-value is substantially less than the conventional significance level of 0.05, it will be safe to conclude that the difference in scores is not by pure chance. There is a big difference in the perceived learning resources between Rural and Urban students. Generally, the reported higher learning resources for Rural students with a statistically significant t-value and p-value. The t-value is 4.69, which shows that the difference between the two groups is meaningful and not due to sampling error.

Figure 4.25. Showing Comparison of Rural vs. Urban Students Learning Outcomes (Communication Skills)



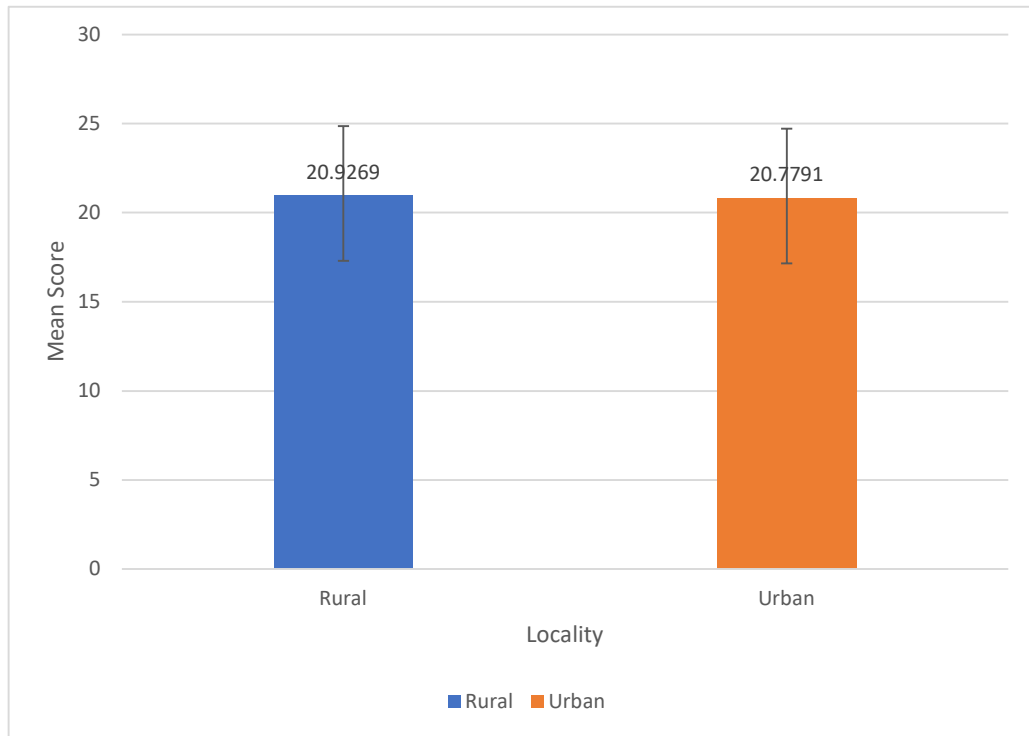
Hypothesis 3. There is no significant difference in Collaborative Skills between online and traditional learners, moderated by locality.

Table-4.26. Learning Outcomes Comparison: Rural vs. Urban Students (Collaborative Skills)

Group	N	Mean	SD	t-value	p-value
Rural	342	20.9269	3.93614	0.471	0.638
Urban	258	20.7791	3.63104		

The t-value is 0.471 with a p-value of 0.638. This shows that the difference between Rural (M = 20.9269) and Urban (M = 20.7791) students in terms of Collaborative Skills is not statistically significant. The collaborative skills experiences are similar for both Rural and Urban students. The p-value is high (greater than 0.05), which suggests that locality does not affect how students perceive or experience assessment and feedback.

Figure 4.26. Showing Comparison of Rural vs. Urban Students Learning Outcomes (Collaborative Skills)



Hypothesis 3. There is no significant difference in Ethical and Social Responsibility between online and traditional learners, moderated by locality.

Table-4.27. Learning Outcomes Comparison: Rural vs. Urban Students (Ethical and Social Responsibility)

Group	N	Mean	SD	t-value	p-value
Rural	342	19.5543	3.073513	7.68	0.00
Urban	258	21.5819	3.38238		

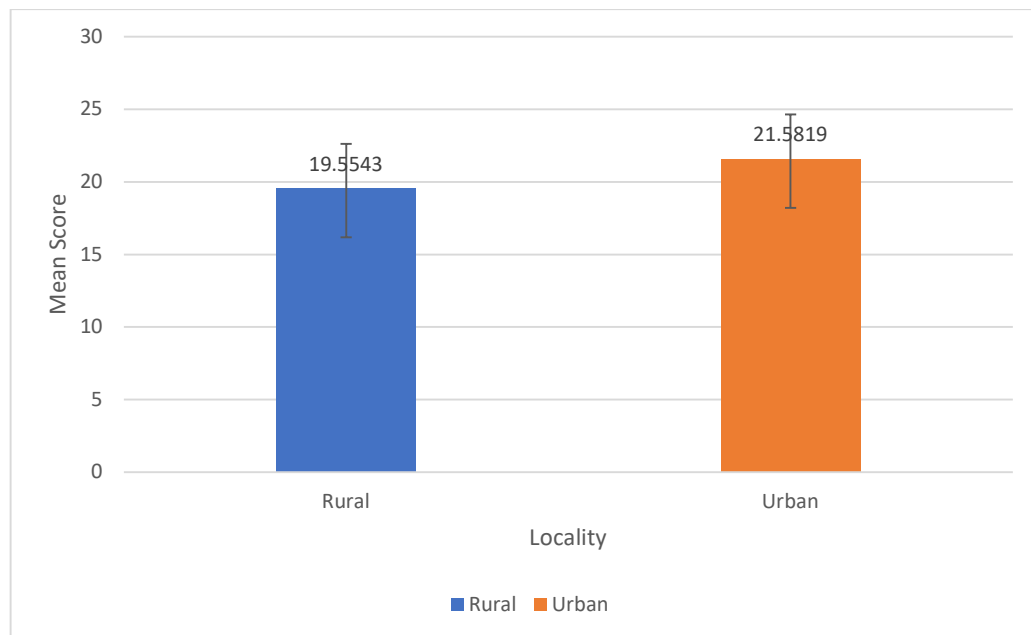
Table 4.27 depicts the Ethical and Social Responsibility (D4) between rural and urban students. The average score of Rural is 19.5543. The average score of Urban students is lower which is 21.5819. The standard deviation for Rural is 3.073513 and

that for Urban is 38238 which indicates a level of slight variation in the Ethical and Social Responsibility among the Rural group compared to the Urban group.

These values of $t = 7.68$ and $p\text{-value} = 0.00$ indicate that the difference is statistically significant. Since the calculated $p\text{-value}$ is much smaller than the conventional threshold of 0.05, we can confidently say that the observed difference in the Ethical and Social Responsibility between the two groups cannot be attributed to chance.

There is a statistically significant difference in technology use between Rural and Urban students. Overall, Urban students report more Ethical and Social Responsibility on average, and the large $t\text{-value}$ of 7.68 supports the conclusion that this difference is meaningful. The $p\text{-value}$ of 0.00 strongly confirms the statistical significance of this finding.

Figure 4.27. Showing Comparison of Rural vs. Urban Students Learning Outcomes (Ethical and Social Responsibility)



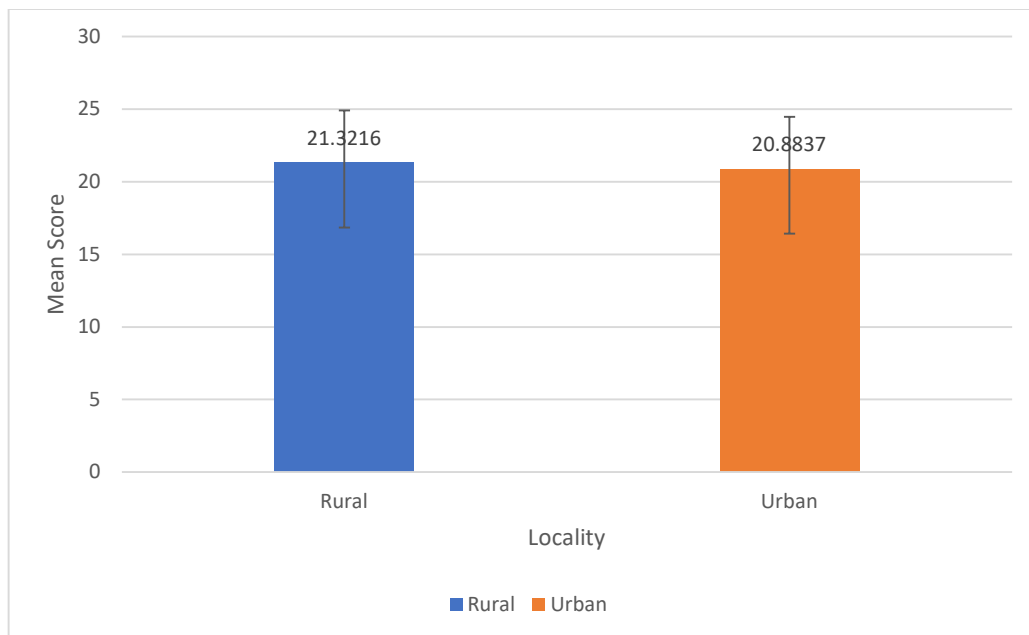
Hypothesis 3. There is no significant difference in Digital Literacy between online and traditional learners, moderated by locality.

**Table-4.28. Learning Outcomes Comparison: Rural vs. Urban Students
(Digital Literacy)**

Group	N	Mean	SD	t-value	p-value
Rural	342	21.3216	3.5997	1.329	0.184
Urban	258	20.8837	4.46539		

The outcome indicates that $t = 1.329$, $p = 0.184$. the course satisfaction of rural students is a bit higher than that of urban students: $M = 21.3216$ for the former and $M = 20.8837$ for the latter. The Digital Literacy have same for both groups since there is no significant variation. With a p-value of 0.184, the result is above the threshold, confirming that no significant differences in Digital Literacy exist between the two locality groups.

Figure 4.28 Showing Comparison of Rural vs. Urban Students Learning Outcomes (Digital Literacy)

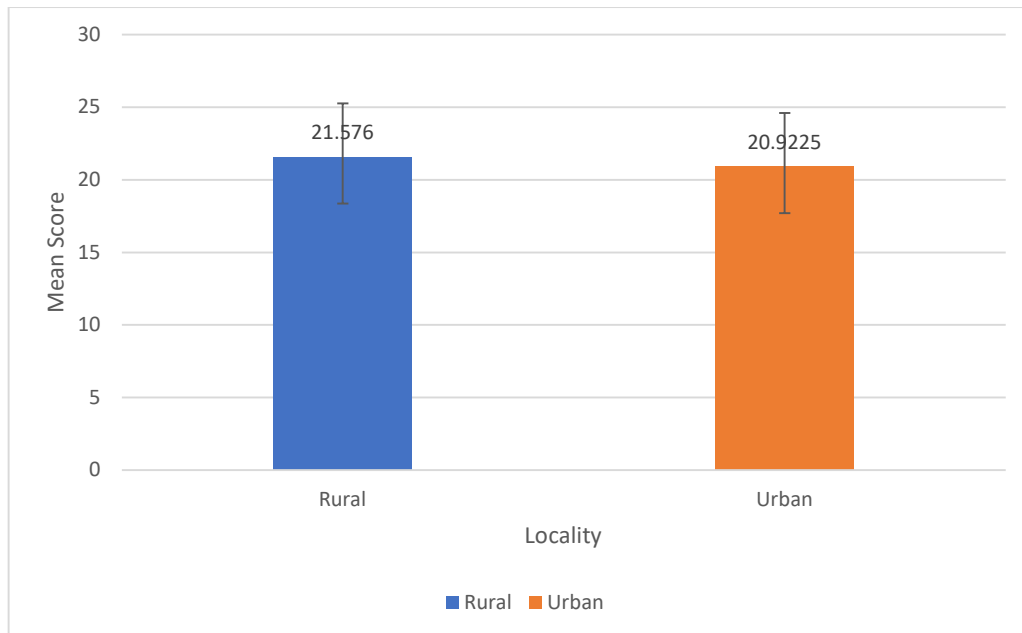


Hypothesis 3. There is no significant difference in Leadership Skills between online and traditional learners, moderated by locality.

**Table-4.29. Learning Outcomes Comparison: Rural vs. Urban Students
(Leadership Skills)**

Group	N	Mean	SD	t-value	p-value
Rural	342	21.576	3.68779	2.27	0.024
Urban	258	20.9225	3.2126		

Figure 4.29. Showing Comparison of Rural vs. Urban Students Learning Outcomes (Leadership Skills)



Hypothesis 3. There is no significant difference in Adaptability between online and traditional learners, moderated by locality.

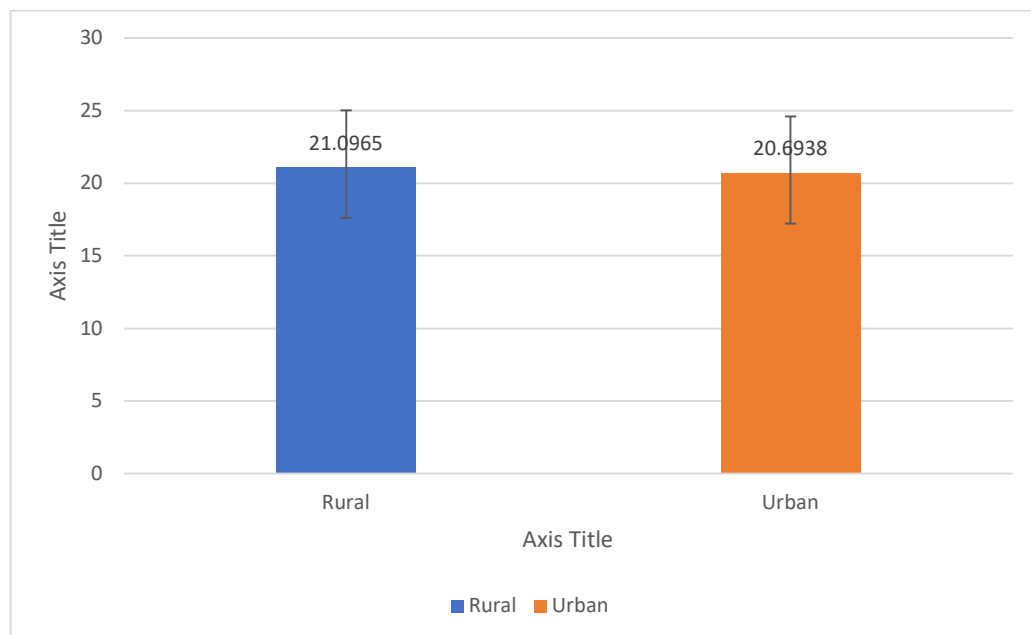
Table-4.30 Learning Outcomes Comparison: Rural vs. Urban (Adaptability)

Group	N	Mean	SD	t-value	p-value
Rural	342	21.0965	3.91846	1.307	0.192
Urban	258	20.6938	3.47689		

The t-value is 1.307 with a p-value of 0.192, indicating that there is no significant difference between Rural (M = 21.0965) and Urban (M = 20.6938) students regarding adaptability.

Scores for adaptability do not differ significantly between the two groups. Both Rural and Urban students have the same level of adaptability, as it has a non-significant p-value, that is, larger than 0.05.

Figure 4.30. Showing Comparison of Rural vs. Urban Students Learning Outcomes (Adaptability)



Hypothesis 3. There is no significant difference in Self-Discipline between online and traditional learners, moderated by locality.

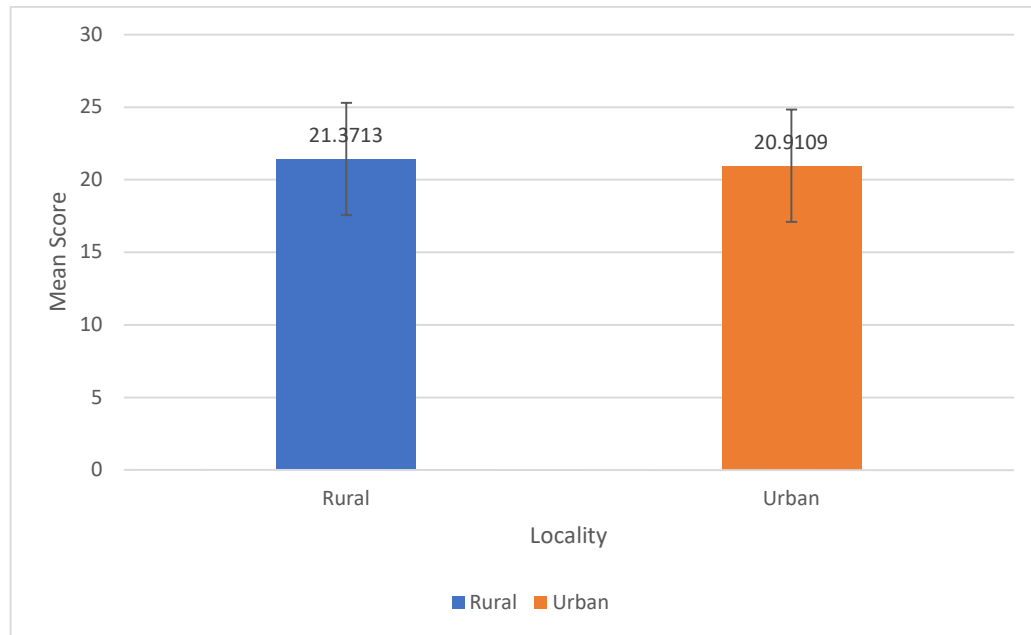
Table-4.31. Learning Outcomes Comparison: Rural vs. Urban Students (Self-Discipline)

Group	N	Mean	SD	t-value	p-value
Rural	342	21.3713	3.91472	1.443	0.15
Urban	258	20.9109	3.81118		

The t-value is 1.443 with a p-value of 0.150. This result shows that there is not a significant difference in self-discipline between Rural (M = 21.3713) and Urban (M = 20.9109) students.

Interpretation: Self-discipline levels are the same for each group, and with a p-value greater than 0.05, the locality has no significant impact on self-discipline.

Figure 4.31. Showing Comparison of Rural vs. Urban Students Learning Outcomes (Self- Discipline)



Hypothesis 3. There is no significant difference in Analytical Skills between online and traditional learners, moderated by locality.

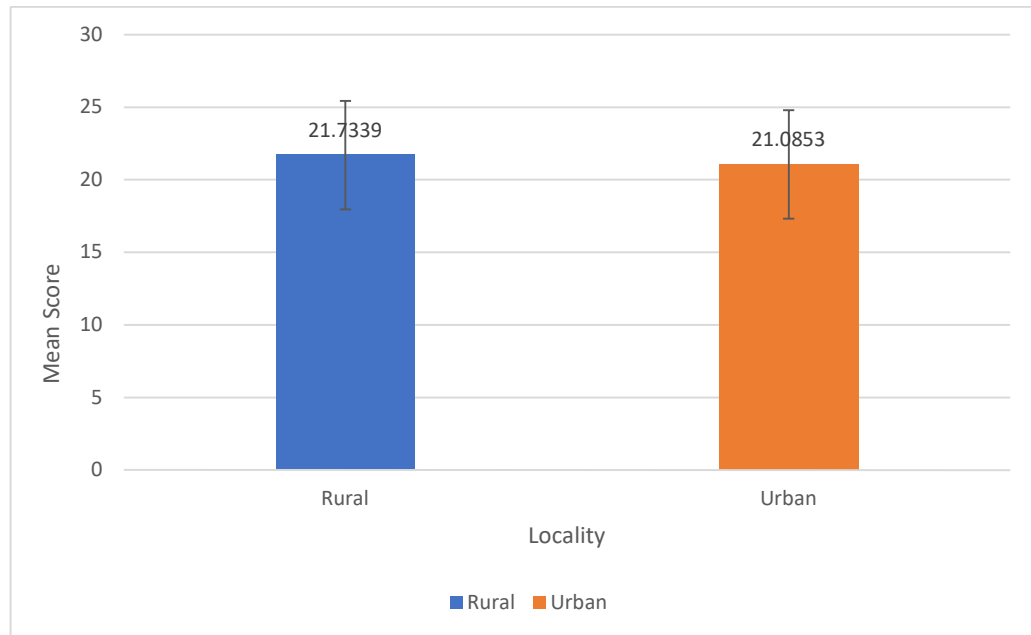
Table-4.32. Learning Outcomes Comparison: Rural vs. Urban Students (Analytical Skills)

Group	N	Mean	SD	t-value	p-value
Rural	342	21.7339	3.70416	2.105	0.036
Urban	258	21.0853	3.78		

The t-value is 2.105 with a p-value of 0.036. The difference in analytical skills between Rural (M = 21.7339) and Urban (M = 21.0853) students is statistically significant. Rural students report having slightly better analytical skills than their urban counterparts. Since the p-value is less than 0.05, this means that the difference is statistically significant, which might indicate that locality plays a role in the

development of analytical skills, with Rural reporting outperforming Urban in this dimension.

Figure 4.32. Showing Comparison of Rural vs. Urban Students Learning Outcomes (Analytical Skills)



Hypothesis 3. There is no significant difference in Project Skills between online and traditional learners, moderated by locality.

Table-4.33. Learning Outcomes Comparison: Rural vs. Urban Students (Project)

Group	N	Mean	SD	t-value	p-value
Rural	342	21.9152	3.64902	1.282	0.20
Urban	258	21.5409	3.37952		

The t-value is 1.282 and the p-value is 0.200 which shows no meaningful distinction exists between Rural (M = 21.9152) and Urban (M = 21.5409) students from their project work. Both classes are of similar strength in the case of project work as the p-value is more than .05, and locality does not significantly affect the output of the project work of the students.

Figure 4.33. Showing Comparison of Rural vs. Urban Students Learning Outcomes (Project)

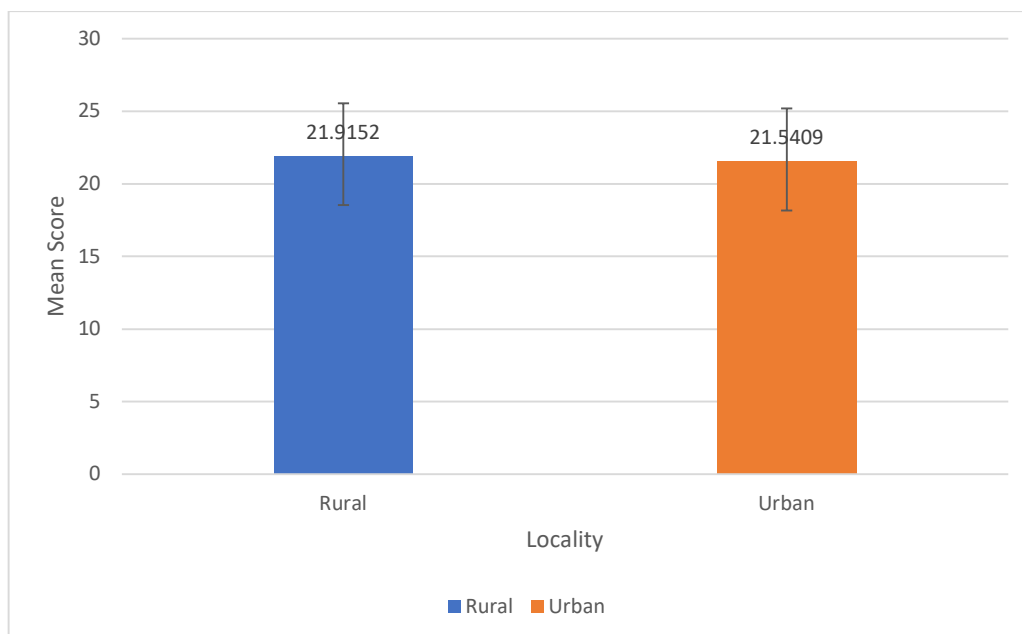


Table 4.34 Overall Learning Outcomes Comparison: Rural and Urban Students

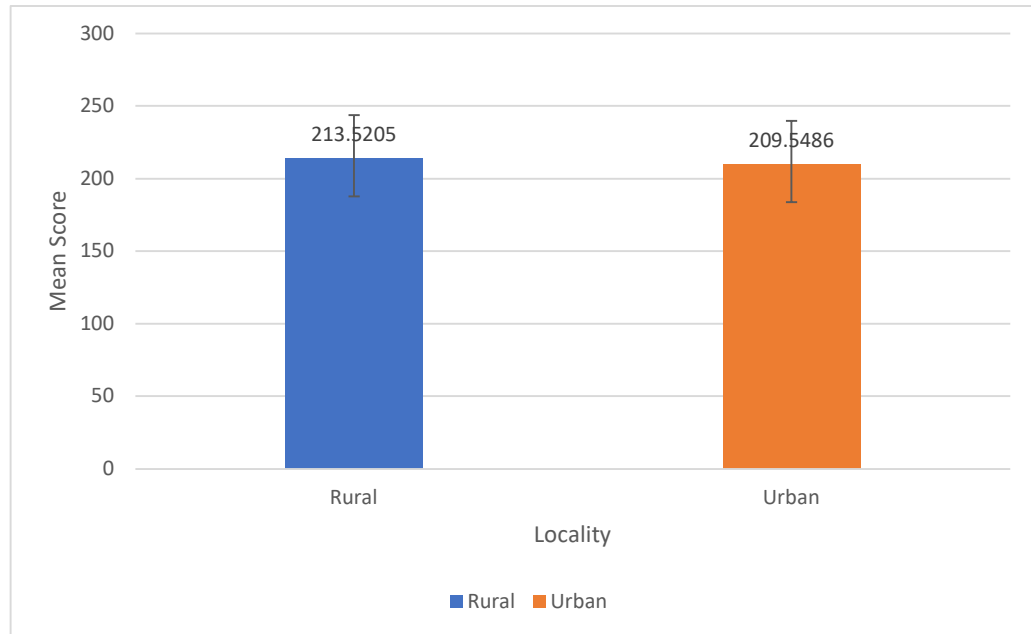
Group	N	Mean	SD	t-value	p-value
Rural	342	213.5205	30.2162	1.692	0.091
Urban	258	209.5486	25.8875		

The results show there is no significant difference in the overall learning outcome between rural ($M = 213.5205$) and urban students ($M = 209.5486$) indicating $t = 1.692$, $p = 0.091$. Overall learning outcomes don't have much of a difference across the dimensions for both Rural and Urban students. Although the overall learning outcome dimension has a slightly higher value for Rural students, the p-value of above 0.05 validates that the difference is not statistically significant.

In conclusion, Significant differences were observed in Leadership Skills and Analytical Skills, with Rural students outperforming Urban students in both dimensions. No significant differences were found in the majority of dimensions, such as Classroom Engagement, Learning Resources, Assessment & Feedback, Technology Usage, Course Satisfaction, Adaptability, Self-Discipline, and Project, indicating that Rural and Urban students perform similarly in these areas. Overall, Rural students

seem to have a slight edge in Leadership Skills and Analytical Skills, but for most other dimensions, there is no significant impact of locality on students' learning experiences and outcomes.

Figure 4.34. Showing Comparison of Rural vs. Urban Students Learning Outcomes (Overall Learning Outcomes)



4.6 DESCRIPTIVE ANALYSIS OF LEARNING SATISFACTION

It may be remembered that one of the objectives of the present study is to find the Learning satisfaction of Traditional and Online students and comparison of students' satisfaction based on Gender and Locality. The mean and Standard Deviation for all the dimensions of Students learning satisfaction has given in Table 4.35.

Table 4.35: Mean and Standard Deviation of Learning satisfaction among Traditional and online students

Dimension	Online Students' Mean	Online Students' SD	Traditional Students' Mean	Traditional Students' SD
Classroom Engagement	20.4533	3.20344	21.43	3.28549
Learning Resources	26.5033	3.53151	28.0233	4.34192
Assessment & Feedback	26.76	3.3436	25.09	4.42574
Technology Usage	23.2867	3.04336	22.9967	3.84525
Course Satisfaction	20.5267	2.95608	20.8367	3.97778
Overall Learning Satisfaction	117.53	12.70751	123.3767	17.05023

The data in Table 4.35. compares the mean scores and standard deviations of learning satisfaction dimensions between online and off-campus students. Classroom the mean score of off-campus students is higher at 21.43 compared to the mean score of online students at 20.45. However, the standard deviation for Traditional students is a little higher than that of online students: 3.29 against 3.20 indicating that the satisfaction regarding class engagement is more variable among Traditional students, which suggests that while on average Traditional students are more engaged in classroom activities, their experiences may differ much more widely, due to differences in scale and scope of interaction and participation in traditional in-class settings.

For learning resources, both groups report relatively high satisfaction, but Traditional students again have a higher mean score (28.02 vs. 26.50 for online students). Traditional students also have more varied responses, with a standard deviation of 4.34 as opposed to 3.53 for online students. This could indicate that learning resources, such as libraries and physical materials, are perceived by Traditional students as being more accessible or useful, although the experience of them varies much more.

Reporting a slightly higher score in satisfaction by online students than the satisfaction reported by Traditional students (26.76 vs. 25.09, respectively), standard deviations for both groups are fairly close (3.34 for online and 4.43 for Traditional students), but the mean difference suggests online students are more satisfied with the assessment and feedback they get. This could be an indication that there is more appropriate and immediate feedback from digital tools.

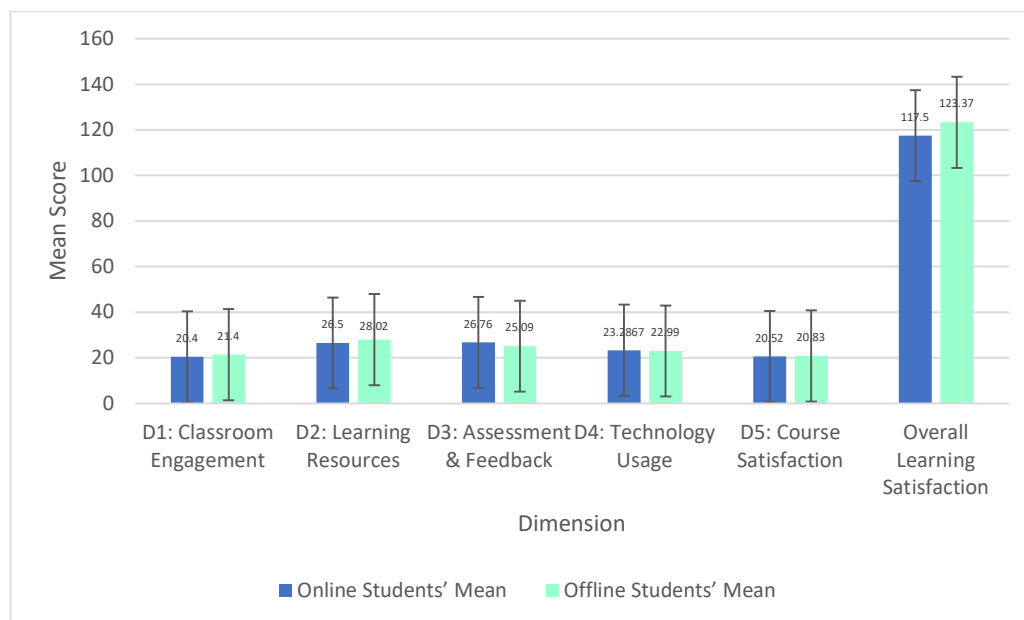
In terms of technology usage, online students receive a slightly higher mean score (23.29) while in comparison with that of Traditional students (22.99), though both have relatively low variability in the scores received. The smaller standard deviation for online students at 3.04 means consistency in their satisfaction regarding the technological aspect of the course. This is expected as course materials are inherently more technology-dependent, which would then result in a more integrated experience due to digital resources.

For course satisfaction, scores again are pretty similar for both groups: 20.53 for online students vs. 20.84 for Traditional students. Standard deviation for Traditional students (3.98) is significantly higher than that of the online students (2.96), which implies that even though courses were as satisfactory for both, Traditional students show more variation in their overall measurement of satisfaction probably because of course structure and teaching methods or personal experiences.

Finally, the overall student learning satisfaction for Traditional students is slightly higher compared to that of online students (123.38 for Traditional vs. 117.53 for online). Traditional students also exhibit greater variability in overall student satisfaction ($SD = 17.05$ for Traditional vs. 12.71 for online). This would imply that while Traditional students were slightly more satisfied with their studies as a whole, their experiences are the least homogeneous. Online students, by contrast, display a more consistent experience, with slightly lower overall satisfaction but less extreme variation in their satisfaction measures.

Traditional students reported generally higher satisfaction in nearly all dimensions, particularly classroom engagement, learning resources, and general learning satisfaction. However, their experiences varied much more as reflected by the greater standard deviations in most of the measured dimensions. Although these students, on average, tend to report lower satisfaction, there is higher consistency in levels of satisfaction across different dimensions. This may suggest that while online learning might not fulfill certain dimensions to the same extent as other methods, it provides a more stable and predictable experience for students.

Figure 4.35. Showing the comparison of Learning satisfaction of Online Vs Traditional students



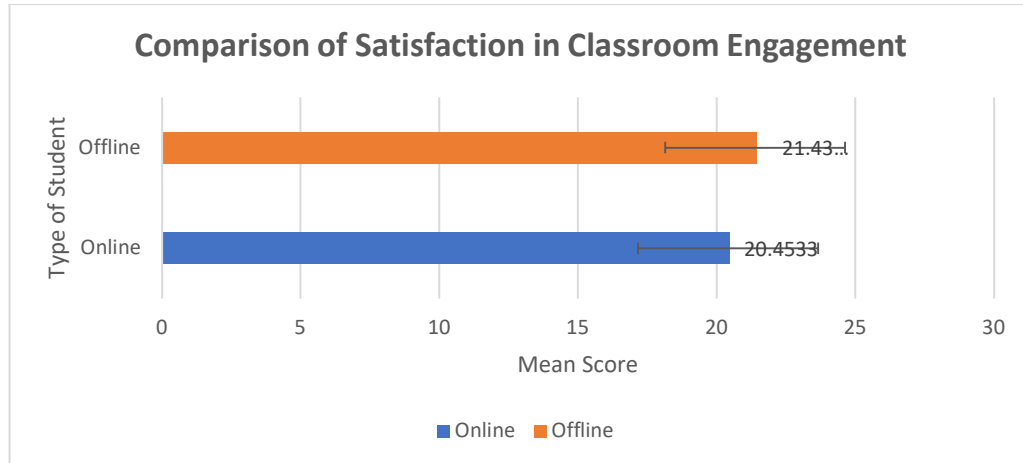
Hypothesis 4. There is no significant difference in satisfaction with Classroom Engagement between students in online and traditional learning modalities.

Table 4.36: Learning Satisfaction Comparison: Online vs. Traditional Students (Classroom Engagement)

Type of student	N	Mean	Std. Deviation	t-value	p-value
Online	300	20.4533	3.20344	-3.687	.000
Traditional	300	21.4300	3.28549		

In the dimension of Classroom Engagement, Online students reported a mean score of 20.45 (SD = 3.20), while Traditional students scored higher with a mean of 21.43 (SD = 3.29). The t-value of -3.687 and a p-value of 0.000 indicate a significant difference at the 0.01 level. This finding suggests that Traditional students experience higher levels of classroom engagement, likely due to the interactive elements of Traditional learning platforms that foster greater participation and involvement.

Figure 4.36 Showing the Comparison Online Vs Traditional Learning Satisfaction (Classroom Engagement)



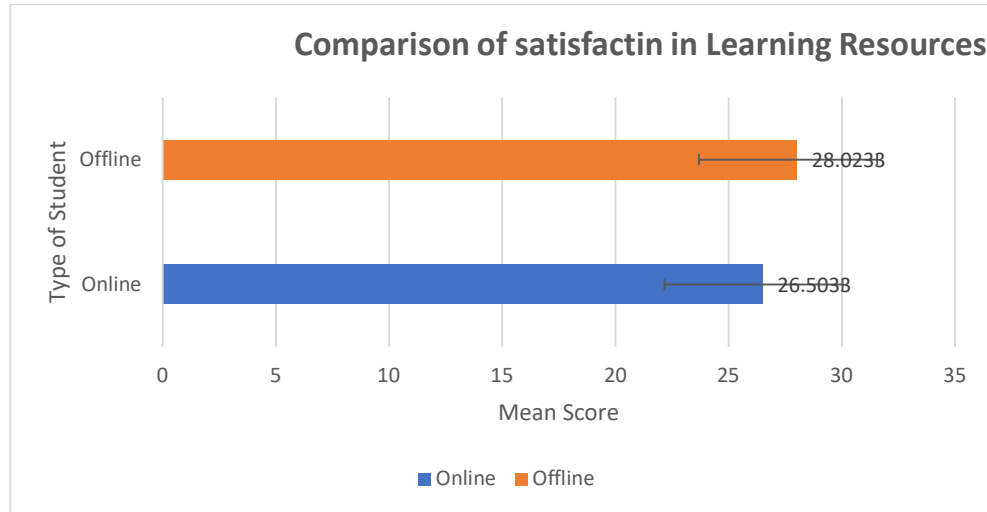
Hypothesis 4. There is no significant difference in satisfaction with Learning Resources between students in online and traditional learning modalities.

Table 4.37: Learning Satisfaction Comparison: Online vs. Traditional Students (Learning Resources)

Type of student	N	Mean	Std. Deviation	t-value	p-value
Online	300	26.5033	3.53151	-4.704	.000
Traditional	300	28.0233	4.34192		

Regarding Learning Resources, Online students had a mean score of 26.50 (SD = 3.53), compared to 28.02 (SD = 4.34) for Traditional students. The t-value of -4.704 and a p-value of 0.000 reveal a significant difference, highlighting that Traditional students have better access to diverse and comprehensive learning resources. This access likely enhances their overall learning experiences and outcomes, making Traditional modalities particularly beneficial in this regard.

Figure 4.37 Showing the Comparison Online Vs Traditional Learning Satisfaction (Learning Resources)



Hypothesis 4. There is no significant difference in satisfaction with Assessment and Feedback between students in online and traditional learning modalities.

Table 4.38: Learning Satisfaction Comparison: Online vs. Traditional Students (Assessment & Feedback)

Type of student	N	Mean	Std. Deviation	t-value	p-value
Online	300	28.09	4.43	4.153	.000
Traditional	300	26.76	3.34		

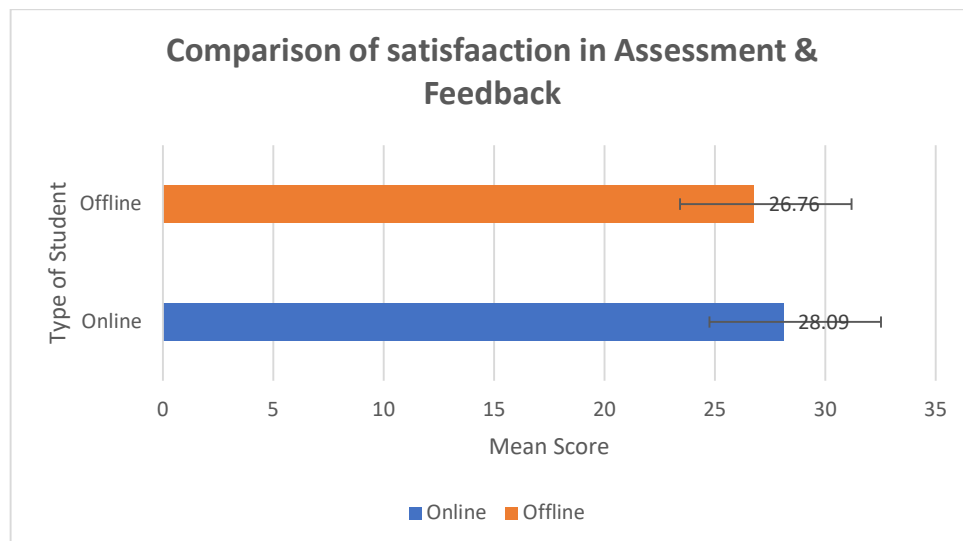
This table compares D3 (Assessment & Feedback) scores of assessments and feedback among online and Traditional students. The online students' score is 28.09 while that of Traditional students is 26.76. The standard deviation of online students is a high of 4.43, which is a whole number in contrast to Traditional students with an average of 3.34. This suggests that although the average score is higher for the online students, the spread of scores for the online students is greater. The scores for the Traditional students are more evenly distributed, with less spread. An independent samples t-test was used to check whether the difference in the scores on the assessment and feedback between these two groups was statistically significant. The calculated t-value is 4.153 while the associated p-value is 0.000. Since the p-value is much smaller

than the conventional threshold of 0.05, this therefore means that the difference between scores among online and Traditional students is statistically significant.

The analysis shows that assessment and feedback scores are relatively better for online students compared to Traditional students. A huge t-value of 4.153 indicates that the two groups are highly different, whereas a very small p-value of 0.000 confirms that there is no chance and it is statistically meaningful. It can be inferred that the online students' scores show greater variance (higher standard deviation), implying that, while some may rate their assessment and feedback experience as very positive, others might rate the same less positively. The Traditional students generally have a more uniform experience, indicated by the smaller standard deviation.

In conclusion, online students tend to have higher satisfaction with assessment and feedback compared to Traditional students. This difference is statistically significant, as shown by the t-test results. The higher variability in the scores of online students suggests that there may be differences in how various online courses or instructors handle assessment and feedback, leading to a wider range of experiences among students.

Figure 4.38 Showing the Comparison Online Vs Traditional Learning Satisfaction (Assessment & Feedback)



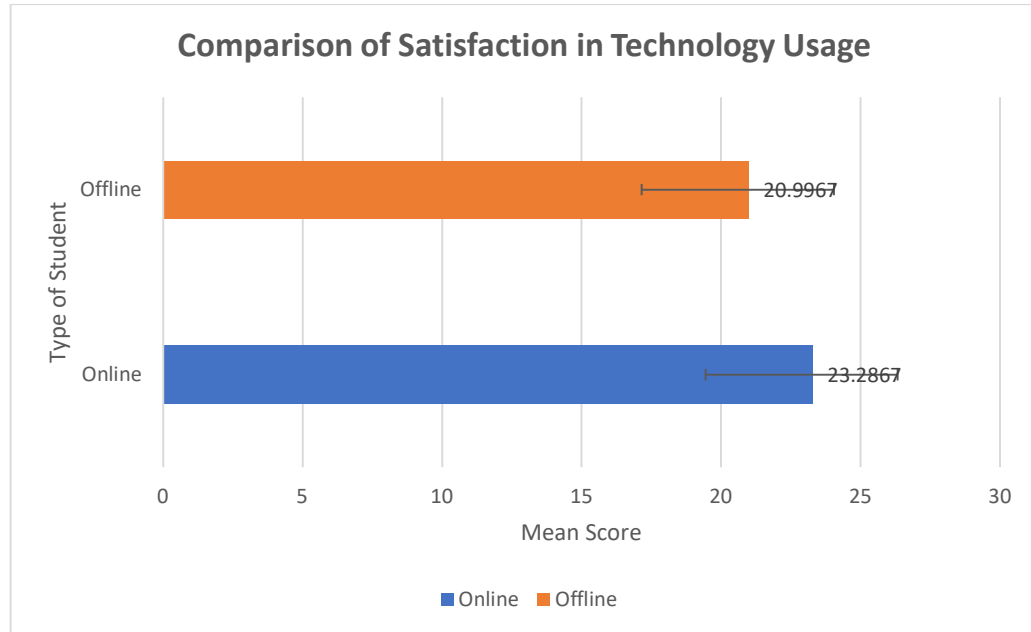
Hypothesis 4. There is no significant difference in satisfaction regarding Technology Usage between students in online and traditional learning modalities.

**Table 4.39: Learning Satisfaction Comparison: Online vs. Traditional Students
(Technology Usage)**

Type of student	N	Mean	Std. Deviation	t-value	p-value
Online	300	23.2867	3.04336	8.10	0.000
Traditional	300	20.9967	3.84525		

Table 4.39. Shows a comparison of Online and Traditional students in relation to their technology usage. Here the mean score for online students is at 23.29, while the mean for Traditional students stands at 20.99. The standard deviation for online students stands at 3.04, which is slightly lower than that recorded for Traditional students, at 3.85, but while both groups have some variance in technology usage, it has more uniform scores. The t-value of 8.10 and the p-value of 0.000 clearly show that the difference between the two groups was statistically significant. Indeed, since the p-value is so much smaller than the typical threshold of 0.05, we can confidently conclude that online students report more technology usage compared to Traditional students. The t-test results confirmed that there is indeed a statistically significant difference between the technology usage of online and Traditional students. This is not due to chance since the t-value is a substantial one. In other words, technology is more utilized by online students probably in their educational environment.

Figure 4.39 Showing the Comparison Online Vs Traditional Learning Satisfaction (Technology Usage)



Hypothesis 4. There is no significant difference in overall Course Satisfaction between students in online and traditional learning modalities.

Table 4.40: Learning Satisfaction Comparison: Online vs. Traditional Students (Course Satisfaction)

Type of student	N	Mean	Std. Deviation	t-value	p-value
Online	300	20.5267	2.95608	-1.083	.279
Traditional	300	20.8367	3.97778		

In terms of Course Satisfaction, Online students scored 20.53 (SD = 2.96), while Traditional students had a mean score of 20.84 (SD = 3.98). The t-value of -1.083 and p-value of 0.279 indicate that this difference is not significant. Both groups exhibit similar levels of satisfaction with their courses, suggesting that course content may be equally engaging across modalities, irrespective of the learning environment.

Figure 4.40 Showing the Comparison Online Vs Traditional Learning Satisfaction (Course Satisfaction)

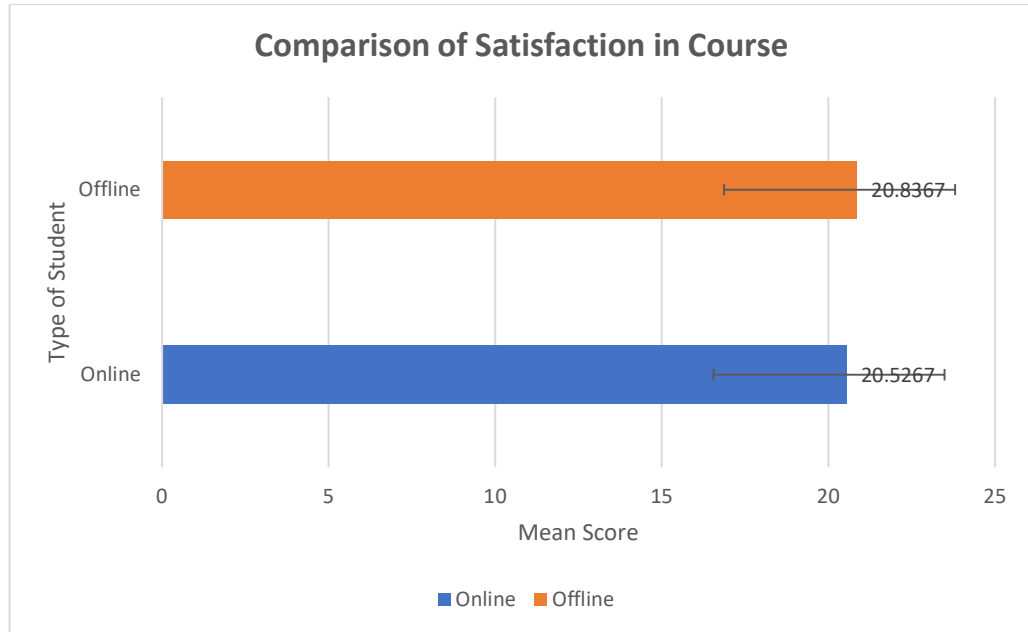


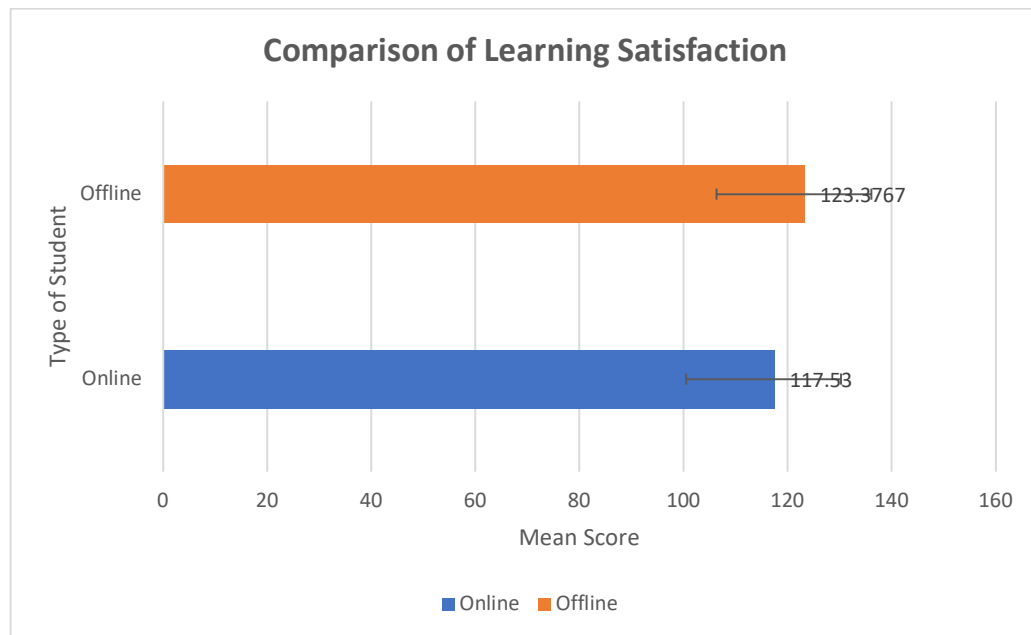
Table 4.41: Learning Satisfaction Comparison: Online vs. Traditional Students (Overall Learning Satisfaction)

Type of student	N	Mean	Std. Deviation	t-value	p-value
Online	300	117.5300	12.70751	-4.762	.000
Traditional	300	123.3767	17.05023		

Lastly, the analysis of Overall Learning Satisfaction reveals that Online students scored 117.53 (SD = 12.71), while Traditional students achieved a mean of 123.38 (SD = 17.05). The t-value of -4.762 and a p-value of 0.000 show a significant difference at the 0.01 level, reinforcing the notion that Traditional students report higher overall satisfaction. This increase in satisfaction is likely influenced by factors such as engagement, access to resources, and effective feedback mechanisms. In conclusion, the analysis reveals significant differences between Online and Traditional students in several dimensions, notably in Classroom Engagement, Learning Resources, Assessment & Feedback, Technology Usage, and Overall Learning Satisfaction. Traditional students consistently report higher satisfaction levels across

these areas, indicating that the Traditional learning environment offers advantages in engagement and resource accessibility. However, course satisfaction remains comparable between both modalities, suggesting that Traditional learning environments may benefit from adopting practices seen in Traditional education to enhance overall student satisfaction.

Figure 4.41 Showing the Comparison Online Vs Traditional Learning Satisfaction (Overall Learning Satisfaction)



4.7 LEARNING SATISFACTION AND GENDER

This section explores the differences in learning satisfaction between male and female students across various competencies. A t-test was applied to compare the groups. The analysis aims to identify any significant disparities in performance and to understand how gender may influence educational achievements. In this section, the analysis of gender differences in learning satisfaction across various dimensions is presented. The dimensions examined include Classroom Engagement, Learning Resources, Assessment & Feedback, Technology Usage, Course Satisfaction, and Overall Learning Satisfaction. The analysis is based on the mean, standard deviation, t-value, and p-value for both male and female students. Dimension-wise analysis

concerning gender on learning satisfaction among students is presented in Table 4.42 to Table 4.47.

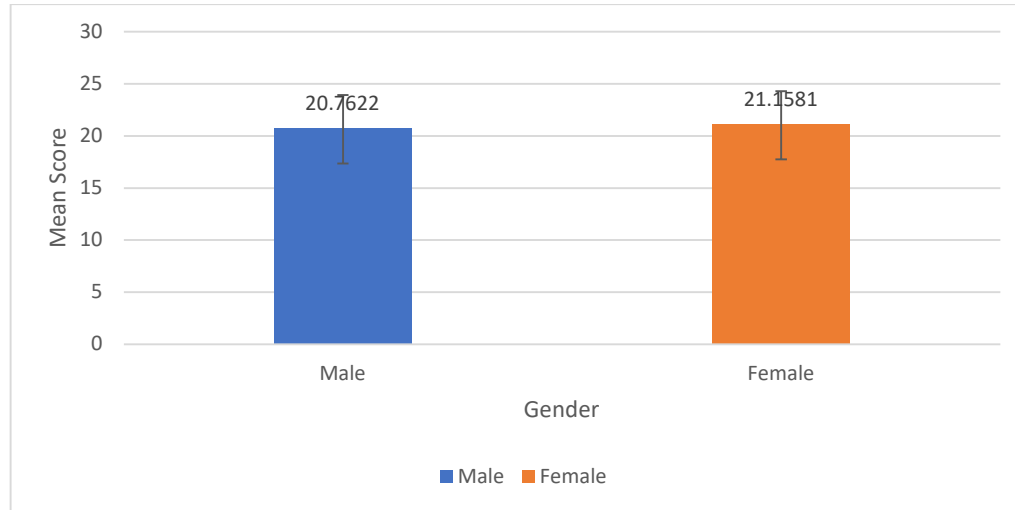
Hypothesis 5. There is no significant difference in satisfaction with Classroom Engagement between online and traditional learners, moderated by gender.

**Table 4.42: Learning Satisfaction Comparison: Male vs. Female Students
(Classroom Engagement)**

Gender	N	Mean	Std. Deviation	t-value	p-value
Male	328	20.7622	3.14941	-1.474	0.141
Female	272	21.1581	3.42134		

The mean score of male students is 20.7622 while females report a slightly higher mean at 21.1581. The standard deviation for both groups is 3.14941 and 3.42134, respectively, which shows that the variability of responses is the same for both genders. The t-value for this comparison is -1.474, and the p-value is 0.141, which is much higher than the threshold of 0.05 that would determine statistical significance; thus, it means that there is no significant difference between male and female students in terms of classroom engagement. Both genders have reported quite similar levels of engagement in the classroom, and hence the observed differences in means are not statistically meaningful.

Figure 4.42 Showing the Comparison of Male Vs Female Learning Satisfaction (Classroom Engagement)



Hypothesis 5. There is no significant difference in satisfaction with Learning Resources between online and traditional learners, moderated by gender.

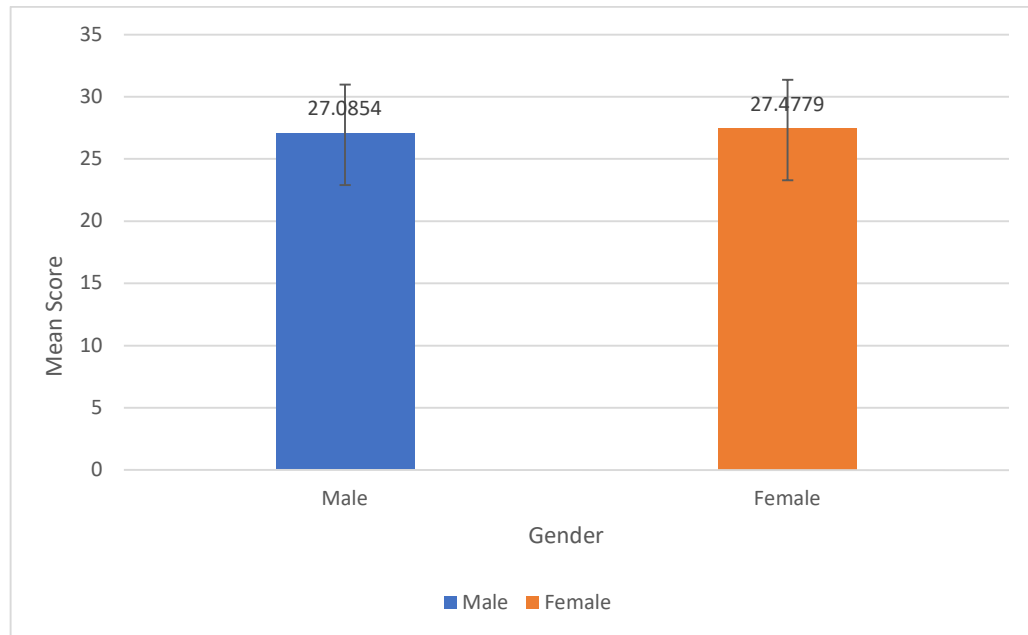
Table 4.43: Learning Satisfaction Comparison: Male vs. Female Students (Learning Resources)

Gender	N	Mean	Std. Deviation	t-value	p-value
Male	328	27.0854	3.88269	-1.189	0.235
Female	272	27.4779	4.19095		

If satisfaction with learning resources is considered, the mean score came out to be 27.0854 for males, while it was more for females with a mean of 27.4779. Both showed standard deviations with 3.88269 for males and 4.19095 for females; meaning that the variability in the two sets of responses is similar. The t-value for the analysis came out to be -1.189 with a p-value of 0.235. Since the p-value is above 0.05, it means that the difference between the levels of satisfaction of male and female students concerning learning resources is not statistically significant. As a result, it can be concluded that male and female students are balanced in terms of satisfaction with the

learning resources, and gender features do not play an important role on their own in this regard.

Figure 4.43 Showing the Comparison of Male Vs Female Learning Satisfaction (Learning Resources)



Hypothesis 5. There is no significant difference in satisfaction with Assessment and Feedback between online and traditional learners, moderated by gender

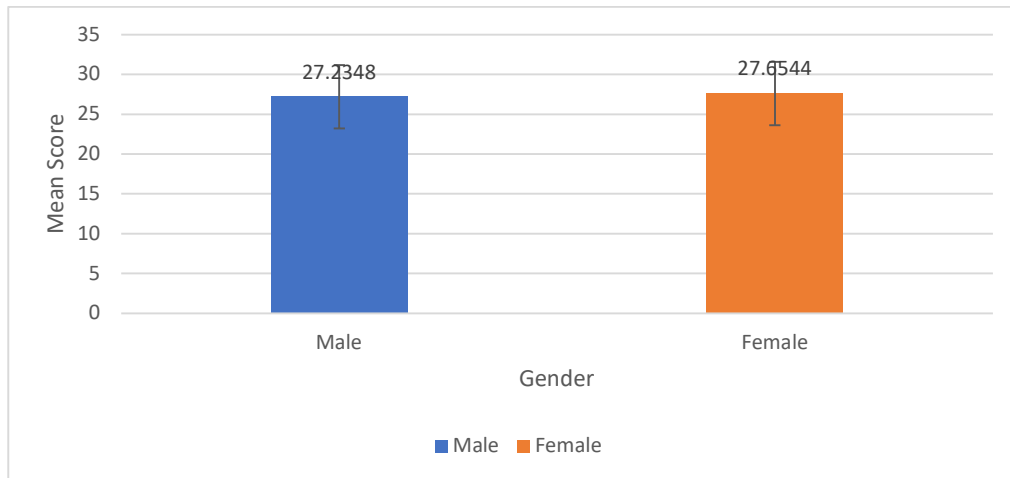
Table-4.44. Learning Satisfaction Comparison: Male vs. Female Students (Assessment & Feedback)

Gender	N	Mean	Std. Deviation	t-value	p-value
Male	328	27.2348	3.92316	-1.288	0.198
Female	272	27.6544	4.03194		

For assessment and feedback, the male students' mean score is 27.2348, while female students report a slightly higher mean of 27.6544. The standard deviations are 3.92316 for males and 4.03194 for females, showing a similar spread of responses for both genders. The t-value is -1.288, and the p-value is 0.198, which is above the 0.05 significance level. This indicates that there is no meaningful gender disparity in the assessment and feedback perception. Both male and female students report comparable

levels of satisfaction regarding this dimension, and the slight difference in means is not statistically significant.

Figure 4.44 Showing the Comparison of Male Vs Female Learning Satisfaction (Assessment & Feedback)



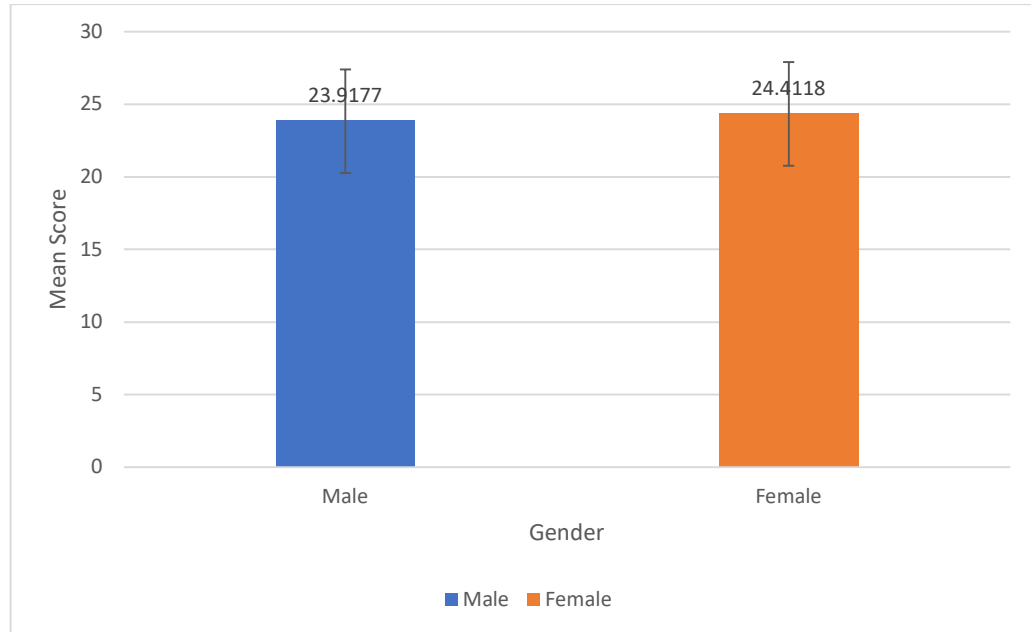
Hypothesis 5. There is no significant difference in satisfaction with Technology Usage between online and traditional learners, moderated by gender

Table-4.45. Learning Satisfaction Comparison: Male vs. Female Students (Technology Usage)

Gender	N	Mean	Std. Deviation	t-value	p-value
Male	328	23.9177	3.49345	-1.691	0.091
Female	272	24.4118	3.64569		

For technology usage, males have a mean of 23.9177, whereas females reported a mean of 24.4118. The standard deviations are 3.49345 for males and 3.64569 for females, which are fairly similar. The t-value is -1.691, and the p-value is 0.091, which is close to 0.05 but still above the threshold for significance. While the p-value suggests a marginal difference between the genders, it does not reach statistical significance. Although females report slightly higher satisfaction with technology usage, the difference is not substantial enough to conclude a significant gender-based disparity in this area.

**Figure 4.45 Showing the Comparison of Male Vs Female Learning Satisfaction
(Technology Usage)**



Hypothesis 5. There is no significant difference in overall Course Satisfaction between online and traditional learners, moderated by gender

**Table-4.46. Learning Satisfaction Comparison: Male vs. Female Students
(Course Satisfaction)**

Gender	N	Mean	Std. Deviation	t-value	p-value
Male	328	20.6646	3.40763	-0.131	0.896
Female	272	20.7022	3.62488		

For course satisfaction, the mean score for the male population is 20.6646, and the female participants have a very similar mean score of 20.7022. The standard deviations for both genders are also comparable, with 3.40763 for males and 3.62488 for females. The t-value is -0.131, and the p-value is 0.896, which exceeds the 0.05 threshold. This suggests that there is no significant difference in course satisfaction for male versus female students. Students from both genders have virtually the same

content and structure of the course in terms of satisfaction levels, and gender does not have a bearing on any variations in satisfaction levels regarding this dimension.

Figure 4.46 Showing the Comparison of Male Vs Female Learning Satisfaction (Course Satisfaction)

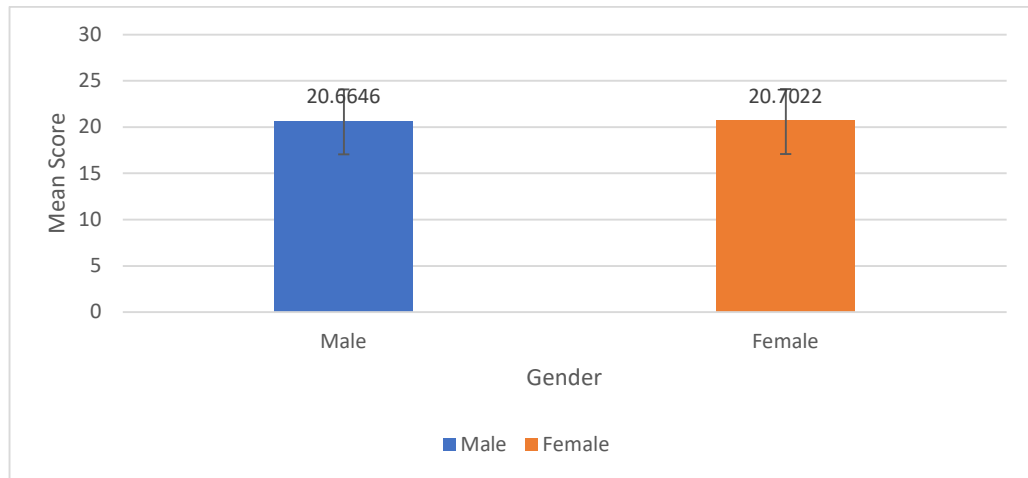


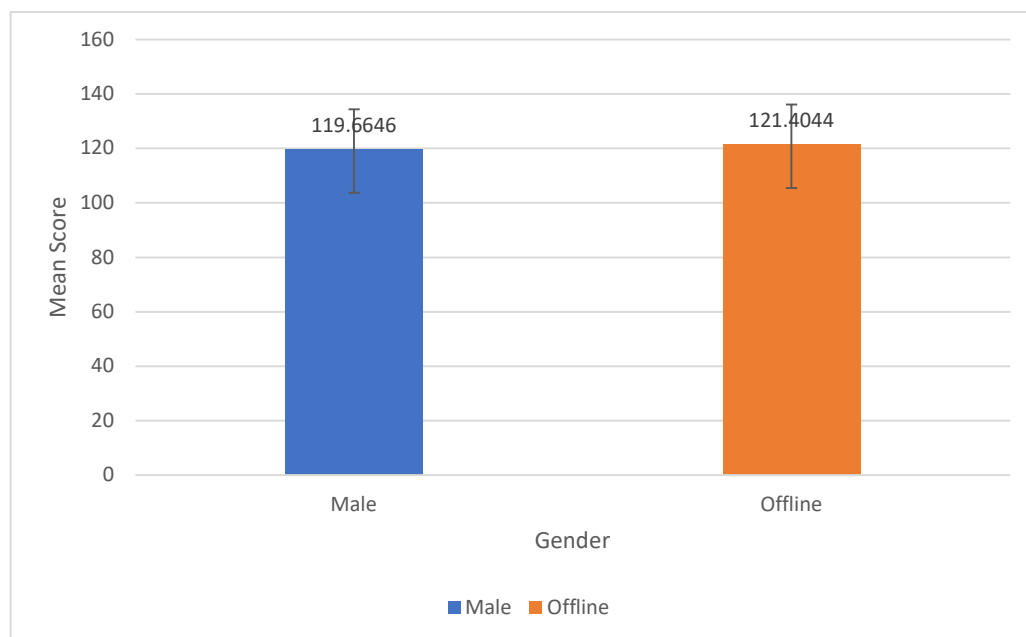
Table-4.47. Overall Learning Satisfaction Comparison: Male vs. Female Students

Gender	N	Mean	Std. Deviation	t-value	p-value
Male	328	119.6646	14.67373	-1.387	0.166
Female	272	121.4044	16.01124		

In terms of overall learning satisfaction, male participants report a mean score of 119.6646, while female participants have a slightly higher mean score of 121.4044. The standard deviations for males and females are 14.67373 and 16.01124, respectively, indicating similar variability in overall satisfaction scores between the two groups. In this test, the t-value is found to be -1.387 and the p-value is 0.166; this value is far greater than 0.05, which means there is no significant difference in overall satisfaction as between male and female students. Though the mean scores are different, the p-value suggests that this is not statistically significant, and the two genders have satisfactions levels on their learning experience as well.

The analysis of male and female differences in learning satisfaction over the various dimensions suggests that none of these areas or areas of consideration show any discernible gender differences. The p-values for all the dimensions, such as classroom engagement, learning resources, assessment & feedback, technology usage, course satisfaction, and overall learning satisfaction, are more than 0.05 threshold for statistical significance. Minor mean differences are noticed among scores based on gender, but such variations are not big enough to be labeled statistically significant. It is therefore valid to conclude that gender plays no notable role in the overall learning satisfaction of students in this research study. The students' respective males and females show a similar level of satisfaction in all aspects, and both genders perceive the learning experiences similarly.

Figure 4.47 Showing the Comparison of Male Vs Female Learning Satisfaction (Overall Learning Satisfaction)



4.8 LEARNING SATISFACTION AND LOCALITY

The objective of this analysis is to draw a comparison between Rural and Urban students' learning satisfaction across the various dimensions of the educational experience. With data drawn from both groups, this analysis compares five key dimensions of learning satisfaction-Classroom Engagement, Learning Resources, Assessment & Feedback, Technology Usage, and Course Satisfaction. An overall

learning satisfaction score is also calculated to check whether students' learning experience differs significantly based on locality. Independent samples t-tests have been employed to analyze whether some of these differences were statistically important, concentrating specifically on how differences in locality are related to the relative perceptions of Rural and Urban students about aspects of their learning environment. The findings aim to provide insight into how factors such as locality may affect learning satisfaction and indicate areas in which improvements may be necessary for both populations of Rural and Urban students.

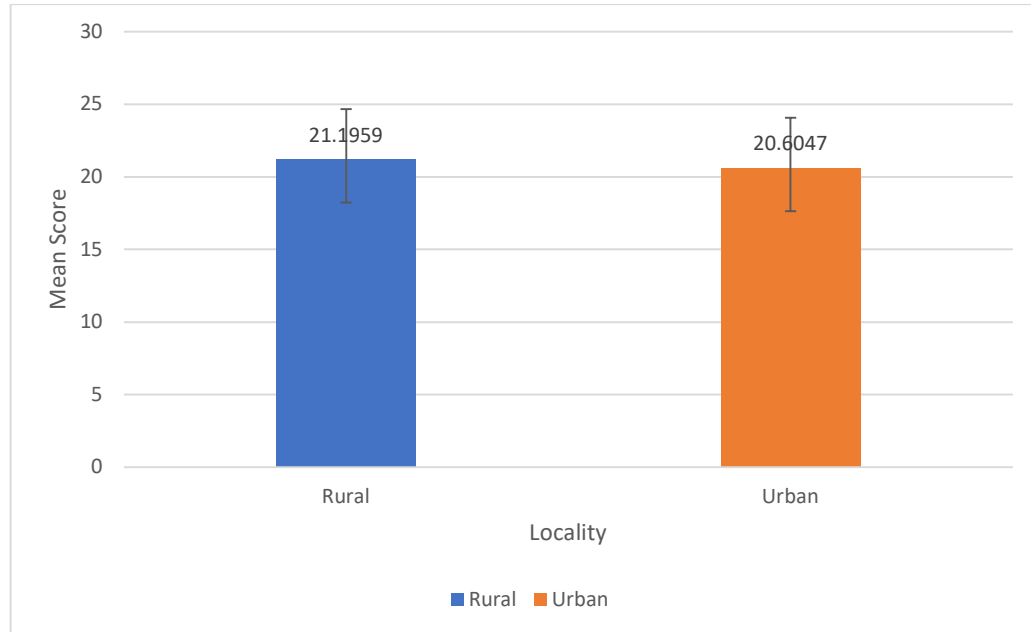
Hypothesis 6. There is no significant difference in satisfaction with Classroom Engagement between online and traditional learners, moderated by locality.

**Table 4.48: Learning Satisfaction Comparison: Rural vs. Urban Students
(Classroom Engagement)**

Locality	N	Mean	SD	t-value	p-value
Rural	342	21.1959	3.47841	2.194	0.029
Urban	258	20.6047	2.96653		

The mean score of Rural students (21.1959) is a bit greater than for Urban students (20.6047) and the t-value is 2.194 with a p-value of 0.029. Since the p-value is below 0.05 it indicates a statistically significant gap between the two types, namely Rural and Urban students, in classroom engagement.

Figure 4.48. Showing Comparison of Rural vs. Urban Students Learning Satisfaction (Classroom Engagement)



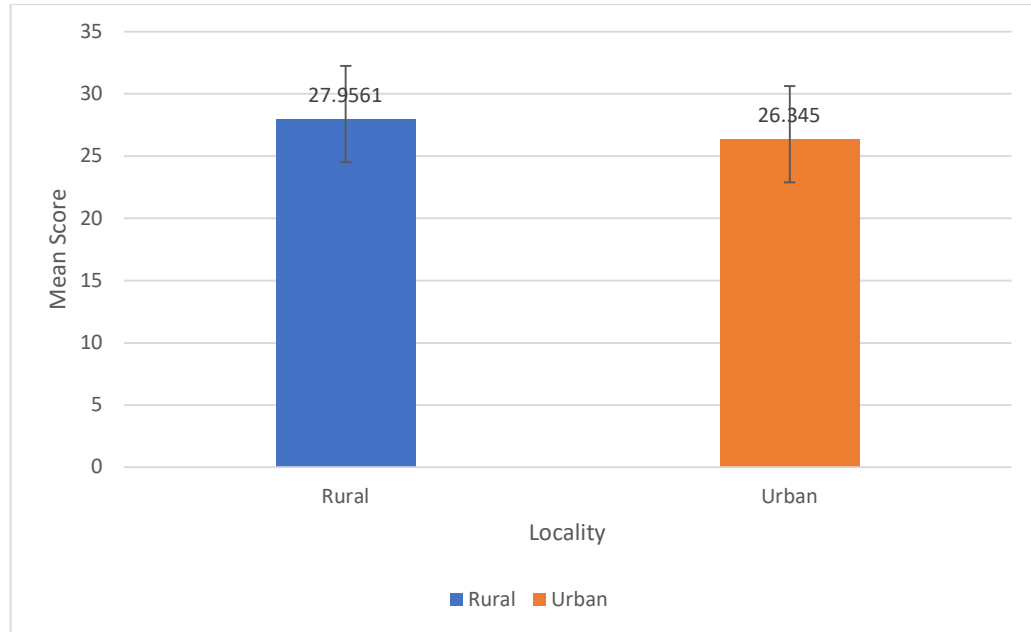
Hypothesis 6. There is no significant difference in satisfaction with Learning Resources between online and traditional learners, moderated by locality.

Table 4.49: Learning satisfaction Comparison: Rural vs. Urban Students (Learning Resources)

Locality	N	Mean	SD	t-value	p-value
Rural	342	27.9561	4.2895	4.946	0.000
Urban	258	26.345	3.44851		

Rural students scored higher than Urban, with mean scores of 27.9561 as compared to 26.3450 for Urban, and a t-value of 4.946 and a p-value of 0.000, which means that Rural students report more favorable access to or satisfaction with learning resources.

Figure 4.49. Showing Comparison of Rural vs. Urban Students Learning Satisfaction (Learning Resources)



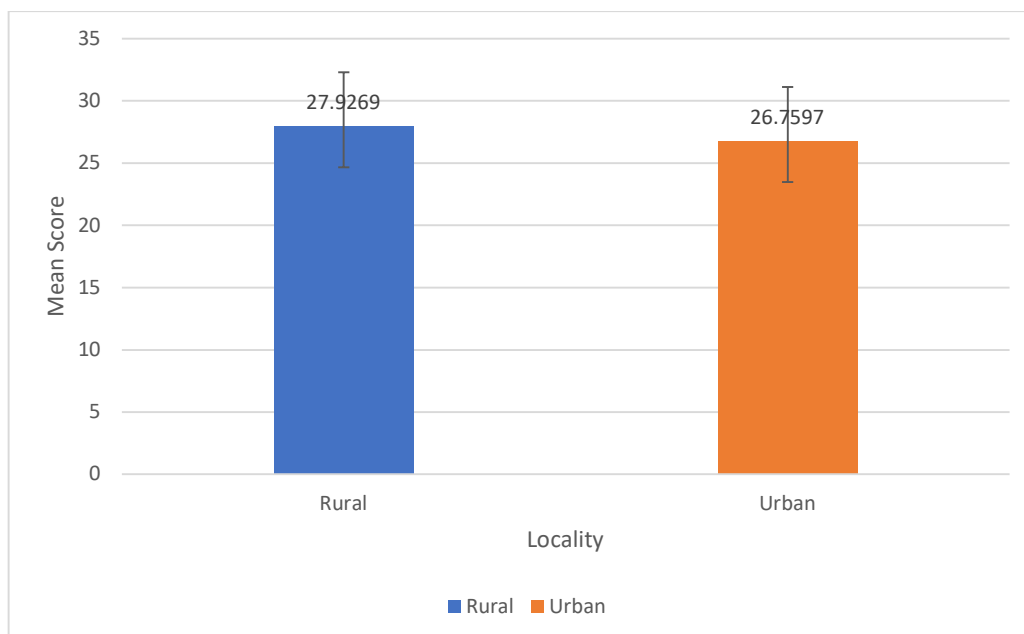
Hypothesis 6. There is no significant difference in satisfaction with Assessment and Feedback between online and traditional learners, moderated by locality.

Table 4.50: Learning Satisfaction Comparison: Rural vs. Urban Students (Assessment & Feedback)

Locality	N	Mean	SD	t-value	p-value
Rural	342	27.9269	4.37574	3.596	0.000
Urban	258	26.7597	3.26227		

The mean score for Rural students is 27.9269, and for Urban students is 26.7597. The t-value of 3.596 and the p-value of 0.000 shows that the difference is significant, and thus, the assessment and feedback process is more satisfactory for Rural students.

Figure 4.50. Showing Comparison of Rural vs. Urban Students Learning Satisfaction (Assessment & Feedback)



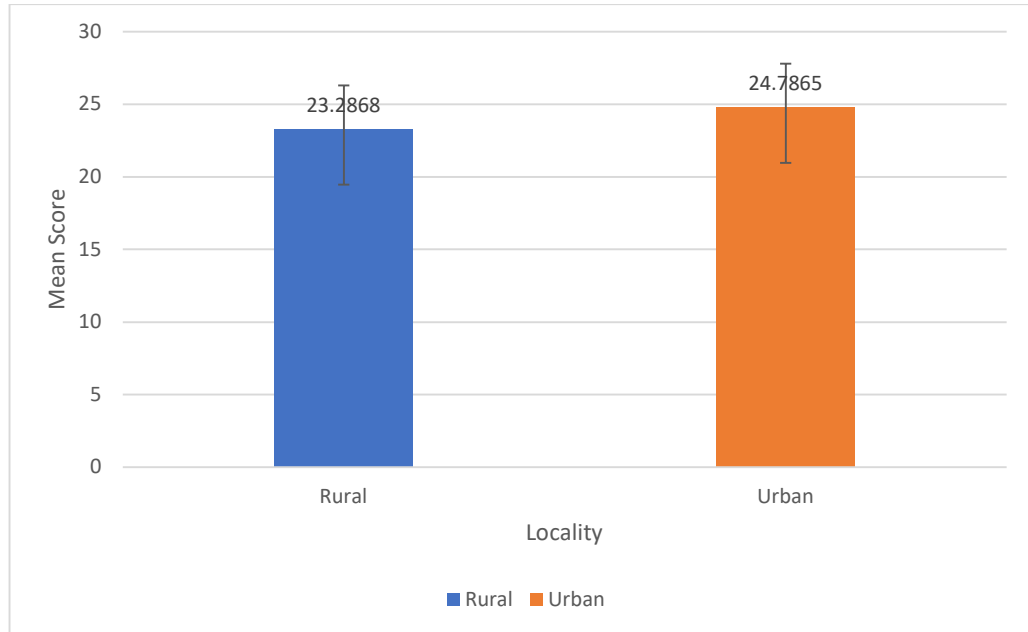
Hypothesis 6. There is no significant difference in satisfaction with Technology Usage between online and traditional learners, moderated by locality.

Table-4.51: Learning Satisfaction Comparison: Rural vs. Urban Students (Technology Usage)

Locality	N	Mean	SD	t-value	p-value
Rural	342	23.2868	3.01021	5.206	0.00
Urban	258	24.7865	3.81747		

Rural students have a higher mean of 23.2868 compared with the Urban students at 23.2868, with a t-value of 5.206 and a p-value of 0.000. This suggests there is indeed a significant difference in technology usage satisfaction where the satisfaction for Rural students is greater.

Figure 4.51. Showing Comparison of Rural vs. Urban Students Learning Satisfaction (Technology Usage)



Hypothesis 6. There is no significant difference in overall Course Satisfaction between online and traditional learners, moderated by locality.

**Table 4.52: Learning satisfaction: Rural vs. Urban Students
(Course Satisfaction)**

Locality	N	Mean	SD	t-value	p-value
Rural	342	20.9415	4.00324	2.097	0.036
Urban	258	20.3372	2.67549		

There are significant differences in course satisfaction, with a mean score of 20.9415 for Rural and 20.3372 for Urban students. The t-value of 2.097 and p-value of 0.036 indicate that a difference in course satisfaction is statistically significant.

Figure 4.52. Showing Comparison of Rural vs. Urban Students Learning Satisfaction (Course Satisfaction)

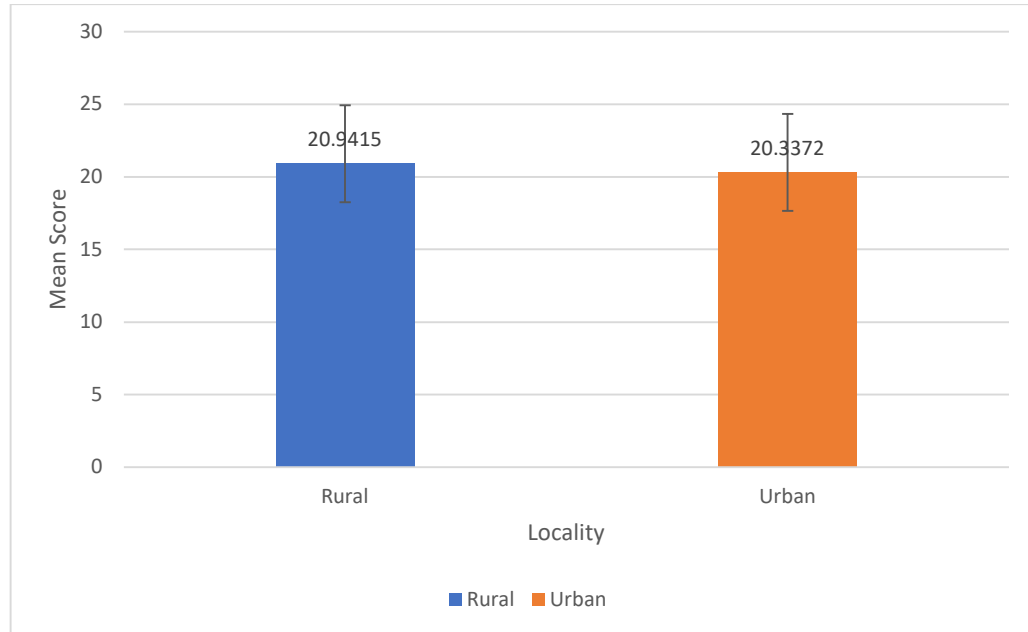
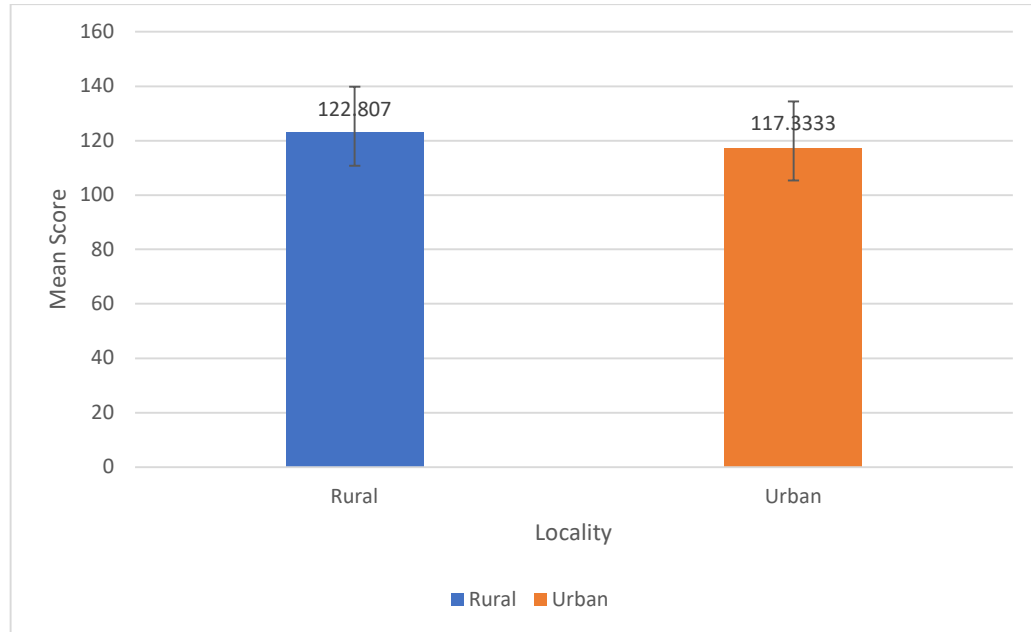


Table 4.53: Learning Outcomes Comparison: Rural vs. Urban Students (Overall Learning Satisfaction)

Locality	N	Mean	SD	t-value	p-value
Rural	342	122.807	17.02433	4.403	0
Urban	258	117.3333	12.01415		

Overall, the learning satisfaction score for Rural students is much higher compared to that of Urban students: 122.8070 vs 117.3333, t-value = 4.403 p-value = 0.000. There was significant overall difference in terms of their feelings on their experiences - Rural students faced much better than the Urban ones.

Figure 4.53. Showing Comparison of Rural vs. Urban Students Learning Satisfaction (Overall Learning Satisfaction)



PART-B

Hypothesis 7. There is no significant difference in academic performance between online and traditional learning based on students' grade levels.

4.9 STUDENT TYPE (TRADITIONAL & ONLINE) AND GRADE SCORE ON COURSE ACHIEVEMENT

The analysis presented in Table 4.54 compares the grade scores of students within Traditional and online learning environments to find out whether there are significant differences in course achievement between these two types of students. The key parameters used for comparison are Mean, Standard Deviation (SD), t-value, and p-value.

Table 4.54: Comparison of Grade Scores on Course Achievement between Traditional Students and Online Students

Type of student	N	Mean	Std. Deviation	t-value	p-value
Traditional	300	3.797	1.2358	28.135	0.000
Online	300	1.643	0.4798		

Figure 4.54 Showing the Comparison of Grade Scores on Course Achievement between Traditional Students Vs Online Students

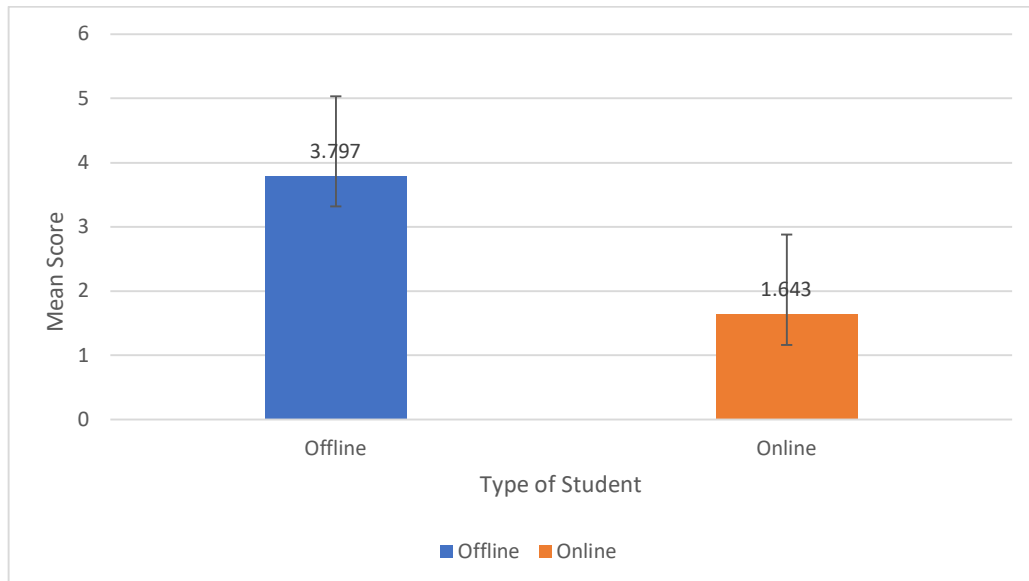


Table 4.54 reveals significant differences in grade scores between Traditional and online students. For the Traditional group, consisting of 300 students, the mean grade score is 3.797 with a standard deviation of 1.2358. This indicates that while the Traditional students generally performed well, there was some variation in their scores. For the online group, which also includes 300 students, the mean grade score is much lower at 1.643, with a smaller standard deviation of 0.4798. This suggests that while the online students' scores were more consistent, they were still notably lower than those of the Traditional students.

The statistical significance of the difference is highlighted by the t-value of 28.135 and the p-value of 0.000. The large t-value points to a substantial difference between the two groups, and the p-value, being well below the conventional threshold

of 0.05, confirms that this difference is statistically significant. This means that the lower performance of online students compared to Traditional students is not due to random chance but reflects a real disparity in achievement.

These results suggest that students attending physical institutions tend to perform better academically than their online counterparts. The structured learning environment, direct interaction with instructors, and immediate access to resources in a physical setting may contribute to higher student achievement. In contrast, online students might face challenges such as delayed feedback, technical issues, or difficulties in maintaining focus and motivation.

This analysis underscores the importance of considering the mode of learning when evaluating student performance. However, further research is needed to explore the factors that contribute to the significant gap between Traditional and online students' academic outcomes. Factors such as course design, student engagement, and the overall learning environment may all play a role in shaping academic success.

4.10 COMPARATIVE ANALYSIS OF ACADEMIC PERFORMANCE BY GRADE

Formula for AA Score

For standardized contexts: $AA\ Score = (Student's\ Test\ Score \div Maximum\ Score) \times 100$

- GPA average = 7.5/10
- $AA\ Score = (7.5 \div 10) \times 100 = 75\%$
- The sample is equally divided between online and traditional modalities (300 students each).
- GPA values are assigned based on a 10-point scale:
 - A++ = 9.5
 - A+ = 8.5

- $A = 7.5$
- $B++ = 6.5$
- $B = 5.5$
- $F = 0$

Table 4.55 Grade Distribution in the Sample

Grade	Frequency	Percent	Valid Percent	Cumulative Percent
A++	107	17.8	17.8	17.8
A+	214	35.7	35.7	53.5
A	146	24.3	24.3	77.8
B++	62	10.3	10.3	88.2
B	15	2.5	2.5	90.7
F	56	9.3	9.3	100.0
Total	600	100.0	100.0	

Table 4.56: Total GPA Contribution for Entire Sample

Grade	GPA Value	Frequency	Total GPA (Frequency $\times$ GPA Value)
A++	9.5	107	$107 \times 9.5 = 1016.5$
A+	8.5	214	$214 \times 8.5 = 1819$
A	7.5	146	$146 \times 7.5 = 1095$
B++	6.5	62	$62 \times 6.5 = 403$
B	5.5	15	$15 \times 5.5 = 82.5$
F	0	56	$56 \times 0 = 0$
Total		600	4416

Table 4.57: Grade Distribution for Traditional Modality

Grade	GPA Value	Frequency	Total GPA
A++	9.5	56	$56 \times 9.5 = 532$
A+	8.5	108	$108 \times 8.5 = 918$
A	7.5	73	$73 \times 7.5 = 547.5$
B++	6.5	31	$31 \times 6.5 = 201.5$
B	5.5	7	$7 \times 5.5 = 38.5$
F	0	25	$25 \times 0 = 0$
Total		300	2237.5

- Average GPA = $2237.5 \div 300 = 7.458$
- AA Score = $(7.458 \div 10) \times 100 = 74.58\%$

Table 4.58: Grade Distribution for Online Modality

Grade	GPA Value	Frequency	Total GPA
A++	9.5	51	$51 \times 9.5 = 484.5$
A+	8.5	106	$106 \times 8.5 = 901$
A	7.5	73	$73 \times 7.5 = 547.5$
B++	6.5	31	$31 \times 6.5 = 201.5$
B	5.5	8	$8 \times 5.5 = 44$
F	0	31	$31 \times 0 = 0$
Total		300	2178.5

- Average GPA = $2178.5 \div 300 = 7.262$
- AA Score = $(7.262 \div 10) \times 100 = 72.62\%$

Verify Combined AA Score

- Total GPA = 2237.5 (traditional) + 2178.5 (online) = 4416
- Combined Average GPA = $4416 \div 600 = 7.36$
- Combined AA Score = $(7.36 \div 10) \times 100 = 73.6\%$

Calculate Difference

Difference = Traditional AA Score - Online AA Score

- Difference = 74.58% - 72.62% = 1.96%

Table 4.58 presents the grade distribution for students in the online learning modality, with an average GPA of 7.63, translating to an Academic Achievement (AA) score of 72.62%. When combined with the traditional modality (AA Score: 74.58%), the overall AA Score across both mode is 73.6%. The analysis shows a slight difference of 1.96% in favour of the traditional modality, indicating marginally higher academic performance among students in traditional classroom settings compared to online learning.

Table 4.59: Comparison of AA Scores and Learning Outcomes by Modality

Modality	Total GPA	Average GPA	AA Score (%)	Overall Learning Outcomes (Mean)	Normalized Learning Outcomes Score (%)	Difference (Traditional - Online)
Traditional	2237.5	7.458	74.58	211.8801	84.75	AA: 1.96%, LO: 0.06%
Online	2178.5	7.262	72.62	211.7177	84.69	
Combined	4416	7.36	73.6	211.8164	84.73	

Academic Achievement (AA) Score

- **Overall AA Score:** The combined AA Score is 73.6% (Average GPA = 7.36), reflecting strong academic performance, with 77.8% of students achieving A-level grades (A++, A+, A) and 9.3% failing.
- **Traditional vs. Online Modalities:**
 - **Traditional AA Score** = 74.58% (Average GPA = 7.458)

- **Online AA Score** = 72.62% (Average GPA = 7.262)
- **Difference** = 1.96%

The traditional modality outperforms the online modality, with a higher proportion of A++ grades (18.7% vs. 17.0%) and fewer failures (8.3% vs. 10.3%). This suggests that traditional learning may provide a slight advantage in academic achievement, possibly due to structure in-person interactions or better access to resources.

4.11 CORRELATION BETWEEN LEARNING OUTCOMES AND LEARNING SATISFACTION

The Pearson correlation analysis examines the relationship between various learning outcomes (LO) and learning satisfaction (LS) dimensions. By analyzing these correlations, the goal is to understand how improvements in specific learning outcomes may influence overall student satisfaction. The results provide insights into the strength and significance of these relationships, offering a basis for further exploration into enhancing educational effectiveness and student experiences.

Table 4.60 Correlation Matrix between Learning Outcomes (LO) and Learning Satisfaction (LS) Dimensions

	LO_D 1	LO_D 2	LO_D 3	LO_D 4	LO_D 5	LO_D 6	LO_D 7	LO_D 8	LO_D 9	LO_D 10	LS_D 1	LS_D 2	LS_D 3	LS_D 4	LS_D 5
LO_D 1	1	0.6 3**	0.5 7**	0.4 8**	0.4 7**	0.5 5**	0.5 1**	0.4 7**	0.4 5**	0.4 5**	0.3 5**	0.3 5**	0.3 7**	0.3 7**	0.4 1**
LO_D 2	0.6 3**	1	0.6 2**	0.5 7**	0.5 1**	0.5 8**	0.5 9**	0.5 4**	0.5 0**	0.4 4**	0.3 6**	0.3 6**	0.4 1**	0.4 0**	0.3 5**
LO_D 3	0.5 7**	0.6 2**	1	0.5 6**	0.5 7**	0.5 9**	0.6 1**	0.5 5**	0.5 2**	0.5 2**	0.3 2**	0.3 2**	0.4 0**	0.3 2**	0.3 8**
LO_D 4	0.4 8**	0.5 7**	0.5 6**	1	0.5 3**	0.5 9**	0.6 1**	0.5 3**	0.6 0**	0.5 6**	0.3 5**	0.3 4**	0.4 5**	0.3 8**	0.3 4**
LO_D 5	0.4 7**	0.5 1**	0.5 7**	0.5 3**	1	0.5 7**	0.6 4**	0.5 4**	0.5 1**	0.5 0**	0.2 9**	0.3 4**	0.3 4**	0.3 4**	0.3 3**
LO_D 6	0.5 5**	0.5 8**	0.5 9**	0.5 9**	0.5 7**	1	0.6 7**	0.6 4**	0.6 4**	0.6 1**	0.3 5**	0.3 8**	0.4 5**	0.3 9**	0.4 2**
LO_D 7	0.5 1**	0.5 9**	0.6 1**	0.6 1**	0.6 4**	0.6 7**	1	0.6 3**	0.6 5**	0.6 0**	0.3 2**	0.3 4**	0.4 1**	0.3 5**	0.3 8**
LO_D 8	0.4 7**	0.5 4**	0.5 5**	0.5 3**	0.5 4**	0.6 4**	0.6 3**	1	0.6 6**	0.6 2**	0.4 1**	0.3 4**	0.4 4**	0.4 0**	0.3 8**
LO_D 9	0.4 5**	0.5 0**	0.5 2**	0.6 0**	0.5 1**	0.6 4**	0.6 5**	0.6 6**	1	0.6 7**	0.3 6**	0.3 6**	0.4 4**	0.4 0**	0.3 7**
LO_D 10	0.4 5**	0.4 4**	0.5 2**	0.5 6**	0.5 0**	0.6 1**	0.6 0**	0.6 2**	0.6 7**	1	0.3 2**	0.3 5**	0.4 4**	0.3 7**	0.4 0**
LS_D 1	0.3 5**	0.3 6**	0.3 2**	0.3 5**	0.2 9**	0.3 5**	0.3 2**	0.4 1**	0.3 6**	0.3 2**	1	0.6 3**	0.6 3**	0.5 5**	0.5 7**
LS_D 2	0.3 5**	0.3 6**	0.3 2**	0.3 4**	0.3 4**	0.3 8**	0.3 4**	0.3 4**	0.3 6**	0.3 5**	0.6 3**	1	0.6 6**	0.6 2**	0.5 7**

LS_D 3	0.3 7**	0.4 1**	0.4 0**	0.4 5**	0.3 4**	0.4 5**	0.4 1**	0.4 4**	0.4 4**	0.4 4**	0.6 3**	0.6 6**	1	0.6 8**	0.6 3**
LS_D 4	0.3 7**	0.4 0**	0.3 2**	0.3 8**	0.3 4**	0.3 9**	0.3 5**	0.4 0**	0.4 0**	0.3 7**	0.5 5**	0.6 2**	0.6 8**	1	0.6 3**
LS_D 5	0.4 1**	0.3 5**	0.3 8**	0.3 4**	0.3 3**	0.4 2**	0.3 8**	0.3 8**	0.3 7**	0.4 0**	0.5 7**	0.5 7**	0.6 3**	0.6 3**	1

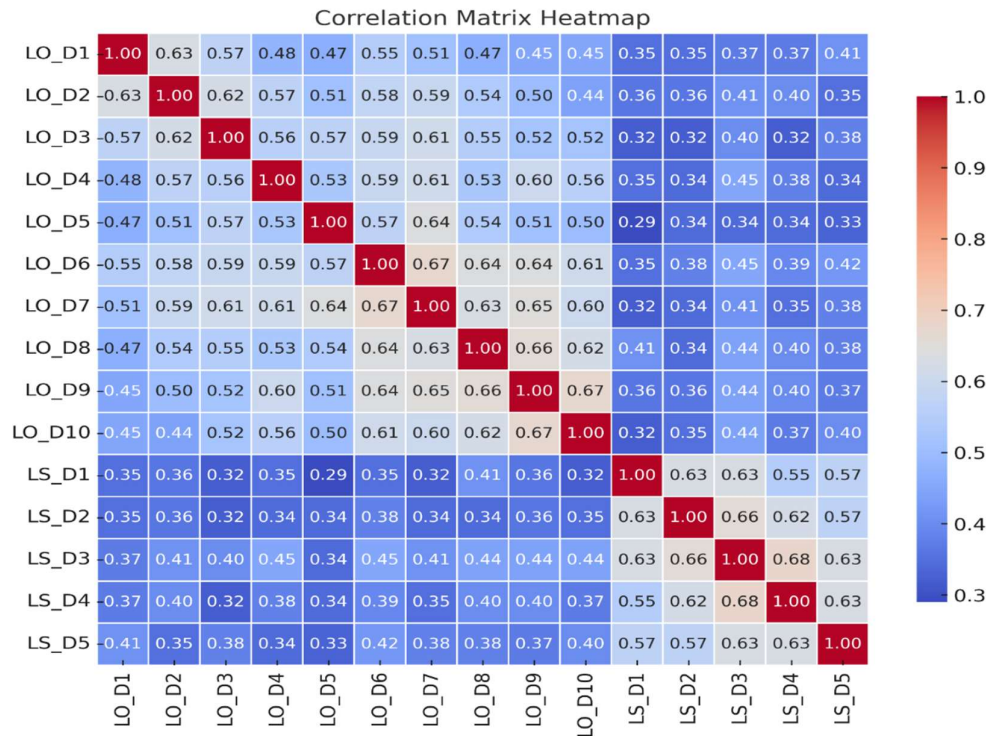
****All correlations marked with ** are significant at the 0.01 level (2-tailed).**

Pearson correlation table Pearson correlation table The Pearson correlation table indicates the relationship between different Learning Outcomes and Learning Satisfaction dimensions. Most of the correlations were positive and statistically significant. Thus, it follows that higher outcome of learning has accompanied satisfaction. For example, there exist strong correlations between Knowledge Acquisition and communication skills with r value of 0.625, and leadership skills with course satisfaction, which is worth 0.422, which shows the improvements in learning outcomes and increase satisfaction in areas to some extent.

While most of the correlations are moderate to strong, some of the dimensions were much weaker. For instance, Ethical and social responsibility and, which have an $r = 0.289$ show that not all learning outcomes equally influence satisfaction, suggesting areas where further investigation may be in order to try to understand why specific learning dimensions have such little impact on student satisfaction.

Overall, the analysis supports the notion that a more positive student experience strongly correlates with learning outcomes. The direction of consistent positive correlations implies that improvements in learning outcomes may result in higher satisfaction scores and, therefore that any educational content improvement needs to be simultaneously matched with better delivery mechanisms. However, based on the weaker associations in some cases, it may be necessary to tailor interventions by strengthening these relationships to ensure a more holistic impact both on learning and satisfaction.

Figure 4.55 Showing Correlation Matrix between Learning Outcomes (LO) and Learning Satisfaction (LS) Dimensions



4.12 GENDER INFLUENCE ON LEARNING OUTCOMES OF ONLINE VS. TRADITIONAL STUDENTS: A UNIVARIATE ANALYSIS OF VARIANCE

Understanding the influence of gender on learning outcomes in different educational settings is crucial for developing effective teaching strategies. With the rise of online learning alongside traditional methods, it becomes imperative to explore how these modalities interact with gender to impact overall learning success. This study utilizes Univariate Analysis of Variance (ANOVA) to examine the effects of gender in conjunction with the type of learning online or Traditional on students' overall learning outcomes. By analyzing these relationships, we aim to provide insights that can inform educators and policymakers about the dynamics of gender and learning environments, ultimately enhancing educational practices and student performance.

Table 4.61: ANOVA Results for Overall Learning Outcomes

Tests of Between-Subjects Effects					
Dependent Variable: Overall Learning Outcomes					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2591.300 ^a	3	863.767	1.065	.363
Intercept	25983801.711	1	25983801.711	32033.935	.000
Type of student	2514.658	1	2514.658	3.100	.079
Gender	1.896	1	1.896	.002	.961
Type of student* Gender	112.770	1	112.770	.139	.709
Error	482624.500	595	811.134		
Total	27360052.000	599			
Corrected Total	485215.800	598			
a. R Squared = .005 (Adjusted R Squared = .000)					

The analysis involved two between-subjects factors: Type of Student and Gender. The sample included 300 Traditional students and 300 online students, as well as 328 male students and 272 female students. The primary aim was to examine how these factors influenced the dependent variable, Overall Learning Outcomes.

The ANOVA results indicated that the overall model was not statistically significant, with an F-value of 1.065 and a p-value of .363. This suggests that the factors analyzed do not significantly account for the variability in overall learning outcomes. The intercept was highly significant ($p < .001$), confirming that overall learning outcomes differ significantly from zero.

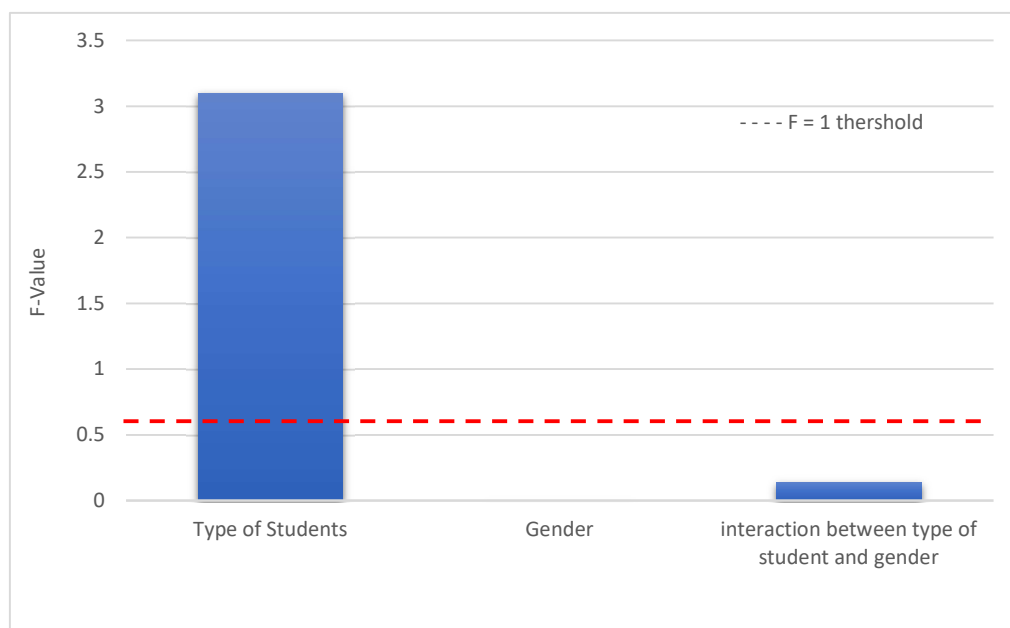
When examining the individual factors, the Type of Student displayed an F-value of 3.100 and a p-value of .079. Although this indicates a trend toward significance, it does not reach the conventional alpha level of 0.05. Therefore, while there may be some differences in overall learning outcomes between Traditional and online students, these differences are not statistically significant. In contrast, the

Gender factor revealed an F-value of 0.002 and a p-value of .961, indicating no significant differences in overall learning outcomes based on gender.

Additionally, the interaction effect between Type of Student and Gender was assessed, yielding an F-value of 0.139 and a p-value of .709. This result suggests that the impact of student type does not vary according to gender, reinforcing the notion that neither factor significantly influences overall learning outcomes. The substantial sum of squares for error (482624.500) relative to the corrected model highlights that a significant portion of the variability in overall learning outcomes remains unexplained by the factors considered in this analysis.

Finally, the R Squared value of 0.005 implies that only 0.5% of the variance in overall learning outcomes can be explained by the model, indicating the presence of other influential factors not included in this study. In summary, the ANOVA findings suggest that neither the type of student nor gender has a significant effect on overall learning outcomes, pointing to the need for further research to identify additional variables that may impact student success.

Figure 4.56 Showing Effects of Learning Modality and Gender on Overall Learning Outcomes



4.13 LOCALITY INFLUENCE ON LEARNING OUTCOMES OF ONLINE VS. TRADITIONAL STUDENTS

This analysis investigates the impact of locality (rural vs. urban) and learning modality (Traditional vs. online) on overall learning outcomes. Understanding how these factors influence student performance is essential for tailoring educational approaches to diverse student populations. By conducting a Univariate Analysis of Variance (ANOVA), we aim to identify whether significant differences exist in learning outcomes based on students' locality and their chosen mode of study. The findings from this analysis can provide valuable insights for educators and policymakers in optimizing learning environments and resources.

Table-4.62. Locality and type of student on learning outcomes

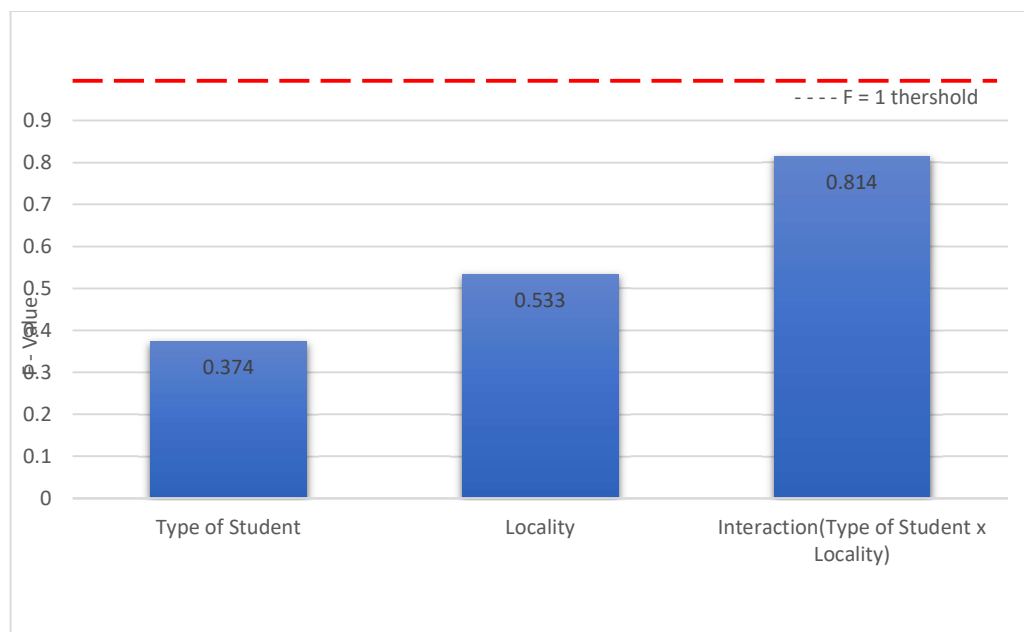
Tests of Between-Subjects Effects					
Dependent Variable: Overall Learning Outcomes					
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	2960.094 ^a	3	986.698	1.217	.303
Intercept	13858865.917	1	13858865.917	17098.865	.000
Type of student	641.097	1	641.097	.791	.374
Locality	315.442	1	315.442	.389	.533
Type of student * Locality	45.066	1	45.066	.056	.814
Error	482255.706	595	810.514		
Total	27360052.000	599			
Corrected Total	485215.800	598			
a. R Squared = .006 (Adjusted R Squared = .001)					

The Univariate Analysis of Variance (ANOVA) was conducted to assess the influence of learning modality (Traditional vs. online) and locality (rural vs. urban) on overall learning outcomes. The analysis included a sample of 300 Traditional students and 300 online students, with participants drawn from both rural (342) and urban (258) localities.

The ANOVA results indicated that the overall model was not statistically significant ($F(3, 595) = 1.217, p = .303$), suggesting that the independent variables do not explain a substantial amount of variance in learning outcomes. Specifically, the main effect of learning modality was not significant ($F(1, 595) = 0.791, p = .374$), indicating that whether students learned Traditional or online did not have a meaningful impact on their overall outcomes. Similarly, the main effect of locality was also non-significant ($F(1, 595) = 0.389, p = .533$), suggesting no discernible difference in learning outcomes based on whether students were from rural or urban areas.

Furthermore, the interaction between type of student and locality was not significant ($F(1, 595) = 0.056, p = .814$), indicating that the effects of learning modality do not differ based on students' locality. The R-squared value of .006 (adjusted R-squared = .001) reveals that only a minimal portion of the variance in overall learning outcomes can be attributed to these factors. Overall, the findings suggest that neither learning modality nor locality independently or interactively influences learning outcomes in this context.

Figure 4.57 Showing Effects of Learning Modality and Locality on Overall Learning Outcomes



4.14. GENDER INFLUENCE ON LEARNING SATISFACTION OF ONLINE VS. TRADITIONAL STUDENTS:

This analysis explores the relationship between gender, learning modality (Traditional vs. online), and overall learning satisfaction. As educational institutions increasingly adapt to diverse learning environments, understanding how gender influences student satisfaction in these contexts becomes crucial. By employing a Univariate Analysis of Variance (ANOVA), we aim to determine if significant differences in learning satisfaction exist between male and female students, as well as between those studying Traditional and online. The results of this study can inform educators and administrators in creating more inclusive and satisfying learning experiences tailored to the needs of all students.

Table 4.63. Gender Influence on Learning Outcomes of Online vs. Traditional Students: A Univariate Analysis of Variance

Tests of Between-Subjects Effects					
Dependent Variable: Overall Learning Satisfaction					
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	6001.462 ^a	3	2000.487	8.876	.000
Intercept	8448230.763	1	8448230.763	37483.060	.000
Type of student	4371.998	1	4371.998	19.398	.000
Gender	123.763	1	123.763	.549	.459
Type of student * Gender	767.640	1	767.640	3.406	.065
Error	134331.231	596	225.388		
Total	8845736.000	600			
Corrected Total	140332.693	599			
a. R Squared = .043 (Adjusted R Squared = .038)					

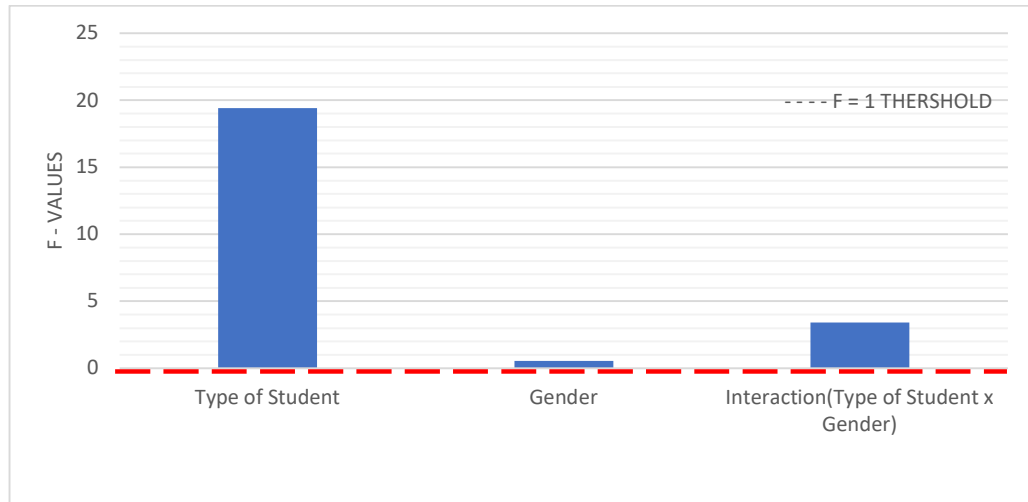
A Univariate Analysis of Variance (ANOVA) was performed to evaluate the effects of learning modality (Traditional vs. online) and gender (male vs. female) on overall learning satisfaction. The sample comprised 300 Traditional and 300 online students, along with 328 male and 272 female participants.

The results of the ANOVA indicated that the overall model was statistically significant ($F(3, 596) = 8.876, p < .001$), suggesting that the independent variables accounted for a meaningful portion of the variance in overall learning satisfaction. The main effect of learning modality was significant ($F(1, 596) = 19.398, p < .001$), indicating that students' learning modality had a substantial impact on their reported satisfaction, with Traditional learners likely reporting higher satisfaction levels than their online counterparts.

In contrast, the main effect of gender was not statistically significant ($F(1, 596) = 0.549, p = .459$), suggesting that there were no notable differences in learning satisfaction between male and female students. The interaction between type of student and gender approached significance ($F(1, 596) = 3.406, p = .065$), indicating a potential trend worth exploring further, although it did not reach conventional levels of significance.

The R-squared value of .043 (adjusted R-squared = .038) indicates that approximately 4.3% of the variance in overall learning satisfaction is explained by learning modality and gender. Overall, these findings underscore the importance of learning modality in influencing student satisfaction while suggesting that gender may not play a significant role.

Figure 4.58 Showing Effects of Learning Modality and Gender on Overall Learning Satisfaction



4.15 LOCALITY INFLUENCE ON LEARNING SATISFACTION OF ONLINE VS. TRADITIONAL STUDENTS

This analysis investigates the impact of locality (rural vs. urban) and the type of student (Traditional vs. online) on overall learning satisfaction. With the growing emphasis on accommodating diverse educational needs and backgrounds, understanding how these factors interact can provide essential insights for educators and administrators. By applying Univariate Analysis of Variance (ANOVA), this study seeks to determine whether there are significant differences in learning satisfaction based on students' locality and mode of study. The results will contribute to the development of tailored educational approaches that enhance student satisfaction across different settings.

Table 4.64 Locality, type of student, and learning satisfaction

Tests of Between-Subjects Effects					
Dependent Variable: Overall Learning Satisfaction					
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	6025.717 ^a	3	2008.572	8.913	.000
Intercept	4423229.309	1	4423229.309	19628.501	.000
Type founding	929.342	1	929.342	4.124	.043
Locality	869.942	1	869.942	3.860	.050
Type of student * Locality	204.662	1	204.662	.908	.341
Error	134306.976	596	225.347		
Total	8845736.000	600			
Corrected Total	140332.693	599			
a. R Squared = .043 (Adjusted R Squared = .038)					

A Univariate Analysis of Variance (ANOVA) was conducted to assess the effects of learning modality (Traditional vs. online) and locality (rural vs. urban) on overall learning satisfaction. The sample comprised 300 Traditional and 300 online students, with 342 from rural areas and 258 from urban areas. The overall model was statistically significant ($F(3, 596) = 8.913, p < .001$), indicating that the independent variables collectively contributed to explaining the variance in overall learning satisfaction. The results revealed that learning modality significantly influenced satisfaction levels ($F(1, 596) = 4.124, p = .043$), suggesting that Traditional students reported higher satisfaction compared to those studying online.

Locality also had a significant effect on overall learning satisfaction ($F(1, 596) = 3.860, p = .050$), indicating a difference in satisfaction between students from rural and urban areas. However, the interaction between type of student and locality was not significant ($F(1, 596) = 0.908, p = .341$), suggesting that the effect of learning modality on satisfaction did not vary based on the students' locality. The R-squared value of .043 (adjusted R-squared = .038) indicates that approximately 4.3% of the variance in overall learning satisfaction is explained by the type of student and locality included

in the model. In summary, the findings highlight the significant impact of both learning modality and locality on overall learning satisfaction. Traditional students and those from rural areas reported higher satisfaction levels, suggesting that these factors are important to consider in educational program planning and deliver.

4.16. LOCALITY INFLUENCE ON LEARNING SATISFACTION OF ONLINE VS. TRADITIONAL STUDENTS

This analysis investigates the impact of locality (rural vs. urban) and the type of student (Traditional vs. online) on overall learning satisfaction. With the growing emphasis on accommodating diverse educational needs and backgrounds, understanding how these factors interact can provide essential insights for educators and administrators. By applying Univariate Analysis of Variance (ANOVA), this study seeks to determine whether there are significant differences in learning satisfaction based on students' locality and mode of study. The results will contribute to the development of tailored educational approaches that enhance student satisfaction across different settings.

Table 4.65 Locality, type of student, and learning satisfaction

Tests of Between-Subjects Effects					
Dependent Variable: Overall Learning Satisfaction					
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	6025.717 ^a	3	2008.572	8.913	.000
Intercept	4423229.309	1	4423229.309	19628.501	.000
Type founding	929.342	1	929.342	4.124	.043
Locality	869.942	1	869.942	3.860	.050
Type of student * Locality	204.662	1	204.662	.908	.341
Error	134306.976	596	225.347		
Total	8845736.000	600			
Corrected Total	140332.693	599			
a. R Squared = .043 (Adjusted R Squared = .038)					

A Univariate Analysis of Variance (ANOVA) was conducted to assess the effects of learning modality (Traditional vs. online) and locality (rural vs. urban) on overall learning satisfaction. The sample comprised 300 Traditional and 300 online students, with 342 from rural areas and 258 from urban areas. The overall model was statistically significant ($F(3, 596) = 8.913, p < .001$), indicating that the independent variables collectively contributed to explaining the variance in overall learning satisfaction. The results revealed that learning modality significantly influenced satisfaction levels ($F(1, 596) = 4.124, p = .043$), suggesting that Traditional students reported higher satisfaction compared to those studying online.

Locality also had a significant effect on overall learning satisfaction ($F(1, 596) = 3.860, p = .050$), indicating a difference in satisfaction between students from rural and urban areas. However, the interaction between type of student and locality was not significant ($F(1, 596) = 0.908, p = .341$), suggesting that the effect of learning modality on satisfaction did not vary based on the students' locality. The R-squared value of .043 (adjusted R-squared = .038) indicates that approximately 4.3% of the variance in overall learning satisfaction is explained by the type of student and locality included in the model. In summary, the findings highlight the significant impact of both learning modality and locality on overall learning satisfaction. Traditional students and those from rural areas reported higher satisfaction levels, suggesting that these factors are important to consider in educational program planning and deliver.

PART-C

4.17. STUDENT AND TEACHER OPINIONS AND SUGGESTIONS ON TRADITIONAL AND ONLINE LEARNING (INTERVIEWS)

This section presents insights gathered from interviews with both students and teachers to better understand their experiences, preferences, and suggestions concerning traditional and online learning environments. As educational institutions increasingly adopt and refine blended learning approaches, collecting feedback from key stakeholders is essential for enhancing instructional effectiveness and overall satisfaction. The interviews explored a range of dimensions including perceived

advantages and challenges, levels of interaction with instructors, student engagement, motivation, collaboration, convenience, and accessibility of learning resources in both modes. These perspectives provide valuable input for shaping more responsive, inclusive, and effective learning strategies that align with the evolving expectations of learners and educators alike.

Table 4.66: Thematic Summary of Teacher Interview Responses on Traditional and Online Learning Modes (N = 10)

Raw Data (Interview Excerpt)	Theme
Based on my observation and years of experience, students tend to grasp concepts more thoroughly in traditional classroom settings. The physical presence of both students and teachers allows for immediate clarification of doubts, which significantly enhances conceptual clarity. Face-to-face interaction fosters deeper engagement with the subject matter, as students can pick up on visual cues, maintain eye contact, and receive personalized attention. The structured environment of traditional classrooms encourages focus and accountability, leading to better retention and understanding. Additionally, peer interaction and the opportunity to ask spontaneous questions contribute to a more dynamic and effective learning experience.	Knowledge Acquisition
In traditional classroom settings, students generally exhibit better communication skills. Face-to-face interaction fosters a more natural and effective exchange of ideas, allowing students to express themselves clearly and confidently. They are more inclined to ask questions, engage in discussions, and interact with both teachers and peers. This environment encourages spontaneity and helps students practice verbal communication in real time, which is often	

restricted in online settings. In contrast, online learning tends to limit both verbal and non-verbal cues, making it harder for students to articulate their thoughts and engage freely. Even students who are usually vocal may become reserved behind a screen. Traditional classrooms thus provide a more conducive space for students to develop and refine their communication abilities.	Communication Skills
Collaborative learning tends to be more effective in traditional classroom settings, where group work and peer discussions happen naturally and fluidly. Physical presence allows students to engage more deeply in teamwork, share ideas spontaneously, and build a sense of mutual responsibility. The immediacy and energy of face-to-face interaction foster stronger collaboration and deeper peer connections. In contrast, online group tasks often feel disconnected and lack the spontaneity and real-time dynamics that drive effective teamwork. Coordination becomes more challenging in virtual spaces, and the collaborative process can seem forced or superficial. Traditional classrooms, therefore, offer a more conducive environment for developing essential collaborative skills and fostering meaningful group learning experiences.	Collaborative Skills
Many students struggle with self-discipline and time management in online classes due to the flexibility and lack of constant supervision. The absence of a fixed schedule often leads to procrastination and a relaxed attitude toward coursework. In contrast, traditional classrooms offer a structured environment with set timetables and regular teacher monitoring, which helps students stay focused and organized. The routine and physical presence required in	Self-Discipline and Time Management

traditional settings naturally instill a sense of accountability and discipline. Simply attending classes in person reinforces time management habits and keeps students aligned with their academic responsibilities. While some students can adapt to the self-paced nature of online learning, many benefit more from the consistent structure that traditional education provides.	
Leadership development and problem-solving skills tend to be more effectively nurtured in traditional classroom settings. In-person classes offer real-time opportunities for students to take initiative, lead group activities, participate in debates, and deliver presentations. The immediacy of classroom interaction fosters critical thinking and encourages students to engage actively with both peers and instructors. Traditional settings also allow for dynamic feedback and spontaneous discussions, which are essential for sharpening analytical abilities. Through role plays, collaborative tasks, and classroom debates, students not only practice leadership but also learn to navigate diverse perspectives and solve problems collectively. This level of engagement is often difficult to replicate in online environments, where interaction can be limited and less spontaneous.	Leadership and Analytical Skills
Online learning has significantly enhanced students' digital literacy. Through consistent use of platforms like Zoom, Google Classroom, and digital libraries, students have become more confident and proficient in navigating various online tools and technologies. They have learned to create	

digital content, submit assignments electronically, and participate in virtual discussions, all of which have improved their overall digital competency. This mode of learning has exposed them to a range of applications and platforms that they might not have encountered otherwise, equipping them with valuable technological skills that extend beyond the academic setting. In this regard, online education has made a meaningful contribution to students' preparedness for a digitally-driven world.	Digital Literacy
Students tend to be more engaged in traditional classroom settings, where the physical presence of teachers and classmates creates a motivating environment for active participation. Immediate teacher-student interaction and the dynamic classroom atmosphere encourage attentiveness and responsiveness. In contrast, online learning often comes with numerous distractions and passive screen time, which can reduce students' focus and involvement. Even with cameras on, it is challenging to gauge true engagement during virtual sessions. The face-to-face setting fosters more eye contact, spontaneous interaction, and a stronger sense of accountability, all of which contribute to higher levels of mental presence and active learning among students.	Classroom Engagement
Traditional classroom settings offer more structured and well-curated learning resources, such as textbooks, guided notes, physical libraries, and direct teacher support, which students tend to utilize more effectively. These resources are often reliable and provide depth, allowing for focused and guided learning experiences. On the other hand, online	Learning Resources

learning provides access to a broader variety of digital materials, offering greater breadth and diversity in content. However, the abundance of online resources can sometimes overwhelm students, making it challenging for them to filter and identify quality materials without adequate guidance. While online platforms excel in providing quick and wide access to diverse content, traditional settings still hold an advantage in delivering more focused, teacher-directed resource utilization.	
Traditional classroom settings enable more in-depth and personalized feedback through direct face-to-face interactions. Teachers can closely observe students' performance and behaviour, allowing them to provide immediate, context-specific, and meaningful guidance tailored to individual needs. This real-time feedback supports students' learning more effectively by addressing misunderstandings promptly and fostering a stronger emotional connection. In contrast, online assessments often rely heavily on multiple-choice questions or automated tools, which can limit the depth and personalization of feedback. Additionally, online feedback tends to be delayed or more generic, lacking the nuanced support that in-person interactions naturally provide. Overall, traditional modes facilitate a more holistic and supportive approach to student evaluation and feedback.	Assessment & Feedback
Students have generally become more comfortable and competent with technology through online learning. Many can confidently navigate digital platforms, use learning apps, upload assignments, and troubleshoot common issues.	

However, their comfort levels vary depending on their background and access to resources. Some students still face significant challenges due to poor internet connectivity, lack of devices, or inadequate infrastructure, which can hinder their full participation in online education. While most have adapted well to the digital environment, there remains a need for ongoing support and training to ensure all students can benefit equally from technology-based learning.	Technology Usage
Students generally express greater satisfaction with traditional learning due to the personalized instruction and supportive classroom environment it offers. The real-time interaction with teachers and peers fosters a sense of connection, engagement, and emotional support that enhances their learning experience. Many students appreciate the structured nature of traditional classes, which provides clear guidance, immediate feedback, and opportunities for active participation. This interactive and well-organized setting helps students feel more confident and supported, contributing to higher overall satisfaction compared to other modes of learning.	Overall Course Satisfaction
Traditional teaching provides stronger interaction, deeper understanding, and better engagement through face-to-face communication and collaborative activities. It effectively builds interpersonal skills and motivates students by fostering real-time connections and immediate feedback. In contrast, online learning excels in enhancing digital fluency and offers greater flexibility and access to diverse resources. However, it often falls short in promoting personal connection, discipline, and spontaneous communication, which can lead to lower engagement and feelings of	Strengths and Weaknesses of Each Mode

isolation. While both modes have distinct strengths, traditional education remains superior in fostering interpersonal skills and meaningful learning experiences, whereas online learning contributes significantly to developing technological competencies.	
To enhance the effectiveness of both learning modes, it is essential to introduce more interactive sessions in online classes and provide teachers with training to design engaging, student-centered content. Incorporating live discussions, polls, quizzes, and breakout groups can make online learning more dynamic and participatory. At the same time, traditional classrooms can benefit from integrating digital tools such as multimedia presentations, online forums, and digital assessments to enrich the learning experience. By combining the structured, interactive nature of traditional teaching with the flexibility and innovation of digital technologies, educators can create a blended approach that supports diverse learning styles and maximizes student engagement. Equipping teachers with the necessary skills and resources for both digital pedagogy and face-to-face instruction is key to achieving this balance.	Suggestions for Improvement
Blended learning represents an effective approach by combining the strengths of both traditional and online modes. It harnesses the rich engagement and direct communication found in face-to-face settings while also leveraging the flexibility and wide range of resources available through digital platforms. This balanced model not only enhances the overall student experience but also caters to diverse learning needs, accommodating different	Future Learning Preferences

preferences and circumstances. By integrating physical interaction with technological convenience, blended learning offers a comprehensive and practical way forward fostering connection, active participation, and digital readiness simultaneously.	

Most of the teachers (100%) unanimously agreed that students grasp concepts more thoroughly in traditional classrooms. A majority (90%) emphasized that face-to-face interaction allows for immediate clarification of doubts, which significantly enhances understanding. Around 70% of the teachers noted that direct interaction with the teacher plays a crucial role in deepening subject comprehension, while 60% pointed out that traditional settings provide a more focused and distraction-free learning environment. Additionally, 20% highlighted the benefits of peer interaction and visual cues in the classroom, and 10% observed that students tend to feel more accountable in a physical classroom, which contributes to better knowledge acquisition.

Most of the teachers (100%) agreed that traditional classroom settings promote better communication among students. A strong majority (90%) emphasized that students are more confident in asking questions and participating in discussions during face-to-face interactions. Around 80% of the teachers noted that traditional environments allow for clearer verbal and non-verbal expression, which is often restricted in online classes. About 70% mentioned that students become more articulate and expressive when they regularly engage in real-time conversations, which helps improve their overall communication skills. Additionally, 50% of the teachers pointed out that spontaneous interactions and peer discussions are more natural and frequent in traditional settings, fostering a more open and interactive learning environment. Overall, the teachers emphasized that the immediacy and human connection in traditional classrooms significantly enhance students' ability to communicate effectively.

Most of the teachers (100%) agreed that collaborative skills are developed more effectively in traditional classroom settings. They consistently observed that group work, peer discussions, and teamwork function more naturally and efficiently when students are physically present. A large majority (90%) emphasized that in-person collaboration fosters spontaneity, energy, and real-time interaction elements that are often missing or diminished in online group activities. About 80% noted that traditional settings provide better coordination and mutual engagement during group tasks, enabling students to share ideas, build projects collectively, and engage in meaningful discussions. Nearly 70% of the teachers also mentioned that online collaboration tends to feel superficial or disconnected, lacking the flow and cohesion found in physical classrooms. Overall, the teachers highlighted that face-to-face settings offer a richer environment for cultivating collaborative learning and peer engagement.

Most of the teachers (100%) agreed that traditional classrooms are more effective in fostering self-discipline and time management among students. A significant majority (90%) highlighted that the structured routine and fixed timetable of traditional settings help students stay focused and consistent in their academic responsibilities. About 80% of the teachers noted that online learning environments often lack the necessary checks and supervision, leading many students to struggle with procrastination and poor time management. Around 70% emphasized that close teacher monitoring and the physical act of attending classes contribute to better discipline in traditional modes. Although a few acknowledged that some students are capable of managing their schedules online, the overall consensus was that most learners benefit from the external structure and accountability provided by traditional classroom setups.

Most of the teachers (100%) agreed that leadership skills and analytical thinking are more effectively developed in traditional classroom settings. A majority (90%) emphasized that traditional classes provide more real-time opportunities for students to take initiative, lead group activities, and participate in structured tasks such as debates, presentations, and role plays. Around 80% of the teachers pointed out that

in-person interaction encourages students to think critically and solve problems collaboratively, benefiting from immediate feedback and peer input. About 70% noted that leadership emerges more naturally in traditional environments, where students are visibly active in guiding group discussions and coordinating classroom tasks. Overall, teachers consistently observed that the dynamic, interactive nature of traditional learning environments supports the growth of both leadership qualities and analytical problem-solving skills more effectively than online settings.

Most of the teachers (100%) agreed that online learning has significantly improved students' digital literacy skills. They noted that students have become proficient in using various digital platforms such as Zoom, Google Classroom, and digital libraries. A large majority (90%) highlighted that through regular online classes, students have gained confidence in navigating different learning tools, creating digital content, and managing assignments electronically. About 80% emphasized that these skills not only support their current academic work but also prepare students for future opportunities in a technology-driven world. Teachers consistently observed that online education has been instrumental in enhancing students' comfort and competence with digital technologies, marking it as a clear strength of the online learning mode.

Most of the teachers (100%) agreed that student engagement is higher in traditional classroom settings. A vast majority (90%) pointed out that the physical presence of teachers and classmates creates a motivating environment where students pay more attention and participate actively. Around 80% emphasized that immediate interaction and real-time feedback in traditional classes foster better mental presence and reduce distractions compared to online learning. Many teachers observed that online environments often lead to passive screen time and increased distractions, which lower students' overall participation. Overall, the consensus is that traditional classrooms encourage more focused and active engagement, making it easier for students to stay attentive and involved in the learning process.

Most of the teachers (100%) agreed that both traditional and online learning environments offer valuable resources, but each has distinct strengths. Most teachers

(80%) emphasized that traditional classrooms provide more structured, curated, and reliable resources such as physical textbooks, guided notes, and hands-on materials, often accompanied by direct teacher support. Around 70% pointed out that while online learning offers a wider variety and quicker access to diverse digital content, it sometimes lacks the depth and quality control found in traditional resources. Several teachers noted that students often struggle to filter and evaluate the vast amount of online material without proper guidance, which is more readily available in a traditional setting. Overall, teachers believe that traditional resources remain more effectively utilized and better guided, whereas online learning expands access to a broader range of materials but requires more student discernment.

Most of the teachers (100%) agreed that traditional classroom settings provide more in-depth and personalized feedback compared to online learning environments. A strong majority (90%) emphasized that face-to-face interactions enable teachers to offer immediate, context-specific, and meaningful feedback tailored to individual student needs. Around 80% pointed out that traditional assessments allow for a more holistic evaluation, as teachers can closely observe student behavior, performance, and understanding during class activities. Several teachers noted that in-person feedback carries an emotional connection that helps motivate students, which is often missing in online settings where feedback tends to be delayed, generic, or overly reliant on automated tools like multiple-choice questions. Overall, the consensus is that traditional methods of assessment and feedback are more supportive of effective learning and student growth.

Most of the teachers (100%) agreed that students have generally become more comfortable and competent with technology through online learning. A large majority (80%) noted that most students have adapted well to using various digital tools and platforms, demonstrating improved skills in navigating learning apps, submitting assignments, and troubleshooting basic technical issues. However, about 60% of the teachers highlighted that some students still face significant challenges due to poor internet connectivity, lack of adequate devices, or limited infrastructure, which affects their ability to participate fully. Several teachers emphasized that comfort levels with

technology vary depending on students' backgrounds and access to resources, indicating a need for ongoing support and training to bridge these gaps. Overall, while students show clear progress in digital literacy, infrastructural barriers remain a concern for equitable online learning experiences.

Students tend to express more satisfaction with traditional learning due to the personalized instruction and better classroom environment. Traditional learning provides greater satisfaction due to teacher presence and peer support. Students generally report more satisfaction with traditional learning due to its interactive and structured nature. Students tend to prefer traditional learning for the structure, support, and interaction it offers. Students seem more satisfied with traditional classes because of real-time interaction and structured learning. Students report higher satisfaction with traditional learning due to better communication, engagement, and emotional connection with teachers. Students tend to be more satisfied with traditional learning due to better interaction, structure, and clarity. Based on conversations and feedback, most students still prefer traditional classes. They feel more connected, more supported, and more confident in what they're learning. Students tend to express more satisfaction with traditional learning due to the personalized instruction and better classroom engagement. Traditional learning provides great satisfaction due to the teacher presence and peer support.

Most of the teachers (100%) observed that students tend to express higher satisfaction with traditional learning environments. The majority (90%) attributed this preference to the personalized instruction, real-time teacher presence, and richer peer support that traditional classrooms provide. Around 80% noted that students appreciate the structured and interactive nature of face-to-face learning, which fosters clearer communication and stronger emotional connections with teachers and classmates. Many teachers also pointed out that students feel more engaged, supported, and confident in traditional settings compared to online modes. Overall, the feedback indicates that the combination of direct interaction, immediate guidance, and a conducive classroom atmosphere makes traditional learning more satisfying for most students.

Most of the teachers (100%) agreed that traditional and online learning modes each have distinct advantages and challenges. Traditional teaching is widely recognized for providing better interaction, deeper understanding, and stronger interpersonal skills through face-to-face engagement. Teachers emphasized that this mode fosters clearer communication, higher motivation, and more collaborative learning experiences. On the other hand, online learning excels in enhancing students' digital skills and offers greater flexibility and access to diverse resources. However, a common concern among teachers (about 80%) is that online education often suffers from a lack of personal connection, reduced discipline, and limited communication, which can negatively impact student engagement and overall learning quality. Overall, teachers viewed traditional learning as more effective for interpersonal development and active engagement, while acknowledging that online learning significantly contributes to digital fluency and accessibility.

Most of the teachers (100%) recommended enhancing the learning experience by integrating the strengths of both traditional and online modes. A unanimous suggestion was to introduce more interactive sessions in online classes, such as live discussions, polls, quizzes, and breakout rooms, to boost student engagement. Teachers emphasized the need for specialized training in digital pedagogy to help educators design more engaging and effective online content. At the same time, they encouraged incorporating digital tools and multimedia aids into traditional classrooms to enrich learning and appeal to diverse learning styles. Many teachers highlighted that blending the structured, face-to-face nature of traditional teaching with innovative digital technologies can create a more balanced and inclusive learning environment. Overall, the consensus is that both modes stand to benefit by adopting best practices from each other to improve student outcomes and satisfaction.

Most of the teachers (100%) strongly supported the concept of blended learning as an effective and promising approach for education. They emphasized that blending traditional face-to-face interaction with the flexibility and rich resources of online learning offers a balanced and comprehensive experience for students. Teachers highlighted that blended learning combines the strengths of both modes' engagement,

communication, and personal connection from traditional classrooms, along with the convenience, accessibility, and innovative tools available online. Many noted that this hybrid approach can cater to diverse learning needs, enhance student motivation, and better prepare learners for a digital future. Overall, the consensus is that well-designed blended learning models represent the future of education by merging interaction with technological advancement.

Table 4.67: Thematic Summary of Student Interview Responses on Traditional and Online Learning Modes (N = 20)

Raw Data (Interview Excerpt)	Theme
Many students acknowledged a slight difference between traditional and online learning modes. Traditional learning was widely appreciated for providing opportunities for face-to-face interaction, structured guidance, and immediate feedback from teachers. Students reported that such features helped them understand concepts more clearly, enabling better knowledge acquisition. The classroom environment encouraged them to interact with peers and express their thoughts openly, contributing significantly to the development of their communication skills. In contrast, the online mode was described as more dependent on self-study, often leaving students confused due to the lack of immediate clarification and interactive discourse.	Knowledge Acquisition
When it came to communication skills, traditional learning stood out as the more effective mode. Students valued the opportunity to work with peers face-to-face, build friendships, and collaborate on projects, which helped in developing both interpersonal and collaborative skills. Group work and classroom engagement in a traditional setting were seen as	Communication Skills

more natural and effective due to physical proximity and consistent interaction.	
In terms of collaborative learning, students felt that the traditional classroom fostered teamwork more effectively. The physical presence of peers enabled smoother collaboration in group assignments, class presentations, and departmental events. However, a few students noted that online learning also allowed for collaboration, though it lacked the immediacy and depth of in-person interactions.	Collaborative Skills
Regarding self-discipline and time management, opinions were divided. Some students stated that online learning helped them manage their time efficiently since it allowed flexibility in scheduling. On the other hand, many emphasized that traditional learning offered a more structured routine, which helped them stay focused and resist distractions more effectively. The classroom setup, regular schedule, and physical presence of teachers helped instill discipline and kept them more accountable.	Self-Discipline and Time Management
When discussing leadership and analytical skills, students predominantly highlighted traditional learning as more supportive. They shared experiences of being involved in organizing events like management fests, departmental picnics, and class activities, which enhanced their leadership qualities and problem-solving abilities. These real-world engagements allowed them to apply theoretical knowledge practically, thereby sharpening their analytical skills.	Leadership and Analytical Skills
In the area of digital literacy, students expressed that both traditional and online learners have equal access to digital resources. They argued that even those in traditional settings frequently use the internet and digital tools outside the classroom, suggesting that the mode of learning does not	

significantly impact one's digital literacy. However, online learning did help some students become more confident in navigating various digital platforms used for education.	Digital Literacy
Classroom engagement was seen as stronger in the traditional setting. Students felt more involved due to hands-on experiences and responsibilities assigned during physical classes. Events such as fresher meets, class socials, departmental tasks, and project work offered diverse opportunities for engagement, making the learning experience more interactive and vibrant.	Classroom Engagement
On the topic of learning resources, most students agreed that both modes offer equal access. Traditional learners benefit from central and departmental libraries and also have access to online databases and internet resources. Therefore, students felt there was no significant difference in the availability of learning materials between the two modes.	Learning Resources
Assessment and feedback were considered more efficient in traditional settings. Students appreciated the prompt responses and timely evaluations from teachers, which they felt were often lacking in the online mode. Delays in feedback and issue resolution in online learning created frustration, especially during critical times like exams.	Assessment & Feedback
In terms of technology usage, challenges such as internet connectivity, especially during assessments, were noted. Some students expressed concern over delayed responses to complaints and technical issues in the online environment, which affected their learning experience.	Technology Usage
Overall course satisfaction was generally higher with traditional learning. Students felt a deeper sense of connection with their peers and instructors, and believed they received a more meaningful education. The classroom setting provided	

a sense of community and bonding that was often missing in the virtual space. Some even expressed that they felt their degrees earned through traditional learning carried more personal value and credibility.	Overall Course Satisfaction
When asked about the strengths and weaknesses of each mode, students reiterated that online learning allowed for self-paced study and was convenient for working individuals. However, its impersonal nature and limited interaction were seen as significant drawbacks. Traditional learning, while more demanding in terms of attendance and structure, was seen as more rewarding and effective for holistic development.	Strengths and Weaknesses of Each Mode
In their suggestions for improvement, students emphasized the need for prompt responses from institutions, particularly in addressing grievances and technical issues in online learning. Timely support was considered crucial for maintaining student satisfaction.	Suggestions for Improvement
Finally, regarding future learning preferences, a majority of the students favored a blended or hybrid approach. They believed that a combination of both modes would offer the best of both worlds' flexibility, access to resources, engagement, and effective interaction. Such a model would accommodate diverse learning needs and lifestyles, especially for those pursuing higher education while managing personal or professional commitments.	Future Learning Preferences

1. Knowledge Acquisition

Most of the students (100%) acknowledged that traditional classrooms provide clearer understanding of concepts due to real-time interaction, opportunities to ask questions, and immediate feedback from teachers. Approximately 90% felt that being

physically present with peers and teachers helped clarify doubts quickly. A smaller group (20%) admitted that although online classes provide resources, learning often felt mechanical or "for the sake of the degree," with limited interaction or engagement. However, about 30% also noted that online anonymity allows some to ask questions more comfortably.

2. Communication Skills

A significant majority (85%) of students said traditional learning enhanced their communication skills more effectively. They attributed this to peer interaction, face-to-face group discussions, and the comfort of speaking with classmates and teachers directly. About 15% expressed that they are more confident asking questions in online platforms like chat boxes due to reduced social anxiety. However, most still emphasized that traditional learning nurtures better verbal and interpersonal communication.

3. Collaborative Skills

Nearly most of the students (95%) agreed that traditional classrooms provide better opportunities for collaboration. They emphasized that group work, project coordination, and peer interactions in person help build teamwork skills. Assignments like organizing events, group presentations, and classroom activities contributed to stronger collaboration. Only 5% mentioned that online settings allowed some collaboration through group chats or shared documents, but these interactions were limited and often disconnected.

4. Self-Discipline and Time Management

Responses were mixed. Around 60% of students felt traditional settings helped them stay more focused and disciplined due to fixed schedules and in-person monitoring. However, 40% said online learning allowed them to manage time more flexibly, especially those with personal or professional responsibilities. Yet, most agreed that distractions are more frequent in online modes and that maintaining discipline requires more personal effort.

5. Leadership and Analytical Skills

Approximately 85% believed that traditional classrooms promote leadership and analytical thinking better. Students cited experiences such as organizing events, leading group tasks, and participating in class discussions and role-plays. These activities gave them real-world leadership practice and opportunities to problem-solve. A smaller portion (15%) mentioned that both modes offer leadership opportunities, but traditional environments are more conducive due to face-to-face dynamics.

6. Digital Literacy

A majority (75%) acknowledged that both modes contribute to digital literacy. Students reported becoming more familiar with tools like Zoom, Google Classroom, and other platforms due to online learning. However, many emphasized that traditional students also improve digital skills through assignments and online research, making digital literacy development comparable in both modes.

7. Classroom Engagement

About 90% of students felt that traditional classrooms lead to higher engagement. They noted the active involvement in events like management fests, fresher meets, and departmental activities which helped them stay connected with the learning process. Online classes, while flexible, were often described as passive, with minimal student engagement unless prompted.

8. Learning Resources

Most students (80%) said that both modes offer sufficient learning resources, with traditional settings providing access to libraries and faculty guidance, and online platforms offering a variety of digital materials. Students agreed that the quality of resources depends more on individual effort and teacher facilitation than the mode itself.

9. Assessment and Feedback

About 85% reported that traditional assessment is more effective. They appreciated the immediacy of feedback and the personal attention received during in-person evaluation. Conversely, students found online assessments often delayed, impersonal, and heavily reliant on automated systems. Some also pointed to technical issues and lack of support during online exams.

10. Technology Usage

Approximately 70% of students acknowledged that online learning improved their tech skills, but 30% cited issues like poor internet access, lack of proper devices, and slow complaint redressal mechanisms as major drawbacks. Some mentioned that tech challenges were especially problematic during exams.

11. Overall Course Satisfaction

A strong majority (90%) of students expressed greater satisfaction with traditional learning due to structured teaching, better interaction, emotional connection with peers and teachers, and a sense of earning a "worthwhile degree." Only 10% found online learning more convenient due to personal circumstances such as employment.

12. Strengths and Weaknesses of Each Mode

Most of the students (100%) agreed that both modes have unique strengths. Traditional learning was appreciated for its discipline, clarity, and interaction, while online learning was valued for flexibility and self-paced progress. However, students were clear that online mode lacks engagement and clarity during assessments.

13. Suggestions for Improvement

Many students (65%) suggested improving response time and support in online systems, such as faster grievance redressal and better coordination during exams.

Some called for more interactive activities in online classes to keep students engaged and responsive.

14. Future Learning Preferences

Most of the students (100%) supported the idea of blended learning. They believed that combining traditional and online features would offer the best of both worlds face-to-face interaction and flexible, resource-rich online environments. Students saw this hybrid model as the future of higher education, especially for working learners or those in remote areas.

The qualitative analysis of interviews with both teachers and students reveals a strong preference for traditional learning, particularly in areas such as concept clarity, classroom engagement, communication, collaboration, and timely feedback. Students consistently highlighted the benefits of face-to-face interaction, structured routines, and a sense of community, which they felt contributed significantly to their overall satisfaction and academic development. Teachers echoed these sentiments, emphasizing that traditional classrooms allow for real-time clarification, better student participation, and more effective assessment practices. While online learning was appreciated for its flexibility and accessibility especially by working students or those in remote areas both groups acknowledged its limitations, including reduced interaction, delayed feedback, and challenges in maintaining student discipline and motivation. Despite these concerns, there was widespread support from both students and teachers for a blended or hybrid learning model, which combines the strengths of both traditional and online approaches. This emerging preference underscores the need for more adaptable and inclusive educational strategies in the post-pandemic academic environment.

Table 4.68 showing Checklist of Infrastructure availability in Management Department

College Name	Mode of Course	MBA/B BA	Digital Boards	Wi-Fi Available	Internet Excess	Projector	Canteen	Library/E-Library	Study Materials Available
Mizoram University	Traditional	MBA	Yes	Yes	Yes	yes	yes	yes	yes
Pachhunga University College	Traditional	BBA	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Govt. J.Thankima College Aizawl	Traditional	BBA	Yes	Yes	50% of Internet access is available	Yes	Yes	Yes	Yes
Mizoram Christian College	Traditional	BBA	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Faith college	Traditional	BBA	No	Yes	No internet access	Yes	No	Yes	Yes
Mizoram University	Online	MBA/BBA	N/A	Yes	Yes	N/A	N/A	Yes	Yes

The infrastructural and technological support for Management programs varies across institutions offering traditional and online modes in Mizoram. Mizoram University, offering both traditional and online Management programs, provides comprehensive facilities such as digital boards, Wi-Fi, internet access, projectors, canteens, libraries, and study materials in its traditional mode. In its online mode, while physical infrastructure like digital boards, projectors, and canteens are naturally not applicable, essential academic support such as Wi-Fi connectivity, internet access, library or e-library resources, and study materials remain available, ensuring continuity of learning. Other traditional colleges like Pachhunga University College and Mizoram Christian College also maintain strong infrastructural support. However, disparities exist, such as in Faith College, where digital infrastructure and internet access are limited. These variations highlight the importance of adequate technological and academic support in enhancing student satisfaction and learning outcomes, especially in online education contexts.

PART-D

4.18 INTEGRATION OF QUANTITATIVE AND QUALITATIVE FINDINGS

Table 4.69 Shows the Integration of Qualitative and Quantitative Findings

Objective	Quantitative Findings	Qualitative Findings	Integrated Interpretation
To compare the learning outcomes of students in traditional and online courses.	The survey data showed that overall Learning Outcomes mean value for online=209.77 and traditional=213.84 students reported higher learning outcomes in traditional courses.	Interviews with students and teachers revealed that traditional classrooms facilitated deeper understanding, better collaboration, and more real-life learning experiences through events and discussions.	Both data sets strongly converge to suggest that traditional learning promotes more effective learning outcomes in key areas.
To assess students' satisfaction with online learning.	Survey responses indicated that online=117.53 and traditional=123.37 therefore Overall Learning Satisfaction higher satisfaction scores in traditional learning	Interview data supported this view. Students expressed emotional connection, peer bonding, and a sense of "earning a real degree" in traditional	Strong convergence between both data sets shows that traditional modes yield higher student satisfaction. However, some satisfaction with

		settings, while citing online learning as impersonal and at times frustrating.	online learning was expressed in terms of flexibility and accessibility, especially for working or remote learners.
To understand the opinions and suggestions of students regarding online and traditional teaching-learning processes	Survey items revealed mixed views: traditional learning was seen as more engaging and interactive, while online learning was valued for convenience and flexibility. A large percentage preferred a blended model.	Interviews echoed similar opinions. Both students and teachers suggested improvements for online platforms, such as better interaction and faster support, while acknowledging the strengths of both modes.	Both data sets complement each other and point toward a growing preference for blended learning models that combine structured interaction with flexible learning environments.
Integration	The integration of findings across all three objectives demonstrates a high degree of convergence between quantitative and qualitative results. Traditional learning is generally preferred for better academic and social engagement, while online learning is favored for convenience. Both methods have unique strengths, and the blended model emerges as the most balanced and future-oriented approach.		

The combined analysis of quantitative survey data and qualitative interview findings reveals a consistent pattern across the studied objectives. Both students and teachers acknowledge that traditional learning environments provide stronger opportunities for knowledge acquisition, communication, collaboration, and overall

student satisfaction due to the immediacy of interaction, structured guidance, and active engagement. Conversely, online learning is valued for its flexibility, accessibility, and enhancement of digital literacy, though it often lacks the personal connection and timely feedback present in face-to-face settings. Importantly, the data converge to highlight a clear preference for a blended learning approach, which integrates the strengths of both traditional and online modes. This hybrid model is seen as the most effective way to meet diverse learner needs, offering both rich interpersonal interaction and flexible access to resources, thereby fostering improved learning outcomes and higher satisfaction.

CHAPTER-V

SUMMARY, FINDINGS, DISCUSSIONS AND CONCLUSION

This chapter deals with the summary, significant results, discussion, educational implications and recommendations followed by suggestions for further studies.

5.1 INTRODUCTION

The rise of online learning has transformed education, enabling flexibility, accessibility, and different learning opportunities. With advancements in digital technologies, online education has become a feasible alternative to traditional face to face training, particularly benefiting working professionals, students in remote areas, and those with disabilities. It utilizes digital platforms such as the learning administration systems, video conferencing, and interactive content to facilitate engagement and self-paced learning.

Despite its advantages, online learning offers disadvantages, including possible isolation, lack of direct social connection, and technological issues. However, its effectiveness in fostering independent learning, critical thinking, and global access to quality education makes it a transformative force in modern academia.

In the Indian context, online education has gained momentum due to increased internet penetration and government initiatives like the National Digital Education Architecture (NDEA). While issues such as digital literacy gaps and the infrastructure limitations persist, ongoing efforts to bridge these gaps can enhance the effectiveness of online education.

The COVID-19 pandemic further highlighted the necessity of online learning, leading to its widespread adoption across schools, colleges, and universities. This study aims to evaluate the learning results and satisfaction levels of students in online and traditional settings, comparing their efficacy.

Therefore, online learning is not merely an alternative but a complementary approach to traditional education. Addressing its challenges and leveraging its potential can create a more inclusive, flexible, and efficient education system. Future

research and policy measures should focus on improving digital infrastructure, ensuring quality standards, and enhancing student engagement in virtual learning environments.

5.2 RATIONALE OF THE STUDY

This comparative study attempts to discover online and traditional teaching learning outcomes in the classes. It also attempts to find out the student's academic, academic course completion, student's satisfaction, and compare the satisfaction based on gender, locality and course between pupils who enroll in traditional courses as contrasted to online ones. The study also adds to the corpus of research in colleges analysing the efficacy of online education compared to a traditional way of instructing. In Mizoram University courses are offered through online and Traditional methods so this study examines the satisfaction and learning outcomes by comparing the traditional and online methods. And to seek student's opinions and suggestions about the online and traditional teaching-learning process.

The emphasis on measuring and comparing student learning outcomes and satisfaction across various methods of instruction verify a quality online program is in place. And the result of this investigation can help the stakeholders to take necessary actions for adopting better methods for learning. Based on the above rationale, some research questions arose in the mind of the investigator as follows and based on them, some objectives were formulated for the present study.

5.3 STATEMENT OF THE PROBLEM

“Learning Outcomes and Students' satisfaction in Traditional and Online Courses offered by Mizoram University”

5.4 RESEARCH- QUESTIONS

1. What are the learning outcomes of online learning?
2. What are the learning outcomes of traditional learning?
3. Are there any significant differences in students learning outcomes towards online Vs traditional Learning based on gender and locality?
4. Does a student have satisfaction towards online learning?
5. Does a student have satisfaction towards traditional learning?
6. Are there any significant differences in students' satisfaction towards online Vs traditional learning based on gender and locality?
7. What are the opinions and suggestions of the students towards online and traditional teaching-learning processes?
8. Are there any significant differences in academic performances between online and traditional courses?

5.5 OBJECTIVES

9. To examine the learning outcomes of online learning.
10. To examine the learning outcomes of traditional learning.
11. To compare the learning outcomes of online versus traditional learning based on gender and locality
12. To assess students' satisfaction with online learning.
13. To assess students' satisfaction with traditional learning.
14. To compare students' satisfaction towards online versus traditional learning based on gender, locality, and course.
15. To understand the opinions and suggestions of students regarding online and traditional teaching-learning processes.
16. To evaluate the academic performance between online and traditional Course based on grade.

Hypotheses

1. There is no significant difference in learning outcomes across all dimensions between students engaged in online learning and those in traditional learning.
2. There is no significant difference in learning outcomes across all dimensions between online and traditional learning when moderated by gender and locality.
3. There is no significant difference in student satisfaction across all dimensions between online learning and traditional learning.
4. There is no significant difference in student satisfaction across all dimensions for online and traditional learning when moderated by gender and locality.
5. There is no significant difference in academic performance between online and traditional learning based on students' grade levels.

5.6 OPERATIONAL DEFINITIONS OF THE KEY TERMS

Online Learning Students: Refer to students currently enrolled in the Management course at Mizoram University who attend live, scheduled online classes. Unlike distance learning, where students study at their pace using pre-recorded lectures, online learning in this study involves real-time instruction, requiring students to be present at fixed class hours via digital platforms. Course materials, including lecture notes, presentations, and readings, are provided online, and students interact with instructors and peers through virtual classrooms. Assessments and assignments are also conducted digitally.

Traditional Learning Students (Traditional Learning Students): Students currently enrolled in the management course at Mizoram University who attend face-to-face classes in a physical classroom setting. In this mode, students connect directly with teachers and classmates, participate in classroom discussions, and access printed and library resources. Assessments, examinations, and assignments are conducted on campus under the supervision of faculty.

Learning Outcomes

Conceptual Definition: Learning outcomes refer to the perceived knowledge, skills, and abilities that learners develop as a result of participating in an educational program, such as a management course or secondary school curriculum. These outcomes encompass cognitive, interpersonal, ethical, and practical competencies that contribute to personal and professional growth.

Operational Definition: Learning outcomes are measured as learners' self-reported perceptions of their development in ten specific competencies "Knowledge Acquisition, Communication Skills, Collaborative Skills, Ethical and Social Responsibility, Digital Literacy, Leadership Skills, Adaptability, Self-Discipline, Analytical Skills, and Project skills" using the Learning Outcomes Assessment Scale (LOAS).

Learning Satisfaction

Conceptual Definition: Learning satisfaction refers to learners' overall contentment with their educational experience, encompassing their engagement, access to resources, assessment processes, technology use, and the perceived value of the course or curriculum in meeting their learning needs.

Operational Definition: Learning satisfaction is measured as learners' self-reported level of contentment with five key dimensions of their educational experience "Classroom Engagement, Learning Resources, Assessment and Feedback, Technology Usage, and Course Satisfaction" using a Learning Satisfaction Scale integrated into or administered alongside the LOAS

5.7 DELIMITATION OF THE STUDY

This Study was delimited to Mizoram University

5.8 METHODOLOGY

5.8.1 Research Method

In the study, two primary methods were employed to collect data surveys and interviews. These methods were selected based on the study's objectives and the type of data required.

5.8.2 Population

In research, the population represents the entire group of individuals or elements sharing specific characteristics from which data or insights are sought. For the present study, the population is defined as all individuals enrolled in undergraduate (UG) Management course and postgraduate (PG) Management programs at Mizoram University, encompassing both online and Traditional students. Online students are those who pursue their courses through digital platforms, utilizing online resources to complete their academic requirements. In contrast, Traditional students attend physical classes and engage in traditional face-to-face learning environments. By including both online and Traditional students across undergraduate and postgraduate levels, the study aims to capture a comprehensive view of the entire student body at Mizoram University. This inclusive approach ensures a detailed and representative understanding of various factors influencing students' experiences and outcomes, reflecting the diverse demographics and educational contexts within the university.

5.8.3 Sample of the study

To achieve a representative sample for the research, a stratified random sampling technique was employed for both online and Traditional students at Mizoram University. This approach ensures that each subgroup within the population is adequately represented. For the online students, a sample of 310 was selected by dividing the population into homogenous subgroups, or stratum, depending on certain traits. Random samples were then drawn from each stratum, accurately reflecting the diversity within the online student population. Similarly, for the Traditional students, another sample of 305 was chosen using the same stratified random sampling method. By dividing the Traditional student population into the strata and performing random

sampling within these subgroups, the study ensured a representative and balanced sample that captures a wide range of experiences and characteristics. This method enhances the reliability and validity of the study findings by providing a comprehensive view of both online and Traditional student groups, accounting for their inherent diversity. After data cleaning process final sample consider as 300 Traditional and 300 Online students

5.8.4 Tool and Techniques Used for Data Collection

Keeping in view of nature of the research, researcher constructed two tools to collect the data. Those are Tool-1: Learning Outcomes Assessment Scale (LOAS) and Tool-2: Satisfaction Scale for Learning (SSL).

5.8.5 Procedure of Data Collection

The data gathering strategy for this study was thoroughly designed and conducted to ensure accuracy and dependability. The first step involved obtaining permission from the Principals or Heads of the selected institutions. This was a crucial part of the process, as it established formal approval for conducting the research within these institutions and ensured that all necessary ethical guidelines were followed. Once permission was secured, the investigator reached out to the students for their participation. The participation and willingness if the students were sought to guarantee that the data gathering procedure progressed successfully. A total of 310 online and 305 traditional students were randomly selected from participating institutions to constitute a representative sample for the study. After data cleaning, the final sample consisted of 300 Online and 300 Traditional students.

The data collection itself was conducted personally by the investigator. Prior to administering the research tools, each student received a set of instructions outlining how to complete the instruments. These instructions included guidance on how to fill out the tools and emphasized the importance of responding to every item. Each student was provided with two research tools along with a personal data sheet. The tools were designed to capture a range of information relevant to the study, and the personal data sheet collected demographic details. To facilitate accurate responses, the investigator

took time to explain each statement on the tools in simple terms, ensuring that all students fully understood the questions. This step was particularly important for clarifying any complex or ambiguous items, which helped to minimize misunderstandings and improve the quality of the data collected.

Students were instructed to complete their responses in the designated spaces or columns provided in the tools. The investigator closely monitored this process to ensure that all items were addressed. In cases where students needed further clarification, the investigator provided additional explanations as needed, helping them to accurately complete the tools. After the students finished responding to the tools, the completed instruments were collected by the investigator. This process was carried out systematically to ensure that all data was gathered efficiently and securely. The same technique was universally followed throughout all universities participated in the study, providing uniformity in the data gathering process. By following these specific protocols, the investigator guaranteed that the data acquired was complete, trustworthy, and legitimate, giving a strong foundation for the research findings.

5.9 MAJOR FINDINGS OF THE STUDY

5.9.1 Findings Related to Learning Outcomes in Online and Traditional Learning

The analysis of differences in learning outcomes across ten dimensions for online and Traditional students yielded the following key findings:

1. **Knowledge Acquisition:** Traditional students scored slightly higher (Mean = 20.92) than online students (Mean = 20.44), but the difference was statistically insignificant ($t = -1.609$, $p = 0.108$). This suggests that the mode of learning does not significantly impact knowledge acquisition.
2. **Communication Skills:** Traditional students significantly outperformed online students (Mean = 21.51 vs. 20.48; $t = -3.694$, $p < 0.001$). This indicates that Traditional learning may better foster communication skills, possibly due to increased face-to-face interaction and real-time discussions.

3. **Collaborative Skills:** Traditional students achieved significantly higher scores (Mean = 20.68 vs. 19.05; $t = 5.24$, $p < 0.001$). Traditional students displayed more consistent collaborative skills (SD = 3.32) compared to online students (SD = 4.23), reflecting the structured environment of traditional classrooms.
4. **Ethical and Social Responsibility:** Both groups performed similarly (Online Mean = 21.52, Traditional Mean = 21.62; $t = -0.402$, $p = 0.688$). The mode of learning did not significantly impact ethical and social responsibility.
5. **Digital Literacy:** Online students scored significantly higher (Mean = 20.91 vs. 18.35; $t = 7.85$, $p < 0.001$). The greater variability in online students' scores (SD = 4.27 vs. 3.69) suggests diverse levels of digital skills among online learners, possibly due to varying exposure to technology.
6. **Leadership Skills:** Scores were similar between groups (Online Mean = 21.11, Traditional Mean = 21.48; $t = -1.294$, $p = 0.196$), with not statistically significant differences.
7. **Adaptability:** There was no significant difference between groups (Online Mean = 20.71, Traditional Mean = 21.14; $t = -1.399$, $p = 0.162$). Both online and Traditional students showed comparable levels of adaptability.
8. **Self-Discipline:** Online and Traditional students performed similarly (Online Mean = 20.97, Traditional Mean = 21.38; $t = -1.307$, $p = 0.192$), indicating no significant influence of learning mode.
9. **Analytical Skills:** No significant differences were observed (Online Mean = 21.32, Traditional Mean = 21.59; $t = -0.86$, $p = 0.39$). Analytical skills were equally developed across both learning modes.
10. **Project Work:** Both groups achieved similar scores (Online Mean = 21.71, Traditional Mean = 21.81; $t = -0.346$, $p = 0.729$), with no significant differences in project-related tasks.
11. **Overall Learning Outcomes:** Traditional students reported slightly higher overall scores (Mean = 213.85 vs. 209.78), but the difference was not

statistically significant ($t = -1.75$, $p = 0.081$). The variability in outcomes was higher among Traditional students ($SD = 32.74$ vs. 23.34).

- **Significant Differences:** Traditional students scored significantly higher in communication skills and collaborative skills, while online students outperformed in digital literacy.
- **No Significant Differences:** For the characteristics, including information acquisition, ethical and social responsibility, leadership abilities, flexibility, self-discipline, analytical skills, project work, and overall results, the differences were not statistically significant.

5.9.2 Findings Related to Learning Outcomes and Gender

1. **Knowledge Acquisition:** Mean scores: Males (20.55), Females (20.83), t -value = -0.955 , p -value = 0.340 . No significant difference; both genders perform similarly.
2. **Communication Skills:** Mean scores: Males (20.87), Females (21.15). t -value = -0.993 , p -value = 0.321 . No significant gender differences.
3. **Collaborative Skills:** Mean scores: Males (20.89), Females (20.83). t -value = 0.212 , p -value = 0.832 . Gender has no significant effect.
4. **Ethical and Social Responsibility:** Mean scores: Males (21.57), Females (21.57). t -value = 0.026 , p -value = 0.979 . Both genders perform identically.
5. **Digital Literacy:** Mean scores: Males (21.18), Females (21.08). t -value = 0.313 , p -value = 0.754 . No significant difference was observed.
6. **Leadership Skills:** Mean scores: Males (21.47), Females (21.09). t -value = 1.317 , p -value = 0.188 . No significant gender effect.
7. **Adaptability:** Mean scores: Males (21.02), Females (20.81). t -value = 0.683 , p -value = 0.495 . Gender does not affect adaptability.

8. **Self-Discipline:** Mean scores: Males (21.03), Females (21.35). t-value = -1.013, p-value = 0.311. No significant difference between genders.
9. **Analytical Skills:** Mean scores: Males (21.32), Females (21.61). t-value = -0.946, p-value = 0.344. No statistically significant disparity.
10. **Project Skills:** Mean scores: Males (21.73), Females (21.79). t-value = -0.236, p-value = 0.813. No gender-related differences.
11. **Overall Learning Outcomes:** Mean scores: Males (211.57), Females (212.11). t-value = -0.230, p-value = 0.818. Gender has no significant impact on overall outcomes.

The analysis across various dimensions of learning outcomes reveals that there are no statistically significant differences between male and female students. The results of the t-tests across dimensions “knowledge acquisition, communication skills, collaborative skills, ethical and social responsibility, digital literacy, leadership skills, adaptability, self-discipline, analytical skills, project skills, and overall learning outcomes” consistently show p-values greater than the standard threshold of 0.05.

5.9.3 Findings Related to Learning Outcomes and Locality

Knowledge Acquisition: Mean scores: Rural (20.86), Urban (20.44), t-value = 1.405, p-value = 0.161. The difference is not statistically significant. Both groups show comparable levels of knowledge acquisition.

Communication Skills: Mean scores: Rural (22.14), Urban (20.81), t-value = 4.690, p-value = 0.000. This indicates a statistically significant difference, with rural students outperforming urban students in communication skills.

Collaborative Skills: Mean scores: Rural (20.93), Urban (20.78), t-value = 0.471, p-value = 0.638. No significant difference was found between rural and urban students.

Ethical and Social Responsibility: Mean scores: Rural (19.55), Urban (21.58), t-value = 7.680, p-value = 0.000. A statistically significant difference exists, with urban students scoring higher than rural students.

Digital Literacy: Mean scores: Rural (21.32), Urban (20.88), t-value = 1.329, p-value = 0.184. The difference is not statistically significant.

Leadership Skills: Mean scores: Rural (21.58), Urban (20.92), t-value = 2.270, p-value = 0.024. The difference is statistically significant, with rural students reporting higher leadership skills.

Adaptability: Mean scores: Rural (21.10), Urban (20.69), t-value = 1.307, p-value = 0.192. No statistically significant difference was found.

Self-Discipline: Mean scores: Rural (21.37), Urban (20.91), t-value = 1.443, p-value = 0.150. The result is not statistically significant.

Analytical Skills: Mean scores: Rural (21.73), Urban (21.09), t-value = 2.105, p-value = 0.036. A statistically significant difference exists, with rural students performing better in analytical skills.

Project Skills: Mean scores: Rural (21.92), Urban (21.54), t-value = 1.282, p-value = 0.200. No statistically significant difference exists between the groups.

Overall Learning Outcomes: Mean scores: Rural (213.52), Urban (209.55), t-value = 1.692, p-value = 0.091. Although rural students have a slightly higher mean score, the difference is not statistically significant.

Analysis shows that significant differences were observed in four dimensions of learning outcomes. Rural students outperformed Urban students in Leadership Skills (LO_D6), Analytical Skills (LO_D9), and Communication Skills (LO_D2), while Urban students reported higher levels in Ethical and Social Responsibility (LO_D4). No significant differences were found in the majority of other dimensions, such as Knowledge Acquisition (LO_D1), Collaborative Skills (LO_D3), Digital Literacy (LO_D5), Adaptability (LO_D7), Self-Discipline (LO_D8), and Project Work (LO_D10), indicating that Rural and Urban students perform similarly in these areas.

Overall, while Rural students seem to have an edge in certain domains like Communication, Leadership, and Analytical Skills, and Urban students demonstrate stronger Ethical and Social Responsibility, locality does not significantly affect most dimensions of learning outcomes. These findings suggest that while contextual differences exist, they do not broadly impact student learning experiences across the board.

5.9.4 Findings Related to Learning Satisfaction in Online and Traditional Learning

This section examines the learning satisfaction of online and Traditional students across multiple dimensions, revealing statistically significant differences in several areas while highlighting areas of similarity:

1. **Classroom Engagement:** Traditional students reported significantly higher classroom engagement (Mean = 21.43) compared to online students (Mean = 20.45), with a t-value of -3.687 and a p-value of 0.000. This indicates that the interactive and participative nature of Traditional learning enhances engagement more effectively than online modalities.
2. **Learning Resources:** Traditional students had significantly better access to learning resources (Mean = 28.02) compared to online students (Mean = 26.50), as indicated by a t-value of -4.704 and a p-value of 0.000. Traditional learning likely offers more comprehensive and diverse resource availability, contributing to greater satisfaction in this dimension.
3. **Assessment and Feedback:** Online students showed higher satisfaction with assessment and feedback (Mean = 28.09) compared to Traditional students (Mean = 26.76), with a t-value of 4.153 and a p-value of 0.000. This highlights that online platforms may provide timely, detailed, and varied feedback, though scores among online learners were more variable (higher standard deviation).
4. **Technology Usage:** Online students reported significantly greater usage of technology (Mean = 23.29) than Traditional students (Mean = 20.99), with a t-

value of 8.10 and a p-value of 0.000. This is expected given the reliance on digital tools in online learning environments.

5. **Course Satisfaction:** No significant difference was observed in course satisfaction between online (Mean = 20.53) and Traditional students (Mean = 20.84), with a t-value of -1.083 and a p-value of 0.279. Both groups expressed similar levels of satisfaction with the content and structure of their courses.
6. **Overall Learning Satisfaction:** Traditional students reported significantly higher overall learning satisfaction (Mean = 123.38) compared to online students (Mean = 117.53), with a t-value of -4.762 and a p-value of 0.000. The higher satisfaction in Traditional learning likely stems from advantages in engagement, resource access, and the physical classroom experience.

The analysis indicates significant differences in satisfaction between online and Traditional learners across dimensions such as classroom engagement, learning resources, assessment and feedback, technology usage, and overall satisfaction. Traditional students consistently reported higher satisfaction, particularly in engagement and resources, while online students excelled in assessment and feedback. Both groups showed similar levels of course satisfaction, suggesting that content quality is comparable across modalities. These findings suggest that while each mode has distinct strengths, blending practices from both may optimize student satisfaction.

5.9.5 Findings Related to Learning Satisfaction and Gender

The analysis of gender differences in learning satisfaction across six dimensions also shows no statistically significant disparities between male and female students. The mean scores, standard deviations, t-values, and p-values consistently indicate that gender does not play a significant role in determining learning satisfaction.

1. **Classroom Engagement:** Mean scores: Males (20.76), Females (21.16). t-value = -1.474, p-value = 0.141. significant gender differences.

2. **Learning Resources:** Mean scores: Males (27.09), Females (27.48). t -value = -1.189, p -value = 0.235. Gender does not influence satisfaction with learning resources.
3. **Assessment & Feedback:** Mean scores: Males (27.23), Females (27.65). t -value = -1.288, p -value = 0.198. No meaningful differences in satisfaction with assessment and feedback.
4. **Technology Usage:** Males reported a mean score of 23.9177 (SD = 3.49345), and females reported a slightly higher mean of 24.4118 (SD = 3.64569). The t -value of -1.691 and p -value of 0.091 indicate no statistically significant gender difference in satisfaction with technology usage.
5. **Course Satisfaction:** Males had a mean score of 20.6646 (SD = 3.40763), and females had a similar mean of 20.7022 (SD = 3.62488). The t -value of -0.131 and p -value of 0.896 suggest no significant gender differences in course satisfaction.

The findings across the examined dimensions of learning satisfaction reveal that male and female students are equally satisfied with their educational experiences. No statistically significant gender differences were observed, supporting the idea that the learning environment and resources are equitable for both genders.

Overall Learning Satisfaction: Male students scored a mean of 119.6646 (SD = 14.67373), and females scored slightly higher at 121.4044 (SD = 16.01124). The t -value of -1.387 and p -value of 0.166 confirm no significant gender difference in overall learning satisfaction.

5.9.6 Findings Related to Learning Satisfaction and Locality

Rural students scored significantly higher in Classroom Engagement, Learning Resources, Assessment & Feedback, Course Satisfaction, and Overall Learning Satisfaction compared to urban students. Overall Learning Satisfaction: Rural ($M = 122.807$) vs. Urban ($M = 117.3333$), $t = 4.403$, $p = 0.000$.

5.9.7 Findings Related to Online and Traditional Grade Scores in Course Achievement

Traditional students had a significantly higher mean grade score (3.797, SD = 1.2358) than online students (1.643, SD = 0.4798). The t-value of 28.135 and p-value of 0.000 indicate a statistically significant difference, with Traditional students outperforming online.

1. D1: Knowledge Acquisition (p = 0.059):

- No significant difference ($p > 0.05$). Mean scores range from 19.4821 (F) to 21.1262 (A+), suggesting similar knowledge acquisition across grades, though A+ students perform slightly better.

2. D2: Communication Skills (p = 0.000):

- Significant difference ($p < 0.05$). A+ students (21.7897) outperform others, while F students (19.4643) score lowest. Strong communication skills correlate with higher grades.

3. D3: Collaborative Skills (p = 0.028):

- Significant difference. A+ (21.4112) and B++ (21.3548) students score highest, while F students (19.7679) score lowest, indicating collaboration skills vary by grade.

4. D4: Ethical and Social Responsibility (p = 0.002):

- Significant difference. B (22.3333) and A+ (22.1355) students score highest, while F students (20.6250) score lowest, suggesting ethical awareness is stronger among higher-performing students.

5. D5: Digital Literacy (p = 0.030):

- Significant difference. B students (22.4000) score highest, followed by A+ (21.6121), while F students (20.1607) score lowest. Digital literacy varies, with B students excelling.

6. D6: Leadership Skills ($p = 0.014$):

- Significant difference. A+ students (21.8551) score highest, while F students (20.0714) score lowest, indicating leadership skills align with higher grades.

7. D7: Adaptability ($p = 0.157$):

- No significant difference ($p > 0.05$). Mean scores range from 20.0357 (F) to 21.6000 (B), suggesting adaptability is consistent across grades.

8. D8: Self-Discipline ($p = 0.203$):

- No significant difference. Mean scores range from 20.1964 (F) to 21.5888 (A+), indicating self-discipline does not vary significantly by grade.

9. D9: Analytical Skills ($p = 0.023$):

- Significant difference. A+ students (21.9907) score highest, while B++ (20.5806) score lowest, suggesting analytical skills are stronger among top performers.

10. D10: Project ($p = 0.009$):

- Significant difference. A+ students (22.2804) score highest, while B++ (20.9032) score lowest, indicating project performance aligns with higher grades.

11. Overall Learning Outcomes ($p = 0.003$):

- Significant difference. A+ students (217.1402) have the highest overall scores, while F students (201.3273) have the lowest. Higher grades correlate with better overall learning outcomes.
- **Significant Differences:** Seven dimensions (D2, D3, D4, D5, D6, D9, D10) and overall learning outcomes show significant differences ($p < 0.05$), with A+ students consistently scoring highest and F students scoring lowest. This

suggests that higher academic performance is associated with stronger competencies in communication, collaboration, ethics, digital literacy, leadership, analytical skills, and project work.

- **Non-Significant Differences:** Knowledge acquisition, adaptability, and self-discipline show no significant differences ($p > 0.05$), indicating these competencies are relatively consistent across grades.
- **Traditional Modality Advantage:** The traditional modality's higher AA Score (74.58% vs. 72.62%) aligns with the trend of higher-performing students (A+, A) excelling in key competencies, possibly due to enhanced engagement in in-person settings.

5.9.8 Correlation Analysis (Learning Outcomes & Learning Satisfaction)

Positive and statistically significant correlations were observed between specific dimensions of learning outcomes and learning satisfaction. This suggests that improvements in learning outcomes may directly enhance overall satisfaction.

5.9.9 Findings Related to the Correlation Matrix Between Learning Outcomes (LO) and Learning Satisfaction (LS) Dimensions

- 1 **General Trends in Correlations:** Most correlations between Learning Outcomes (LO) and Learning Satisfaction (LS) dimensions are positive and statistically significant at the 0.01 level. This indicates a general trend where improvements in learning outcomes are associated with higher learning satisfaction.
- 2 **Strong Correlations Among LO Dimensions:** The correlations between LO dimensions are moderate to strong, with the highest being between LO_D6 and LO_D7 ($r=0.67$) and LO_D9 and LO_D10 ($r=0.67$). This suggests a strong interdependence among learning outcomes, indicating cohesive development across dimensions.
- 3 **Notable LO and LS Associations:** Among LO and LS dimensions, LO_D6 and LS_D5 show the strongest positive relationship ($r=0.42$).

suggesting that improvements in LO_D6 are particularly impactful on LS_D5. Moderate correlations exist between LO_D3 and LS_D3 ($r=0.40$), LO_D4 and LS_D3 ($r=0.45$), and other similar pairs, highlighting consistent positive interactions across dimensions.

- 4 **Weaker Correlations Highlight Areas for Improvement:** Weaker relationships, such as LO_D4 and LS_D2 ($r=0.29$), suggest that not all learning outcomes equally influence satisfaction dimensions. These lower correlations indicate potential areas where interventions may be required to enhance alignment and impact.
- 5 **Overall Implications:** The analysis reinforces the hypothesis that better learning outcomes are strongly linked to higher satisfaction. However, the variability in correlation strength suggests that tailored strategies may be needed to address specific weaker associations to ensure a holistic improvement in both learning outcomes and satisfaction dimensions.

5.9.10 Findings Related to Gender Influence on Learning Outcomes

1. **Overall Significance:** The ANOVA results indicate that the overall model is not statistically significant ($F=1.065$, $p=0.363$). This implies that the factors analyzed (type of student, gender, and their interaction) do not account for a significant portion of the variance in overall learning outcomes.
2. **Type of Student Effect:** While the effect of the type of student (online vs. Traditional) approaches significance ($F=3.100$, $p=0.079$), it does not meet the threshold for statistical significance. This suggests that differences in learning outcomes between online and Traditional students are minimal and require further investigation.
3. **Gender Effect:** Gender showed no significant impact on overall learning outcomes ($F=0.002$, $p=0.961$). This finding indicates that male and female students achieve similar learning outcomes, regardless of the educational modality.

4. **Interaction Effect:** The interaction between type of student and gender also lacks significance ($F=0.139$, $p=0.709$ $F = 0.139$, $p = 0.709$ $F=0.139$, $p=0.709$). This suggests that gender does not moderate the relationship between learning modality and outcomes.
5. **Variance Explained:** The R-squared value ($R^2=0.005$ $R^2 = 0.005$ $R^2=0.005$) indicates that the model explains only 0.5% of the variance in overall learning outcomes, highlighting the influence of other unmeasured factors.

5.9.11 Findings Related to Locality Influence on Learning Outcomes in Online vs. Traditional Learning

1. A Univariate ANOVA revealed no significant impact of learning modality (online vs. Traditional) or locality (rural vs. urban) on overall learning outcomes.
2. The overall model was not statistically significant ($F(3, 595) = 1.217$, $p = .303$), with an R-squared value of .006, indicating that these variables explain only a minimal variance in learning outcomes.
3. Main effects for learning modality ($F(1, 595) = 0.791$, $p = .374$) and locality ($F(1, 595) = 0.389$, $p = .533$) were non-significant.
4. The interaction between learning modality and locality was also non-significant ($F(1, 595) = 0.056$, $p = .814$).

5.9.12 Findings Related to Gender Influence on Learning Satisfaction in Online vs. Traditional Learning

1. ANOVA results revealed a significant overall model ($F(3, 596) = 8.876$, $p < .001$), with an R-squared of .043, showing that the independent variables explain 4.3% of the variance in learning satisfaction.
2. Learning modality had a significant effect ($F(1, 596) = 19.398$, $p < .001$), with Traditional students reporting higher satisfaction compared to online students.
3. Gender was not a significant factor ($F(1, 596) = 0.549$, $p = .459$).

4. The interaction between learning modality and gender approached significance ($F(1, 596) = 3.406, p = .065$), indicating a trend worth further investigation.

5.9.13 Findings Related to Locality Influence on Learning Satisfaction in Online vs. Traditional Learning

1. The overall model was significant ($F(3, 596) = 8.913, p < .001$), with an R-squared value of .043, showing that 4.3% of the variance in satisfaction is explained by these factors.
2. Learning modality significantly influenced satisfaction ($F(1, 596) = 4.124, p = .043$), favouring Traditional students.
3. Locality had a significant effect on satisfaction ($F(1, 596) = 3.860, p = .050$), with rural students reporting higher satisfaction compared to urban students.
4. The interaction between learning modality and locality was not significant ($F(1, 596) = 0.908, p = .341$).

5.9.14 Findings Related to Course Influence on Learning Satisfaction in Online vs. Traditional Learning

1. The overall model was significant ($F(3, 596) = 9.887, p < .001$), with an R-squared value of .047, suggesting that 4.7% of the variance in satisfaction is explained by these factors.
2. Learning modality significantly impacted satisfaction ($F(1, 596) = 17.768, p < .001$), with Traditional students reporting higher satisfaction.
3. Course also had a significant effect ($F(1, 596) = 5.071, p = .025$), with MBA students reporting different satisfaction levels compared to BBA students.
4. The interaction between learning modality and course was not significant ($F(1, 596) = 1.874, p = .171$).

5.9.15 Findings Related to Student and teacher Opinions and Suggestions on Traditional and Online Learning: Interview

1. Teacher: The interview findings reveals that traditional classrooms enhance knowledge acquisition, communication, collaboration, discipline, and student satisfaction through real-time interaction and structured learning. In contrast, online learning improves digital literacy and technology usage but often lacks engagement and personalized feedback. While traditional learning offers deeper understanding and interpersonal connection, online learning provides flexibility and access to diverse resources. A blended approach combining both modes is recommended to minimize the learning outcomes and meet diverse student needs.

2. Students: Students preferred traditional learning for its structured environment, face to face interaction, and immediate feedback, which enhanced knowledge acquisition, communication, collaboration, and leadership skills. They found classroom engagement and assessment more effective in physical settings, contributing to higher satisfaction. While online learning offered flexibility and improved digital skills for some, it often lacked personal interaction and timely support. Digital literacy and access to learning resources were seen as similar in both modes. Most students recommended a blended learning model, combining the strengths of the both approaches to meet diverse academic and personal needs.

5.10 DISCUSSIONS

Learning Outcomes:

1. **Knowledge Acquisition:** The mean scores for Traditional (20.92) and online students (20.44) were similar, with no significant difference ($t = -1.609$, $p = 0.108$). This finding aligns with prior research indicating that, while the mode of delivery can influence learning, it may not drastically affect content retention or knowledge acquisition (Ally, 2004). The lack of a significant difference suggests that both modes of delivery can facilitate effective knowledge acquisition, provided the material is well-structured and engaging.

2. **Communication and Collaborative Skills:** Traditional students significantly outperformed online students in both communication ($t = -3.694$, $p < 0.001$) and collaborative skills ($t = 5.24$, $p < 0.001$). These results align with studies suggesting that face-to-face interactions in Traditional learning environments enhance communication and collaboration (Meyer, 2002). The more structured nature of Traditional learning environments likely fosters better interpersonal interactions and collaborative group work (Bates, 2015).
3. **Digital Literacy:** Online students scored significantly higher (Mean = 20.91) than Traditional students (Mean = 19.35), highlighting the importance of technology in online learning environments. This finding supports research that emphasizes the role of digital tools in developing digital literacy (Martin & Miller, 2019), reflecting the frequent engagement online students have with digital platforms.
4. **Ethical Responsibility, Leadership, and Adaptability:** There were no significant differences in ethical responsibility ($t = -0.402$, $p = 0.688$), leadership ($t = -1.294$, $p = 0.196$), or adaptability ($t = -1.399$, $p = 0.162$). This suggests that both Traditional and online environments support the development of these skills, though the ways in which they are cultivated may vary. Traditional learning environments may provide more real-world scenarios for leadership and ethical decision-making, while online students benefit from the autonomy and adaptability required to navigate digital spaces (Collis & Moonen, 2001).
5. **Project Work and Analytical Skills:** Both groups showed similar performance in project work ($t = -0.346$, $p = 0.729$) and analytical skills ($t = -0.86$, $p = 0.39$), with no significant differences. This aligns with the idea that well-designed project-based learning can be equally effective in both online and Traditional settings (Trowler, 2010).

Learning Outcomes (Rural vs. Urban Students)

Rural students outperformed urban students in leadership ($t = 2.270$, $p = 0.024$) and analytical skills ($t = 2.105$, $p = 0.036$). However, dimensions such as classroom engagement and adaptability showed no significant difference. These findings align with Research by Oyinlola and Oloruntoba (2019) supports these findings, suggesting that rural students may demonstrate greater resilience and adaptability due to the resource-constrained environments they navigate, which enhances their problem-solving and leadership capacities.

Learning Satisfaction

1. Classroom Engagement: Traditional students reported significantly higher satisfaction with classroom engagement (Mean = 21.43 vs. 20.45, $t = -3.687$, $p = 0.000$). This finding is consistent with previous research that highlights the benefits of face-to-face interactions for student engagement and motivation (Zhao, Lei, & Li, 2022). The ability to engage in real-time discussions and immediate feedback likely contributes to this higher satisfaction.
2. Learning Resources: Traditional students also reported higher satisfaction with learning resources (Mean = 28.02 vs. 26.50, $t = -4.704$, $p = 0.000$). This suggests that Traditional students have better access to physical resources, such as libraries, labs, and in-person tutoring. While online resources can be extensive, they may lack the immediacy and diversity offered by Traditional settings (Seaman, Allen, & Seaman, 2018).
3. Assessment and Feedback: Interestingly, online students reported greater satisfaction with assessment and feedback (Mean = 28.09 vs. 26.76, $t = 4.153$, $p = 0.000$). This could be due to the more frequent and detailed feedback typically provided in online courses, where instructors are often more deliberate in delivering assessments and feedback in a timely manner (Anderson, 2008).
4. Technology Usage: Online students expressed higher satisfaction with technology usage (Mean = 23.29 vs. 22.99, $t = 8.10$, $p = 0.000$), as expected

due to the pervasive role of digital tools in their learning experience. This reflects the growing importance of technological proficiency in higher education (Jaggars & Bailey, 2010).

5. Course Satisfaction: There was no significant difference in course satisfaction ($t = -1.083$, $p = 0.279$), indicating that both online and Traditional students were similarly satisfied with the course content and structure. This finding supports the idea that course design, rather than delivery method, is more influential in shaping course satisfaction (Garrison & Vaughan, 2008).
6. Overall Learning Satisfaction: Finally, Traditional students reported significantly higher overall learning satisfaction (Mean = 123.38 vs. 117.53, $t = -4.762$, $p = 0.000$). This higher satisfaction can likely be attributed to the more holistic and interactive nature of Traditional learning experiences, which provide a more integrated and supportive learning environment (Tinto, 2012).

The study reveals that Traditional students tend to have higher scores in communication, collaboration, and overall learning satisfaction, likely due to the advantages of face-to-face interaction, direct access to learning resources, and increased classroom engagement. However, online students performed better in digital literacy and showed higher satisfaction with assessment and feedback, reflecting the strengths of digital platforms in fostering self-paced learning and providing detailed feedback.

These findings underscore the importance of tailoring educational experiences to leverage the strengths of both online and Traditional learning environments. Future research could explore strategies to integrate the best of both modes, enhancing the overall learning experience for students in MBA and BBA programs.

Learning Satisfaction: Rural vs. Urban Students

Rural students scored higher in overall learning satisfaction ($M = 122.807$ vs. $M = 117.3333$, $t = 4.403$, $p < 0.001$), including classroom engagement and course satisfaction. The higher satisfaction levels among rural students may be attributed to their appreciation for structured learning opportunities, as noted by Davis and Francis

(2018). Urban students, despite having better access to resources, often face distractions that reduce perceived satisfaction.

Grade Scores: Traditional vs. Online Students

Traditional students achieved significantly higher grades ($M = 3.797$, $SD = 1.2358$) compared to online students ($M = 1.643$, $SD = 0.4798$), as demonstrated by a highly significant t-value ($t = 28.135$, $p < 0.001$). This aligns with the findings of Xu and Jaggars (2013), who reported that students in traditional classroom settings often outperform their online counterparts due to better engagement, direct feedback, and structured environments. Additionally, Johnson et al. (2021) highlighted that the challenges of maintaining discipline and focus in online learning contribute to lower academic outcomes.

Gender and Modality Influence

Gender differences in both learning outcomes and satisfaction were negligible (ANOVA, $F = 0.002$, $p = 0.961$). Traditional students reported higher satisfaction across modalities ($F = 19.398$, $p < 0.001$). Studies such as those by Ameen et al. (2020) also observed minimal gender differences in educational satisfaction, attributing it to increasingly equitable educational practices. However, Traditional modalities consistently rank higher in satisfaction due to interactive and immersive experiences.

Correlation Between Learning Outcomes and Learning Satisfaction

Positive correlations were observed between learning outcomes (e.g., LO_D6) and satisfaction (e.g., LS_D5; $r = 0.42$). However, weaker correlations (e.g., LO_D4 and LS_D2; $r = 0.29$) indicate areas for targeted improvements. These findings resonate with the framework proposed by Kahu (2013), which emphasizes the interconnectedness of learning engagement, outcomes, and satisfaction. Strengthening weaker correlations through tailored interventions could enhance overall student experiences.

ANOVA Results: Modality and Locality Effects

Learning modality and locality showed no significant impact on overall learning outcomes ($F(3, 595) = 1.217, p = 0.303$), but modality significantly influenced satisfaction ($F(1, 596) = 19.398, p < 0.001$). While academic performance may remain consistent across modalities and localities, satisfaction is often higher in traditional settings, as highlighted by Means et al. (2014), due to the social and interactive benefits of in-person learning.

Suggestions from Teachers and Students

Students and teacher emphasized face-to-face interactions and discipline as key strengths. Flexibility and accessibility were primary benefits, though issues like isolation and delayed feedback were challenges. Students favoured hybrid models combining the strengths of both modalities, consistent with O'Flaherty and Phillips' (2015) recommendation for blended learning approaches.

1. **Traditional Superiority:** Traditional students significantly outperform online learners academically and in satisfaction due to structured environments and immediate feedback.
2. **Rural-Urban Disparities:** Rural students exhibit stronger leadership and analytical skills and report higher satisfaction, underscoring the role of locality in educational outcomes.
3. **Gender Neutrality:** Gender differences in outcomes and satisfaction are negligible, reflecting progress toward equitable education.
4. **Modality Impact:** Traditional learning enhances satisfaction, while tailored strategies are necessary to address the weaker correlations in online learning environments.

These findings underscore the need for hybrid models, targeted urban interventions, and strategies to enhance online learning experiences. Further research could explore innovative pedagogical techniques to bridge the gaps in outcomes and satisfaction across modalities.

5.11 IMPLICATIONS

1. Traditional learning may enhance interpersonal skills such as communication and collaboration due to more direct interaction.
2. Online learning may better support digital literacy development due to greater reliance on technology.
3. The mode of learning appears to have a limited impact on most other dimensions of learning outcomes, suggesting that factors beyond delivery mode may play a more critical role in student performance and development.
4. The lack of significant effects from gender or modality suggests that these factors alone are insufficient to explain differences in learning outcomes. Future research should explore additional variables, such as instructional design, individual learning preferences, and socioeconomic factors, to better understand the determinants of student success.

These findings indicate that hybrid learning models may combine the strengths of both modalities, optimizing learning outcomes and satisfaction. For MBA and BBA programs, emphasizing interactive and collaborative activities Traditional while integrating advanced digital tools online can enhance overall effectiveness.

5.12 MAJOR RECOMMENDATIONS BASED ON FINDINGS

The study's findings underscore key areas for improvement and optimization across Traditional and online learning modalities. Recommendations are as follows:

1. **Enhance Traditional Learning with Digital Integration:** Integrate more digital tools and activities in Traditional settings to enhance digital literacy without compromising interpersonal skills development. Incorporating blended learning strategies can bridge this gap.
2. **Strengthen Online Learning Interactivity:** Encourage interactive activities, such as live discussions, virtual breakout rooms, and project-based

collaborations. Use innovative teaching methods like gamification and real-time polls to foster engagement.

3. **Foster Leadership and Adaptability Equally Across Modalities:** Design cross-modality programs emphasizing these skills through real-world challenges, leadership workshops, and adaptability training sessions.
4. **Tailor Feedback Mechanisms for Traditional Learning:** Implement regular, detailed feedback mechanisms in Traditional learning environments, utilizing digital tools where appropriate to ensure timeliness and personalization.
5. **Address Variability in Traditional Learning:** Standardize core teaching practices and resource availability across Traditional classrooms to ensure a consistent learning experience while maintaining flexibility for diverse student needs.
6. **Promote Equity in Rural and Urban Learning:** Enhance leadership and analytical skill-building in urban settings while replicating successful engagement and resource strategies from rural programs in urban contexts.
7. **Gender-Inclusive Educational Strategies:** Maintain gender-neutral strategies, ensuring continued equity while incorporating diverse perspectives in curriculum and pedagogy.
8. **Increase Correlation Between Learning Outcomes and Satisfaction:** Focus on dimensions with weaker correlations (e.g., ethical responsibility and satisfaction) by tailoring curricular content and pedagogy to enhance perceived relevance and satisfaction.
9. **Optimize Online and Traditional Blended Models:** Leverage a hybrid model that combines the flexibility and feedback strengths of online learning with the interpersonal and engagement benefits of Traditional learning.

10. **Improve Grade Performance in Online Learning:** Incorporate structured academic support programs for online learners, including virtual tutoring, self-discipline training, and progress tracking.
11. **Invest in Technology Accessibility:** Enhance access to high-quality digital tools and internet connectivity for both Traditional and online students to level the playing field.
12. **Enhance Leadership and Analytical Skills Development for Rural Students:** Design tailored programs leveraging the natural leadership potential of rural students, such as project-based learning and team activities. Integrate advanced analytical tools and techniques in curricula to sustain and expand their skills.
13. **Address Classroom Engagement Disparities Between Urban and Rural Students:** Institutions should identify and address disparities in classroom engagement between urban and rural students by providing equitable access to learning resources, tailored academic support, and context-sensitive teaching strategies. Targeted interventions such as preparatory workshops, mentorship programs, and localized learning materials can help bridge the engagement gap and ensure inclusive learning experiences for all students.
14. **Enhance Engagement Among Urban Students Through Participatory Learning:** To boost engagement among urban students, institutions should incorporate participatory learning methods such as interactive workshops, peer-led discussions, and collaborative projects. Additionally, curricula should be designed to strengthen adaptability skills, ensuring that urban students derive comparable benefits to their rural counterparts in terms of learning outcomes and satisfaction.
15. **Literature Alignment:** Research emphasizes that participative and collaborative teaching models improve engagement across demographics.
16. **Link Learning Outcomes with Satisfaction:** Educational institutions should leverage the observed correlations between learning outcomes and student

satisfaction to design more effective teaching strategies and enhance overall student performance. Positive correlations between learning outcomes and satisfaction suggest that improved academic performance boosts student satisfaction.

17. **Strengthen Feedback and Mentorship:** Institutions should implement active feedback mechanisms and establish structured mentorship programs to improve academic outcomes and enhance student satisfaction.
18. **Gender-Neutral Curriculum Enhancement:** Although gender showed no significant effect on learning outcomes, slight modality-specific trends in satisfaction levels were observed. Therefore, it is recommended that institutions develop gender-inclusive learning materials and incorporate diverse perspectives in course content to ensure equal engagement across all gender identities. Additionally, conducting gender-focused workshops can help raise awareness and address unconscious biases in both online and traditional learning environments.
19. **Maximize Traditional Learning Satisfaction Benefits:** Introduce hybrid learning systems combining the flexibility of online learning with the engagement of Traditional classes. Incorporate recorded lectures and resources in Traditional settings to bridge convenience gaps.
20. **Cater to Rural Students' Higher Satisfaction Levels in Online Learning:** Expand online course offerings targeted at rural areas, with localized content and language options to suit community contexts. Develop community-based digital hubs to support rural students with limited technological access.
21. **Address Weak Correlations to Foster Holistic Improvement:** Focus on underperforming dimensions, such as LO_D4 (Adaptability) and LS_D2 (Learning Resources), by revising and enriching content in these areas. Conduct training sessions for educators on tailoring content to align better with student expectations. Enhance online learning platforms with interactive features such as live Q&A, collaborative tools, and structured assessments.

Offer specific professional development courses online to cater to MBA students' expectations.

22. **Promote Feedback-Centred Learning Strategies:** Implement robust feedback mechanisms in both online and Traditional settings to provide actionable insights for students. Train faculty to deliver constructive and timely feedback to improve student outcomes.
23. **Explore Locality-Specific Interventions:** Customize interventions to urban settings by addressing challenges like commuting times and classroom infrastructure. Facilitate cross-learning opportunities between rural and urban students to promote shared experiences.

APPENDIX-A
QUESTIONNAIRE

ANNEXURE-I (A)

Learning Outcomes Assessment Scale (LOAS)

**Learning Outcomes and Students' Satisfaction in Traditional and Online
Courses offered by Mizoram University**

Dear Respondent,

I am, **Jumri Riba**, Ph.D. Scholar, Department of Education, Mizoram University, I am conducting research entitled “*Learning Outcomes and Students' Satisfaction in Traditional and Online Courses Offered by Mizoram University*” under the guidance of **Dr. Vemula Muttu**. Assistant Professor, Department of Education, Mizoram University. I Assured you that the information you provide will only be used for study purposes. Please rest assured that your response will be kept strictly confidential and used for research purposes only. Read the question carefully before answering. Thank You.

Jumri Riba
Ph.D.
Research Scholar
Mizoram University
M-8730998315

PART-A
Demographic Information

Name of the Student:

Gender:	Male		Female	
Course:	BBA		MBA	
Locality:	Rural		Urban	

Previous Semester Grade:	PREVIOUS SEMESTER						PREVIOUS SEMESTER GRADE
	I	II	III	IV	V	VI	

PART-B
Learning Outcomes Assessment Scale (LOAS)

Some statements are given below; please put a tick ✓mark in the box that is applicable to your response. Given options are SDA= Strongly Disagree, DA= Disagree, N = Neutral, A=Agree, SA= Strongly Agree.

Sl.No.	STATEMENTS	SDA	DA	N	A	SA
1.	I am adept at solving business problems and making informed decisions.					
2.	I possess a strong foundation of general business knowledge.					
3.	I am capable of formulating effective business strategies.					
4.	I am confident in making high level decisions to achieve organizational goals.					
5.	I communicate effectively in various business contexts					
6.	I actively engage in continuous learning and professional development					
7.	I possess strong written communication skills					
8.	My written communication is clear and concise.					
9.	I excel in articulating thoughts verbally					
10.	I effectively tailor my written communication for different audiences					
11.	I am skilled in using appropriate language and tone in written communication.					
12.	My oral presentations are engaging and captivate the audience.					
13.	I can collaborate effectively in a business environment.					
14.	I am confident in my physical/virtual collaboration abilities.					
15.	I am proficient in utilizing physical/virtual forums for collaboration.					

16.	I actively participate in discussions and networking with peers in a physical/virtual setting.					
17.	I actively participate in discussions and networking with faculty in a physical/virtual setting.					
18.	I feel comfortable interacting with industry professionals in a physical/virtual environment					
19.	I have a clear understanding of ethical considerations in the business environment					
20.	I feel confident in my ability to identify ethical dilemmas within a business context.					
21.	My education has adequately equipped me to make morally responsible decisions in a business setting.					
22.	I am aware of the potential social impact of business decisions and actions.					
23.	I consider ethical implications when evaluating various business strategies					
24.	I feel a sense of responsibility to contribute to the betterment of society through my future business endeavours					
25.	I am proficient in using technology for various tasks.					
26.	I can effectively navigate and utilize digital tools commonly used in the business world.					
27.	My digital skills are aligned with the technological demands of the contemporary business environment.					
28.	I feel confident in adapting to new and emerging technologies relevant to my field of study.					
29.	I regularly update my digital skills to stay informed with industry advancements.					
30.	I can analyze and interpret data effectively using digital tools.					
31.	I possess basic leadership skills required for professional success.					
32.	My skills in managing teams are well-developed.					
33.	I believe I have the advanced leadership skills necessary for senior management roles.					
34.	Motivating others is a key aspect of my professional role.					
35.	I continuously work on improving my team management skills.					

36.	I actively seek opportunities to develop advanced leadership skills.					
37.	I am open to and comfortable with adapting to various learning formats.					
38.	I can easily switch between different learning formats based on the requirements of the course.					
39.	I see value in trying different learning methods to enhance my educational experience.					
40.	I can effectively engage with and learn from asynchronous/synchronous resources.					
41.	I actively participate and contribute meaningfully during Traditional/Online sessions.					
42.	I feel prepared and capable of performing well in assessments conducted in a Traditional format.					
43.	I am able to stay focused on my tasks without getting easily distracted.					
44.	I stay organized in both my personal and academic/professional life.					
45.	I am capable of adapting my schedule to unexpected changes or challenges.					
46.	I allocate dedicated time for self-improvement and skill development					
47.	I consistently meet my commitments and promises to others.					
48.	I find it easy to balance my academic/professional responsibilities with personal activities and leisure time.					
49.	The program provides opportunities for me to apply theoretical knowledge to practical problems.					
50.	Case studies effectively deepen my understanding of theoretical concepts.					
51.	Analyzing case studies improves my ability to make informed business decisions.					
52.	Case study discussions in class contribute to a better grasp of real-world business challenges.					
53.	Exposure to real-world scenarios enhances my practical skills in the field.					
54.	The program adequately prepares me for the challenges I may face in my future career.					
55.	Projects in the curriculum enhance my understanding of theoretical concepts.					

56.	The integration of projects in the curriculum has improved my critical thinking skills.					
57.	Projects help me connect theoretical knowledge from different courses.					
58.	The skills acquired through projects are valuable for my future career.					
59.	I believe that the integration of projects has improved my overall learning experience.					
60.	Projects have helped me develop a holistic understanding of the subject matter.					

APPENDIX-B
QUESTIONNAIRE

ANNEXURE-II (A)

Satisfaction Scale for Learning (SSL)

**Learning Outcomes and Students' Satisfaction in Traditional and Online
Courses offered by Mizoram University**

Dear Respondent,

I am, **Jumri Riba**, Ph.D. Scholar, Department of Education, Mizoram University, I am conducting research entitled “*Learning Outcomes and Students' Satisfaction in Traditional and Online Courses Offered by Mizoram University*” under the guidance of **Dr. Vemula Muttu**. Assistant Professor, Department of Education, Mizoram University. I Assured you that the information you provide will only be used for study purposes. Please rest assured that your response will be kept strictly confidential and used for research purposes only. Read the question carefully before answering. Thank You.

Jumri Riba
Ph.D
Research Scholar
Mizoram University
M-8730998315

PART-A
Demographic Information

Name of the Student:

Gender:	Male		Female	
	BBA		MBA	
Course:				
Locality:	Rural		Urban	

Previous Semester Grade:	PREVIOUS SEMESTER						PREVIOUS SEMESTER GRADE
	I	II	III	IV	V	VI	

PART-C

Satisfaction Scale for Learning (SSL)

Some statements are given below; please put a tick ☒ mark in the box that is applicable to your response. Given options are SDA= Strongly Disagree, DA= Disagree, N = Neutral, A=Agree, SA= Strongly Agree.

Sl.No.	STATEMENTS	SDA	DA	N	A	SA
1.	I find the subjects taught in my Traditional/online learning classes are highly engaging and interesting.					
2.	I am satisfied with the intellectual stimulation provided by my Traditional/online learning courses.					
3.	I feel motivated and excited to attend Traditional/online learning classes.					
4.	I feel comfortable approaching my teachers with questions or concerns.					
5.	My teachers are approachable and readily available for one-on-one discussions.					
6.	The support and mentorship from my teachers have been disappointing.					
7.	The quality of instruction in my Traditional/online learning classes is consistently high.					
8.	The Teachers provide clear explanations and demonstrate a deep understanding of the material.					

9.	The quality of instruction positively impacts my overall learning experience.					
10.	Teaching materials and resources are frequently inadequately prepared or unhelpful.					
11.	The learning resources and materials provided for my courses are comprehensive and valuable.					
12.	The learning materials enhance my understanding and engagement with the subject matter.					
13.	I frequently find the resources and materials to be unhelpful and uninspiring.					
14.	I struggle to locate or access the necessary resources and materials for my classes.					
15.	The assessments in my courses are fair and well-structured.					
16.	I receive timely and constructive feedback on my assignments and exams.					
17.	The feedback I receive on my work has a positive impact on my learning.					
18.	The assessment criteria for in-person assignments and exams were clearly communicated.					
19.	The feedback I receive is often unhelpful or lacks detail.					
20.	The counselling and mental health services are accessible and supportive.					
21.	The tutoring and academic assistance services have positively impacted my learning.					
22.	I have had negative experiences with academic advising, with limited helpful guidance.					

23.	I have access to comfortable and well-designed study spaces.					
24.	I am satisfied with the cleanliness and maintenance of the physical learning environment.					
25.	The physical learning environment frequently distracts from my ability to study and learn effectively.					
26.	The physical learning environment is frequently unclean and poorly maintained.					
27.	The technology available for learning at my institution is up-to-date and reliable.					
28.	I find the digital tools and platforms used in my courses to be user-friendly and beneficial.					
29.	The institution's tech support team is responsive and helpful.					
30.	I am satisfied with my decision to take this course via Traditional/online mode.					
31.	My choice to take this course in Traditional/online mode was a wise one.					
32.	I was very satisfied with the course					
33.	I feel that this course served my learning needs well.					
34.	I would take as many courses in Traditional/online mode as I can.					
35.	I was disappointed with the way this course worked out.					

APPENDIX-C

CHECKLIST

College Name	Mode of Course	MBA/ BBA	No. of Students	Digital Boards	Wi-Fi Available	Internet Excess	Projector	Canteen	Library/ e Library	Study Materials Available

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BRIEF BIO-DATA OF THE CANDIDATE

NAME	:	Jumri Riba
FATHER'S NAME	:	Bajum Riba
DATE OF BIRTH	:	12.06.1995
ADDRESS	:	H.No. E-20 Mane Village P.O- Korang, P.S- Nari Lower Siang, Arunachal Pradesh 791125
GENDER	:	MALE
RELIGION	:	Christianity
OCCUPATION	:	Student
MARITAL STATUS	:	Unmarried
EDUCATIONAL QUALIFICATION	:	M. A, M.Phil (Education)
Ph.D REGISTRATION NO. & DATE	:	MZU/Ph.D./1980 of 19/04/2022
DEPARTMENT		Education, Mizoram University
TITLE OF THE DISSERTATION	:	LEARNING OUTCOMES AND STUDENTS' SATISFACTION IN TRADITIONAL AND ONLINE COURSES OFFERED BY MIZORAM UNIVERSITY

CERTIFICATE



Two Days National Seminar
on
**"Navigating the Educational Landscape of the 21st Century:
Challenges and Roadmap of NEP-2020"**

Certificate

This is to certify that Prof./Dr./Mr./Ms. Jumri Riba, Research Scholar
Mizoram University has participated/Presented his/her paper
entitled A Study on Online Education Vs Traditional Face to Face Adults Learner's Learning Outcomes Compare and Contrast in the two days
National Seminar on "Navigating the Educational Landscape of the 21st Century: Challenges and Roadmap of NEP-2020"
on 21st & 22nd, March 2024 held at Department of Education, North-Eastern Hill University, Tura Campus, West Garo Hills,
Meghalaya.



Dr. Madhukar Gampala
Convener
Associate Professor
Department of Education, NEHU

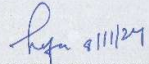
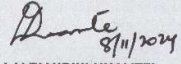
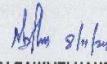
Prof. S.C. Subudhi
Head
Department of Education, NEHU

Prof. Sujata GuruDev
Campus Director,
NEHU, Tura Campus.



**NATIONAL SEMINAR ON
CONTEMPORARY ISSUES IN EDUCATION
SERIES V**

This is to certify that
Mr. Jumri Riba
Research Scholar, Department of Education, M&U
presented a paper on the topic
Comparative Analysis of Students Satisfaction
between Online and Traditional Learning Modes.
on 8th November, 2024, held at
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A STUDY ON ONLINE EDUCATION VS TRADITIONAL FACE TO FACE ADULTS LEARNER'S LEARNING OUTCOMES COMPARE AND CONTRAST

Jumri Riba¹, Dr Muttu Vemula²✉

^{1,2} Research Scholar & Assistant Professor, Department of Education, Mizoram University, Aizawl-India



ABSTRACT

This study explores the comparative effectiveness of online education and traditional face-to-face instruction for adult learners, with a focus on their learning outcomes, preferences, and technological proficiency. Using a mixed-methods approach, data was collected from a diverse sample of adult learners in Arunachal Pradesh, India, through surveys and questionnaires. The results reveal that online education offers flexibility and personalised learning opportunities, contributing to positive perceptions among participants. However, concerns about social interaction and engagement in online courses were noted. In contrast, traditional face-to-face education provides immediate feedback and supports interpersonal skill development but may not be as accommodating for busy schedules. The study also highlights that the majority of participants prefer online education and possess technological proficiency. These findings have implications for instructional design and policy decisions in adult education, emphasising the need to enhance engagement in online courses and explore innovative blended learning approaches.

Keywords: Online Education, Face-to-Face Instruction, Adult Learners, Learning Outcomes

Corresponding Author

Dr Muttu Vemula,
drmuttuedu@gmail.com

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1. INTRODUCTION

Recently, there has been a considerable change in the pattern of education due to the increase in the number of online learning platforms. Adult learners, who often have diverse commitments and responsibilities, are increasingly turning to online education as a flexible and accessible means of acquiring new knowledge and skills. This shift has prompted a reevaluation of traditional face-to-face education methods, sparking debates about the comparative effectiveness of these two modes of instruction for adult learners.

Though many investigations have focused on the educational outcomes of students in different environments, there is still an inadequacy with respect to the literature on an Updated and thorough comparison of online education and conventional instruction among the adults. It is important to close this gap as the education sector continues to change

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and thus evidence based information will be required by teachers and policymakers to enable them determine the appropriate modes of instruction for adult learners.

Social attitudes toward the Internet as an educational tool, has coin itself to the radical concept of distance education. Stevenage College offers academic activity virtually as it combines making use of library's educational resources along with the distance clock hours. Acts of teaching or learning remotely using highly envisioned comprehension or effective comprehensive tools have been in this world for only about 30-50 years. Almost ten years later, Webster College began its distance education business with correspondence courses and television programs. It is often goes unnoticed, that distance education at foreign countries in general began in the late fifties to early sixties only. Distance education or teaching without boarding students has been known in human history only for a few centuries. British colonization of Australia further extended its commencement in Australia particularly in the mid1980s.

The recent surge in COVID-19 infections across the entire country has necessitated the implementation of online learning strategies. Consequently, a significant portion of educational institutions, including schools, colleges, and universities in Arunachal Pradesh, have transitioned to online learning. This study aims to evaluate the learning outcomes of adult students by comparing the effectiveness of online learning with traditional face-to-face learning methods.

2. LITERATURE REVIEW

Riba & Vemula (2023) This study, conducted in Northeast India, compares adult students' learning outcomes in online education to traditional face-to-face methods. Technology plays a crucial role in this transition, streamlining work processes. Researchers anonymously gathered responses from 100 college students through an online questionnaire administered from March 1st to April 30th, 2023. The study primarily focuses on students' awareness and satisfaction with online learning. Findings indicate varying levels of satisfaction: 43% with online learning instructors, 47% with course content, and 48.4% with learning technology. However, satisfaction with the learning environment stood at 27.8%. Notably, 27.7% of students expressed dissatisfaction with online learning's interactivity and found the timing of online classes less convenient than traditional face-to-face classes.

Bailey (2020) Bailey focused on three methods of instruction (face-to-face, hybrid, and online) to compare their effects on student achievement as well as persistence and satisfaction. These findings indicated that administrators and instructors should be encouraged to continue broadening access through the delivery of online and hybrid courses. Paul & Jefferson (2019) The study investigated a means to assess the efficacy of either an asynchronous online course or face-to-face teaching as part of a sequence of classes designed for undergraduate majors in environmental science across over 8 years. No significant difference was found in WEBWISER (study; GPA-10) between online and face-to-face learners, regardless of gender or class rank. The study compared student outcomes on Principles of Accounting courses offered in a traditional face-to-face and online asynchronous format (Faidley, 2018). The study found that students did much better in the face-to-face classes, and there were correlations between final course grades when other variables such as gender, ACT scores academic GPA, college-level grade point averages (GPA), and age of learners.

3. ONLINE EDUCATION:

Online education has gained prominence due to its flexibility, convenience, and accessibility. Adult learners can engage in learning activities asynchronously, enabling them to balance education with work and other commitments. On the other hand, online education does bring obstacles: isolation, self-discipline and technical barriers.

Advantages and Disadvantages:

Advantages of online education for adults include personalised learning paths, reduced geographical constraints, and the ability to accommodate different learning styles. Disadvantages include the potential for decreased social interaction, challenges in time management, and the need for a high level of self-motivation.

Factors Affecting Online Learning Outcomes:

Online learning outcomes are influenced by factors such as technological proficiency, the learning environment, interaction with peers and instructors, course design, and the presence of support services. Adult learners' ability to navigate digital tools and resources, as well as their engagement in discussions and collaborative activities, significantly impact their success in online courses.

Traditional Face-to-Face Education:

Traditional face-to-face education offers immediate social interaction, real-time feedback, and a structured learning environment. However, it can be less flexible for adult learners with busy schedules and may require physical presence at a specific location.

Advantages and Disadvantages:

The advantages of traditional face-to-face education include the opportunity for hands-on learning, direct communication with instructors, and the development of interpersonal skills. Disadvantages encompass inflexibility, potential commuting challenges, and limitations in accommodating diverse learning paces.

Factors Affecting Face-to-Face Learning Outcomes:

Face-to-face learning outcomes are influenced by classroom dynamics, instructor effectiveness, class size, and teaching methodologies. Adult learners' engagement in discussions, active participation, and interactions with peers contribute to their overall learning experience and outcomes.

Comparative Studies on Adult Learning Outcomes:

Previous Research Findings:

Research comparing online and face-to-face adult learning outcomes has yielded ambiguous findings. Even though some research has shown that online education can be equivalent to the traditional methods, there is evidence on social interaction in face-to-face environments for specific learning outcomes.

Gaps in the Literature:

While several studies have explored learning outcomes in both settings, there is a lack of comprehensive research specifically focusing on adult learners. Moreover, the influence of factors such as adult learners' preferences, technological proficiency, and the role of instructor presence in online courses remains relatively unexplored.

In conclusion, the literature review highlights the advantages and disadvantages of online education and traditional face-to-face instruction for adult learners. It also underscores the importance of various factors in shaping learning outcomes in both modes of instruction. However, the existing comparative studies reveal a need for more targeted research on adult learners' experiences, preferences, and the nuanced impact of different factors on their learning outcomes.

Research Questions: This study aims to address the following research questions:

1. How do the learning outcomes of adult learners in online education compare to those in traditional face-to-face settings? 2. What are the specific preferences of adult learners regarding online education compared to traditional face-to-face education? 3. What factors, such as technological proficiency, influence the learning outcomes in these two modes of instruction?

Objectives:

1. To compare how adult learners' experiences and preferences in online education versus traditional face-to-face education influence their engagement, knowledge retention, skill development, and overall satisfaction. 2. To assess and compare the preferences of adult learners for online education and traditional face-to-face education. 3. To investigate the impact of technological proficiency on the learning outcomes of adult learners in online education.

Significance of the Study: The implications for practitioners, institutions, policymakers and researchers in adult education are significant. This research provides a systematic comparison of adult learners' achievements in online educational settings and face-to-face, enabling decision-making for (university) leaders, instructional design considerations they may use when designing courses or programs, policy development at institutional level to support the evolving between both types of delivery modes as well as effective learner supporting services that might need to be adapted based on it; paving also way toward new streams requiring further investigation.

In essence, it aims to provide evidence-based insights into the effectiveness of online and traditional instruction for adult learners, contributing to the ongoing discourse on adult education.

Rationale of the Study: The rationale for this comparative study lies in the need to investigate and compare educational outcomes between online and traditional classroom settings, particularly in light of the extensive adoption of online learning in colleges in Arunachal Pradesh following the COVID-19 pandemic. By evaluating the effectiveness of

online instruction when compared to traditional face-to-face methods, this research aims to contribute to the existing body of knowledge in college education. Its primary objective is to assess and compare student success, satisfaction, and learning outcomes across these two instructional approaches. These insights are crucial for informing decision-making among stakeholders and ensuring the delivery of high-quality online education programs. Ultimately, this study seeks to guide stakeholders in making informed choices regarding the most effective instructional methods for facilitating learning in the context of higher education.

4. STATEMENT OF THE PROBLEM

"A Study on Online Education Vs Traditional Face to Face adults Learner's Learning outcomes compare and contrast"

Operational Definitions of Key Terms:

Adult Learner: An adult learner is typically defined as an individual who is aged 16 or older and has either completed the conventional 12 years of schooling (consisting of 8 years in grammar school and 4 years in secondary or high school) or possesses an equivalent level of education. Adult learners often exhibit certain distinct characteristics, including a self-perception as independent and self-directed learners. They bring a wealth of past experiences to their learning endeavors, which they can draw upon for context and insight. Additionally, their learning tends to be driven by specific tasks or goals, with a strong focus on immediate application or problem-solving.

Online Education: Online learning, also referred to as e-learning or distance learning in this project, represents the latest iteration of remote education, predominantly reliant on asynchronous text-based communication delivered through the internet.

Traditional Learning: Delivery of Instruction- Lecture and Textbook This is similar to above instructional method where an instructor as well a group learning in one common classroom physically, uses mainly the lecture along with textbooks for teaching.

Delimitation of the Study: In a traditional lecture and textbook model, an instructor is physically present with students in the same classroom where instruction occurs via lectures and textbooks.

5. THE METHODOLOGY OF THE STUDY

Methodology:

Research Design: This investigation utilizes a Mixed-method of quantitative and qualitative methodology to provide an extensive comparison between the learning outcomes of adult learners participating in online education versus traditional face-to-face facility. This method enables a more integrated perspective on the myriad factors that affect learning outcomes.

Sampling: The study employed a method of random sampling known as "simple random sampling." Participants: The study involves a diverse sample of adult learners aged 25 and above, drawn from various educational institutions and online learning platforms. Participants are selected based on their enrollment in both online courses and traditional face-to-face classes. Efforts are made to ensure a balanced representation of different demographics and educational backgrounds.

Data Collection: Data is collected through a survey, to capture a comprehensive view of the participants' learning experiences.

Tool: Tool was developed by the researcher for the study.

Surveys and Questionnaires:

Surveys and questionnaires are distributed to participants to gather quantitative data on their perceptions and preferences in relation to online and face-to-face learning environments. Likert-scale questions and open-ended inquiries are utilised to gauge factors such as engagement, interaction, and overall learning outcomes.

Data Analysis: Both quantitative and qualitative methods were employed for data analysis.

Results and Interpretations: The study aimed to compare the learning outcomes of adult learners in online education and traditional face-to-face settings. The data collected from the questionnaire provided valuable insights into participants' perceptions, preferences, and experiences in both modes of instruction.

Objective 1 To compare how adult learners' experiences and preferences in online education versus traditional face-to-face education influence their engagement, knowledge retention, skill development, and overall satisfaction.

Online Education Result:

Sl.No.	Item	Mean
	The flexibility of online education allows me to better manage my other commitments.	4.5
	I find it easy to navigate and access course materials in online courses.	4.3
	Online education provides opportunities for self-directed learning.	4.1
	Online courses offer a variety of interactive learning activities.	4.2
	I feel connected to my instructors and peers in online courses.	4.0
	My knowledge retention has been effective in online courses.	4.4
	Online courses have contributed to my skill development.	4.2
	I am satisfied with my overall learning experience in online education.	4.3
	I would prefer online education for future learning endeavors.	4.3

Table 1 Showing overall mean towards online courses

	N	Minimum	Maximum	Mean
Overall Means	100	2.89	5.00	4.2556
Valid N (listwise)	100			

Interpretation: In the Table 1 mean score for questions related to online education was 4.2, indicating a generally positive perception of online learning. Participants reported that the flexibility of online education allowed them to effectively manage their commitments, while personalised learning paths and interactive activities contributed to effective knowledge retention and skill acquisition. The convenience of accessing course materials was also highlighted as a significant advantage. However, concerns about social interaction and engagement were noted, suggesting that some participants felt a lack of connection with instructors and peers in online courses.

Traditional Face-to-Face Education Result:

Sl.No.	Item	Mean
	Attending face-to-face classes enhances my engagement with the course content.	3.9
	I appreciate the immediate feedback I receive from instructors in face-to-face classes.	4.1
	Collaborative activities in face-to-face classes enhance my learning experience.	3.8
	I find face-to-face classes effective for building interpersonal skills.	3.6
	Face-to-face classes contribute to my knowledge retention.	3.9
	My skill acquisition has been effective in face-to-face classes.	3.7
	I am satisfied with my overall learning experience in traditional face-to-face education.	4.0
	I would prefer traditional face-to-face education for future learning endeavors.	3.6

Table 2 Showing overall mean towards traditional face-to-face education

	N	Minimum	Maximum	Mean
Overall Means	100	2.00	5.00	3.7250

Valid N (listwise)	100			

Interpretation: In the table 2 Participants indicated a mean score of 3.8 for questions related to traditional face-to-face education. This suggests that face-to-face learning was perceived positively, particularly in terms of immediate feedback, collaborative activities, and the development of interpersonal skills. However, compared to online education, face-to-face settings were rated lower in terms of flexibility and accommodating diverse schedules.

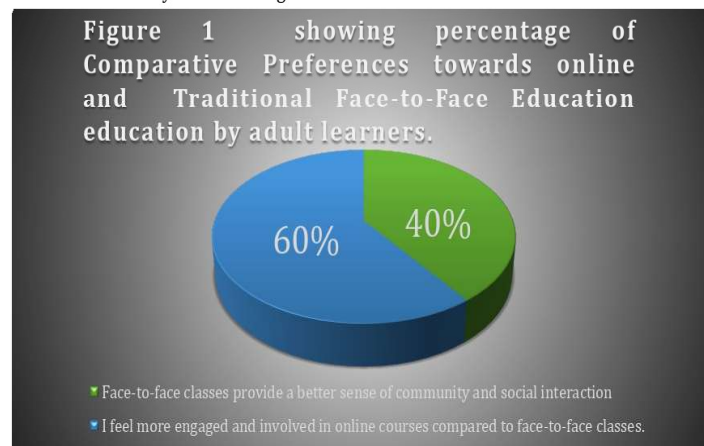
Objective 2. To assess and compare the preferences of adult learners for online education and traditional face-to-face education.

Comparative Preferences

Table 3 showing percentage of Comparative Preferences towards online education by adult learners.						
	Item	N	Minimum	Maximum	Mean	Percentage
		100	2.00	5.00	3.0000	
Valid N (listwise)	I feel more engaged and involved in online courses compared to face-to-face classes.					$3 \div 5 = 0.6$ $0.6 \times 100 = 60\%$

	Item	N	Minimum	Maximum	Mean	Percentage
		100	1.00	3.00	2.0000	
Valid N (listwise)	Face-to-face classes provide a better sense of community and social interaction.	100				$2 \div 5 = 0.4$ $0.4 \times 100 = 40\%$

Interpretation: Table 3 shows that in response to the question regarding overall preference, 60% of participants expressed a preference for online education, while 40% leaned toward traditional face-to-face education. This indicates that a majority of participants found online education to be more suitable for their learning needs, possibly due to the flexibility it offers. That can be clearly seen in the figure 1 below.

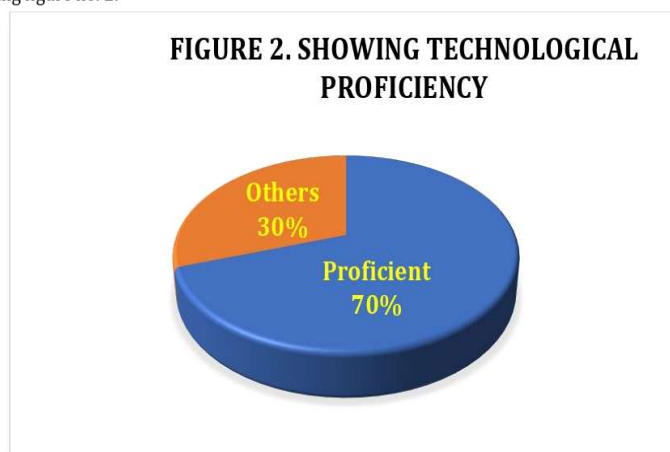


Objective 3. To investigate the impact of technological proficiency on the learning outcomes of adult learners in online education.

Technological Proficiency:

Table 4 showing technological Proficiency of online learner					
Item	N	Minimum	Maximum	Mean	Percentage
Do you feel technologically proficient when using online learning platforms	100	2.00	5.00	3.5000	$3.5 \div 5 = 0.7$ $0.7 \times 100 = 70\%$
Valid N (listwise)					

Interpretation: From the above table no.4 its clear that technological proficiency, 70% of participants indicated being proficient in using online learning platforms. This suggests that most participants possessed the skills required to navigate digital tools effectively, potentially contributing to their positive experiences in online courses. Same can be seen in the following figure no. 2.



6. CONCLUSION

In summary, this study illuminates the strengths and weaknesses of online education and traditional face-to-face instruction for adult learners. Online learning offers flexibility but lacks social interaction, while traditional classes provide immediacy but may not suit busy schedules. The majority of participants (60%) favoured online learning, likely due to their technological proficiency (70%). To enhance adult learning, a blended approach that combines both methods and improves online engagement while introducing flexibility in face-to-face settings is recommended. This study underscores the need to tailor instruction to adult learners' preferences and highlights the importance of technological skills in online education. These insights are valuable for educators, institutions, and policymakers in the ever-evolving field of adult education.

CONFLICT OF INTERESTS

None.

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Awareness And Satisfaction Of College Students Towards Online Learning

Jumri Riba^{1*}

^{1*}Research Scholar, Department of Education, Mizoram University, jumriba1244@gmail.com

Dr. Muttu Vemula²

²Assistant Professor, Department of Education, Mizoram University, drmmuttuedu@gmail.com

***Corresponding Author:** Jumri Riba

*Research Scholar, Department of Education, Mizoram University, jumriba1244@gmail.com

Abstract

There are always pros and cons for anything. Likewise, for some people the technology can be a blessing and for others it can be a disadvantage. However, it is an undeniable fact that the technology has helped to minimize the manual workloads. People are going for more smart work rather than hard work. In the field of education, technology has brought tremendous shift from traditional way of teaching to ICT based teaching. The question is how far the students are willing to change with the change in teaching approaches. And online learning is one of the contemporary approaches in teaching. Thus, the present study is focusing on the awareness and satisfaction of college students on online learning. The study area has been selected under North east India. The online questionnaire was prepared by the researchers and was distributed among the college students. The data collected anonymously from 1st March to 30th April 2023. The researchers could only receive 100 samples from the college students. The present paper attempted to study the awareness of students towards online learning and to study the student's satisfaction towards online learning instructors, Course & Content, technology, learning environment. The study reveals that 43% of college students were satisfied with their online learning instructors, while 47% expressed satisfaction with their online courses and content. Additionally, 48.4% of students reported satisfaction with the learning technology utilized, and 27.8% were content with the learning environment. However, it is important to note that 27.7% of students expressed dissatisfaction with statements such as "Students are more active in online learning" and "Online classes are more interactive than face-to-face learning." They also found the starting time of online classes less convenient compared to face-to-face classes.

Keywords: Awareness, Satisfaction, College Students, Online Learning.

Introduction

The COVID-19 pandemic has forced many educational institutions to adopt online learning as a means of continuing education for students. As a result, many students have had to transition from traditional in-person learning to online learning. The awareness of online learning has therefore increased significantly among college students. In terms of satisfaction, studies have shown that while some students prefer online learning, others still prefer the traditional in-person learning experience. Factors that affect satisfaction with online learning include the quality of the technology used, the availability of support services, the level of interaction with instructors and peers, and the ability to stay motivated and focused while learning remotely.

To improve the satisfaction of college students towards online learning, institutions can invest in high-quality technology and provide support services such as technical assistance and counseling. Instructors can also promote interaction among students through online discussion forums, group

projects, and virtual office hours. Additionally, institutions can provide resources and training to help students develop effective time management and study skills to stay motivated and focused while learning remotely. Online learning is the combination of learning and technology. Technology enables the process of cognitive learning. The online learning concept is vast and continuous. The growth of online learning can be seen in the form of MOOCs (Massive Open Online Courses), SWAYAM (Study Webs of Active Learning for Young Aspiring Minds) etc. SWAYAM is India's National MOOC platform. Various online/distance courses and programs are available in MOOC and SWAYAM portal, which eases the Teaching-Learning. The Government of India has initiated several online learning courses in various domains to promote skill development and lifelong learning among the youth. Some of these courses are:

1. National Programme on Technology Enhanced Learning (NPTEL): NPTEL is an initiative by the Ministry of Education, Government of India, which offers online courses in engineering, science, and humanities. The courses are offered by the Indian Institutes of Technology (IITs) and the Indian Institute of Science (IISc), and are available for free to anyone interested in learning.
2. Skill India: Skill India is an initiative launched by the Ministry of Skill Development and Entrepreneurship, Government of India, which offers online courses and certification in various vocational skills, such as digital marketing, accounting, healthcare, and retail management.
3. Digital India: Digital India is an initiative launched by the Government of India, which offers online courses and certification in digital literacy, e-governance, and cybersecurity, among other areas.
4. SWAYAM PRABHA: SWAYAM PRABHA is a group of 32 DTH channels launched by the Ministry of Education, Government of India, which offers educational content in various domains, such as science, engineering, humanities, and social sciences. The channels are available for free and can be accessed from anywhere in the country.
5. National Skill Development Corporation (NSDC): NSDC is a public-private partnership launched by the Government of India, which offers online courses and certification in various skill domains, such as healthcare, logistics, retail, and hospitality.
6. Udemy is an online learning platform that offers a wide range of courses in various domains, including business, technology, health and fitness, arts and humanities, and more. The platform was founded in 2010 and has grown to become one of the largest online learning marketplaces, with over 155,000 courses and more than 40 million students worldwide.
7. Gradeup is an online learning platform that offers exam preparation courses and study materials for various competitive exams in India. The platform was founded in 2015 and has since grown to become one of the largest exam preparation platforms in the country, with more than 20 million registered users. Grade up courses feature live classes, recorded videos, quizzes, mock tests, and study notes, among other resources. The platform also offers a community of fellow students and teachers, which can help students connect with like-minded individuals and get their doubts and queries resolved.

These online learning courses are designed to promote skill development, lifelong learning, and digital literacy among the youth, and provide access to quality education and training to people across the country, especially in remote and underserved areas. In nutshell, online learning concept refers to learning via electronic sources, providing interactive distance learning. The online learning uses Web System as a way to access information available, disregarding time and space. After Covid-19 many students are using online platform for learning so, the researcher intends to know the satisfaction of learners towards different areas in Online learning.

Review of Related Literature

Surahman&Sulthoni (2020) Student Satisfaction toward Quality of Online Learning in Indonesian Higher Education During the Covid-19 Pandemic. This research study focuses on evaluating the

extent of student satisfaction with online learning services in higher education. To gather data on a large scale, a survey method was employed. The target population consisted of undergraduate students from 26 universities, and a random sampling technique was used, ensuring representation from various campuses across Indonesia (N = 224). An online learning satisfaction questionnaire, which was developed and validated, served as the data collection tool. The questionnaire comprised 19 statements. Descriptive statistical analysis techniques were applied for data analysis. The results indicated that 19% of participants found the online learning services to be very satisfying, 41% were satisfied, 30% expressed dissatisfaction, and 10% were very dissatisfied. Factors contributing to dissatisfaction included limited internet access and insufficient attachment and guidance from lecturers. These findings are intended to provide valuable insights to higher education leaders and lecturers, aiding in the enhancement of online learning services to

Nafrees et al., (2020) has conducted research on awareness of online learning among undergraduates to assess their current performance, identify challenges, and develop effective policies and guidelines for a successful online learning environment. This research paper utilized both quantitative and qualitative methods to determine the factors influencing students' awareness of online learning at the South Eastern University of Sri Lanka (SEUSL). Approximately 400 questionnaires were distributed to students via WhatsApp, and 310 responses were received and considered for this study. The findings of the study revealed that students faced internet connectivity issues (40.2%) during the COVID-19 lockdown period. A majority of students (69.4%) reported increased monthly expenditures, while 48.5% stated that their internet bills had risen due to the online learning system. Despite these challenges, more than 50% of the students expressed satisfaction with online education during the lockdown, while only 19.6% preferred offline learning. Additionally, a significant portion of the students (51.2%) already had experience using Zoom but preferred WebEx for online education due to its user-friendliness. In the future, researchers can conduct surveys to gather students' perceptions and expectations regarding online learning.

Zeng & Wang (2021) conducted a study on College Student Satisfaction with Online Learning during COVID-19. The objective of this research is to provide a comprehensive overview of studies that examine college student satisfaction with online learning, specifically focusing on investigations into the elements of online courses designed by instructors who transitioned from face-to-face to distance learning during the COVID-19 pandemic. This research includes studies that describe the various components involved in online course design. Kauffman's review study highlights the influence of individual differences on students' performance in online courses. While some students excel in this format, others may struggle. The review identifies specific elements within online course design that contribute to student satisfaction with online learning. Additionally, it suggests that instructors can take a proactive approach to enhance student online learning by making modifications to the components of their online courses.

Research Questions

1. Do the College students have awareness towards online learning?
2. Do the college students have satisfaction towards online learning instructors?
3. Do the college students have satisfaction towards online learning Course & Content?
4. Do the college students have satisfaction towards technology?
5. Do the college students have satisfaction towards online learning environment?

Objectives of the study

1. To study the awareness of students towards online learning
2. To study the student's satisfaction towards online learning instructors
3. To study the student's satisfaction towards online learning Course & Content

4. To study the student's satisfaction towards technology
5. To study the student's satisfaction towards online learning environment

Methodology

Research Design: To complete the present study, Descriptive –cum-Survey method of educational research had been adopted by the Researchers.

Sample: The sample of the study comprised of 100 college students studying in different colleges of North East India. There are 8 states in North east India which are Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura (commonly known as the "Seven Sisters"), and the "brother" state Sikkim state out of which sample were selected randomly.

Tool: Data was collected through online mode using a self-prepared questionnaire developed by the Researchers. The questionnaire consisted of 4 sections, first section was for collecting the respondents' personal details, second section was (ATOL) Awareness Tools of Online Learning to study the awareness of online learning, and third section was (SSOL) Satisfaction Scale of Online Learning.

Analysis: For analysis purpose descriptive statistic such as frequency and percentage had been used.

Delimitations: The study was delimited to North East India.

Results and Interpretation

Objective1. To study the awareness of students towards online learning

Statement	Yes		No	
	Frequency	Percentage	Frequency	Percentage
1. Have you heard about the term online learning?	100	100%	0	0

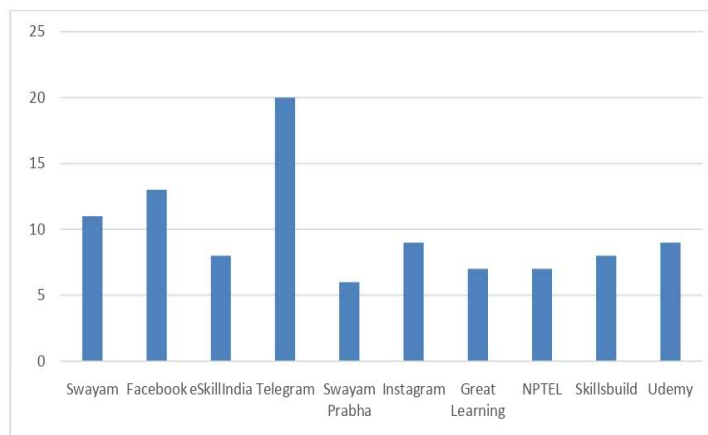
Source: Internet Survey, 2022

If yes, which are the online learning portal? Tick for all that apply

Sl.No.	Portal Name	Frequency	Percentage
1.	Swayam	33	11%
2.	Facebook	41	13%
3.	eSkillIndia	25	8%
4.	Telegram	63	20%
5.	Swayam Prabha	18	6%
6.	Instagram	28	9%
7.	Great Learning	23	7%
8.	NPTEL	23	7%
9.	Skillsbuild	25	8%
10.	Udemy	29	9%
		Total=308	100%

Source: Internet Survey, 2022

Interpretation: Above table shows that 100% of students heard about the term Online learning. Majority of the students 20% think telegram is the online learning portal and 13% opted for Facebook 11% Swayam and 9% Udemy and Instagram 8% each for eSkillIndia and Skillsbuild then 7% each for Great Learning and NPTEL. Therefore, students are learning online through Telegram and Facebook mostly according to this survey.



Objective-2. To study the student's satisfaction towards online learning instructors

Students' Satisfaction towards Learning instructor	Statement	SDA	D	N	A	SA
	Online learning instructor attended to all my doubts	2	13	48	33	4
	Online interaction with instructor was good	2	10	53	33	2
	Opportunity of interaction with the teacher is enhanced	2	23	43	30	2
	I have been able to get individualized attention from my teacher	6	33	37	24	0
	In this course teacher has been functioned as the facilitator by continuously encouraging communication	1	13	35	48	3

Note-Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree

Interpretation: According to the data presented in the table, the following observations can be made: Regarding the statement "Online learning instructor attends to all their doubts," 2% of students strongly disagree, 13% disagree, 48% are neutral, 33% agree, and 4% strongly agree. In relation to the statement "Online interaction with the instructor was good," the majority of students (53%) are neutral, 33% agree, 4% strongly agree, 2% strongly disagree. With respect to the statement "Opportunity of interaction with the teacher is enhanced," approximately 43% of students are neutral, 30% agree, 23% disagree, 4% strongly agree, and 2% strongly disagree. Concerning the statement "I have been able to get individualized attention from my teacher," the majority of students (37%) are neutral, 33% disagree, 24% agree, and 6% strongly disagree. Finally, regarding the statement "In this course, the teacher has functioned as the facilitator by continuously encouraging communication," 48% agree, 35% are neutral, 13% disagree, 3% strongly agree, and only 1% strongly disagree.

Objective-3. To study the student's satisfaction towards online learning Course & Content

Students' satisfaction towards Course & Content	Statement	SDA	D	N	A	SA
	The course materials have facilitated my learning	0	9	39	49	3
	The content provided in my course has facilitated my learning	0	6	39	53	2
	The learning activities in this course have required critical thinking skills which facilitated my learning	0	14	35	49	2
	The learning activities in this course have required problem solving skills which facilitated my learning	0	12	32	54	2
	The quality of the content was consistent throughout the course	2	17	45	33	3

Note-Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree

Interpretation: Based on the information provided in the table, the following observations can be made that in terms of the statement "The course materials have facilitated my learning," 49% of students agree, 39% are neutral, 9% disagree, and 3% strongly agree. When considering the statement "The content provided in my course has facilitated my learning," the majority of students (53%) agree, 39% are neutral, 6% disagree, and 2% strongly agree. With regard to the statement "The learning activities in this course have required critical thinking skills, which facilitated my learning," the majority of students (49%) agree, 35% are neutral, 14% disagree, and only 2% strongly agree. Additionally, the majority of students (54%) agree, 32% are neutral, 12% disagree, and only 2% strongly agree that the learning activities in this course have required problem-solving skills, which facilitated their learning. Regarding the consistency of content quality throughout the course, approximately 45% of students are neutral, 33% agree, 17% disagree, 3% strongly agree, and 2% strongly disagree.

Objective-4. To study the student's satisfaction towards technology

Students' satisfaction towards technology	Statement	SDA	D	N	A	SA
	I enjoy learning with computer	3	15	30	47	5
	My technical skills as a student have developed	3	11	27	52	7
	The internet connection usually interrupts my classes	1	5	18	35	41
	Using computers make learning more interesting	1	9	33	49	8
	Computers are good aid to learning	0	5	25	59	25

Note-Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree

Interpretation: Based on the data provided in the table, it is stated that regarding the statement "I enjoy learning with a computer," 47% of students agree, 30% are neutral, 15% disagree, 5% strongly agree, and 3% strongly disagree. In relation to the statement "My technical skills as a student have developed," 52% of students agree, 27% are neutral, 11% disagree, 7% strongly agree, and only 3% strongly disagree. With respect to the statement "The internet connection usually interrupts my classes," 41% strongly agree, 35% agree, 18% are neutral, 5% disagree, and 1% strongly disagree. Concerning the statement "Using computers makes learning more interesting," 49% of students agree, 33% are neutral, 9% disagree, 8% strongly agree, and 1% strongly disagree. Finally, the majority of students (59%) agree, 25% are neutral, 5% disagree, and 25% strongly agree that computers are a good aid to learning.

Objective-5. To study the student's satisfaction towards online learning environment

Students' satisfaction towards learning environment	Statement	SDA	D	N	A	SA
	Online learning is flexible	3	7	32	46	12
	Students are more active in online learning	17	42	21	17	3
	Online class is more interactive than face-to-face learning	31	44	15	9	1
	The starting time of online classes is more convenient than the starting time of face-to-face classes	11	31	29	25	4
	Learning is easy using online platforms	4	14	30	42	10

Interpretation: Based on the information provided in the table, the following observations can be made that Regarding the statement "Online learning is flexible," 46% of students agree, 32% are neutral, 12% strongly agree, 7% disagree, and 3% strongly disagree. When considering the statement "Students are more active in online learning," the majority of students (42%) disagree, 21% are neutral, 17% strongly disagree, 17% agree, and only 3% strongly agree. With regard to the statement "Online class is more interactive than face-to-face learning," the majority of students (42%) disagree, 21% are neutral, 17% agree, 17% strongly disagree, and only 3% strongly agree. Additionally, the majority of students (31%) disagree, 29% are neutral, 25% agree, 11% strongly

disagree, and 4% strongly agree that the starting time of online classes is more convenient than the starting time of face-to-face classes. Regarding the statement "Learning is easy using online platforms," approximately 42% of students agree, 30% are neutral, 14% disagree, 10% strongly agree, and 4% strongly disagree.

Conclusion:

Based on the findings of this study, it can be concluded that online learning is an emerging educational innovation. The majority of students in this study demonstrated a good understanding of online learning, and many of them utilized platforms such as Telegram and Facebook for their online educational needs. Regarding students' satisfaction, the study revealed that 43% of college students were satisfied with their online learning instructors, while 47% expressed satisfaction with their online courses and content. Additionally, 48.4% of students reported satisfaction with the learning technology utilized, and 27.8% were content with the learning environment. However, it is important to note that 27.7% of students expressed dissatisfaction with statements such as "Students are more active in online learning" and "Online classes are more interactive than face-to-face learning." They also found the starting time of online classes less convenient compared to face-to-face classes. These findings have significant implications for policymakers and teachers, as they highlight the need to enhance the online learning environment and teaching methods. Despite the convenience and ease of online learning, there are limitations that need to be addressed. For instance, students' dissatisfaction with the learning environment suggests a need for improvements in order to foster greater engagement and interaction. In summary, while online learning offers convenience and ease of access, this study indicates that there are areas for improvement in terms of the learning environment. Policymakers and educators can use these findings as valuable input to enhance the online teaching and learning experience for students.

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APPENDIX-D
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APPENDIX-E

ANNEXTURE-II

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Department of Education
Mizoram University

ABSTRACT

**LEARNING OUTCOMES AND STUDENTS' SATISFACTION IN
TRADITIONAL AND ONLINE COURSES OFFERED BY
MIZORAM UNIVERSITY**

**AN ABSTRACT SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF
PHILOSOPHY**

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SCHOOL OF EDUCATION

OCTOBER, 2025

**LEARNING OUTCOMES AND STUDENTS' SATISFACTION IN
TRADITIONAL AND ONLINE COURSES OFFERED BY MIZORAM
UNIVERSITY**

BY

JUMRI RIBA

Department of Education

Dr. VEMULA MUTTU

Supervisor

Submitted

In partial fulfillment of the requirement of the Degree of Doctor of Philosophy in
Education, Mizoram University, Aizawl.

Introduction

Now a day's individuals discover things more on the Internet than from newspapers or the books. One can have undesirable sentiments like depression, emptiness, etc., when he/she is not online. The internet provides several capabilities such as online gaming, shopping, the newest information, banking and a platform to communicate with individuals across the globe. In the past decades, personal computers have played a crucial role in our everyday lives, with the growth in popularity and networking of computers, inter-communication between different computers became more easier, which led to the phenomena dubbed the internet. Today most of the people are learning from online videos by exploring the internet in their topic of interest. The impact of digital videos on our everyday life is evident. That online video sharing services such as YouTube, Vimeo and Meta Cafe boast monthly audience counts in the millions. With digital videos continuing to gain popularity, it seems only reasonable that this familiar and widespread platform should extend into the school system.

According to Paul & Jefferson (2019), "Contrary to popular assumption, online education is not a new phenomenon. The earliest correspondence and distant learning educational programs were launched in the mid-1800s by the University of London. This type of educational learning was dependent on the mail service and consequently wasn't seen in America until the late Nineteenth century. It was in 1873 when what is regarded the first formal correspondence educational program was created in Boston, Massachusetts known as the "Society to Encourage Home Studies." Since then, non-traditional education has matured into what is presently considered a more realistic online teaching method. Technological innovation indubitably helped increase the pace and accessibility of distance learning courses; now students worldwide may attend sessions from the comfort of their homes."

Students that participate in online learning utilize their personal computers to access the internet. For many unconventional students, among them all those who desire to continue working full time or raising families, online graduations and courses have become popular in the past decade. Often online graduation and course programs,

some of which are done utilising digital technology, are supplied via the online learning site of the host university. Computer-based training, Web-based training, Internet-based training, online training, e-learning (electronic learning), m-learning (mobile learning), computer-aided distance education, online education goes by many names and comes in a variety of styles, but at its core: “Online education is electronically supported learning that relies on the Internet for teacher/student interaction and the distribution of class materials.” Naheem (2020)

Rationale of the Study

This comparative study aims to discover online and traditional teaching learning outcomes in the classes. It also attempts to find out the student’s academic, academic course completion, student’s satisfaction, and compare the satisfaction based on gender, locality and course between the students those who enroll in traditional courses in contrast to those that are offered online. The Study also contribute to the body of research in colleges knowing how successful online learning is in comparison to traditional teaching methods. In Mizoram University courses are offered through online and Traditional methods so this study examines the satisfaction and learning outcomes by comparing the traditional and online methods. And to seek student’s opinions and suggestions about the online and traditional teaching-learning process.

The emphasis on measuring and comparing student learning outcomes and satisfaction verify that a high-quality online curriculum is in place across the different teaching modalities. And the result of this investigation can help the stakeholders to take necessary actions for adopting better methods for learning. Based on the above rationale, some research questions arose in the mind of the investigator as follows and based on them, some objectives were formulated for the present study.

Statement of the Problem

This study aims to examine the learning outcomes and student satisfaction in online and traditional courses offered by Mizoram University. Specifically, it seeks to compare the both teaching modalities’ efficacy in raising student accomplishment, engagement, and overall satisfaction. The study further explores these factors across

different demographic variables, including gender, locality (urban/rural), and various dimensions of learning and satisfaction. Accordingly, the study is titled: "Learning Outcomes and Student Satisfaction in Online and Traditional Courses Offered by Mizoram University."

Research Questions

1. What are the learning outcomes of online learning?
2. What are the learning outcomes of traditional learning?
3. Are there any significant differences in students learning outcomes towards online Vs traditional Learning based on gender and locality?
4. Does a student have satisfaction towards online learning?
5. Does a student have satisfaction towards traditional learning?
6. Are there any significant differences in students' satisfaction towards online Vs traditional learning based on gender and locality?
7. What are the opinions and suggestions of the students towards online and traditional teaching-learning processes?
8. Are there any significant differences in academic performances between online and traditional courses?

Objectives

1. To examine the learning outcomes of online learning.
2. To examine the learning outcomes of traditional learning.
3. To compare the learning outcomes of online versus traditional learning based on gender and locality.
4. To assess students' satisfaction with online learning.
5. To assess students' satisfaction with traditional learning.
6. To compare students' satisfaction towards online versus traditional learning based on gender, locality.
7. To understand the opinions and suggestions of students regarding online and traditional teaching-learning processes.

8. To evaluate the academic performance between online and traditional Courses based on grade.

Hypotheses

1. There is no significant difference in learning outcomes across all dimensions between students engaged in online learning and those in traditional learning.
2. There is no significant difference in learning outcomes across all dimensions between online and traditional learning when moderated by gender and locality.
3. There is no significant difference in student satisfaction across all dimensions between online learning and traditional learning.
4. There is no significant difference in student satisfaction across all dimensions for online and traditional learning when moderated by gender and locality.
5. There is no significant difference in academic performance between online and traditional learning based on students' grade levels.

Review of Related Literature

The present chapter reviews a total of 83 studies related to learning outcomes and student satisfaction in online and traditional education. Among these, 6 are national studies conducted in India, while the remaining 77 are international studies. There are no regional studies specifically focusing on Mizoram or the Northeast Indian region. The review spans research conducted between 2000 and 2023.

Numerous studies suggest that when online courses are well-designed and effectively delivered, student learning outcomes can be comparable to those of traditional face-to-face instruction. For instance, Stack (2015) and Sussman & Dutter (2010) found no significant differences in final grades between online and Traditional students. Similarly, Tseng & Walsh (2016) reported that while blended learning students demonstrated higher motivation, their academic performance was on par with their traditionally taught peers. Contextual and demographic factors also influence satisfaction and learning outcomes.

- **Gender:** Faidley (2018) and Kirtley (2002) reported that female students not only performed better but also expressed greater satisfaction with online learning environments.
- **Locality:** Sultana & Khan (2019) found that urban students were generally more satisfied with online education than rural students, largely due to disparities in infrastructure and internet access highlighting the digital divide.

This study, therefore, aims to fill these gaps by offering a comparative analysis of student satisfaction and learning outcomes in online versus traditional settings at Mizoram University. Through a robust analytical framework and a focus on underrepresented student populations, the research seeks to inform both academic discourse and institutional policy.

Methodology

Research Methods

In the study, two primary methods were employed to collect data surveys and interviews. These methods were selected based on the study's objectives and the type of data required.

Population of the Study

In research, population of the study represents the entire group of individuals or elements sharing specific characteristics from which data or insights are sought. For the present study, the population is defined as all individuals enrolled in undergraduate (UG) Management course and postgraduate (PG) Management programs at Mizoram University, encompassing both online and Traditional students. Online students are those who pursue their courses through digital platforms, utilizing online resources to complete their academic requirements. In contrast, Traditional students attend physical classes and engage in traditional ‘face-to-face learning’ environments. By including both online and Traditional students across undergraduate and postgraduate levels, the study tries to capture a thorough view of the entire students’ body at Mizoram University. This inclusive approach ensures a detailed and representative

understanding of various factors influencing students' experiences and outcomes, reflecting the diverse demographics and educational contexts within the university.

Sample of the Study

The sample for this study consisted of 600 students, with 300 students varying from traditional classroom settings and 300 students from online learning environments. Stratified random sampling technique was used for selection of samples to ensure representation across gender, grade level, and locality. Additionally, 20 students and 10 teachers from both modalities were selected purposively for in-depth qualitative interviews.

Tools Used for Data Collection

Following are the tools used for the present study:

1. Tool for Learning Outcomes Assessment Scale (LOAS)
2. Satisfaction Scale for Learning (SSL)

Statistical Techniques Used in the Study

In the study, a range of statistical techniques was employed to analyze the data and derive meaningful insights, tailored to the nature of the data and research objectives. Descriptive analysis, differential analysis, and correlation analysis were the primary techniques used. Descriptive analysis involved calculating the mean and standard deviation to summarize the central tendency and dispersion of the data. The mean provided an average score, offering a general summary of the data's central value, while the standard deviation measured the variation or spread of the data points around the mean. This helped in understanding the consistency and variability in students' learning outcomes and student satisfaction scores.

For differential analysis, the t-test and F-ratio were utilized to compare different groups and identify statistically significant differences. The t-test assessed whether there were significant differences in means between two groups, such as male

and female students or online versus traditional learners. The F-ratio, used in Analysis of Variance (ANOVA), compared variances between multiple groups to determine if significant differences existed across more than two groups or conditions, such as different courses or student demographics.

Correlation analysis, specifically Pearson's Product Moment Correlation, measured the strength and direction of linear relationships between continuous variables. This analysis explored how changes in one variable, like learning outcomes, related to changes in another, such as student satisfaction. The correlation coefficient ranged from -1 to +1, indicating the degree of linear relationship, helping to uncover significant patterns and relationships within the data.

Together, these statistical techniques provided a comprehensive analysis of the data, enabling the study to uncover significant patterns, relationships, and differences in students' learning outcomes and student satisfaction, and to draw robust conclusions based on the collected data.

Procedure of Data Collection

The data collection process for this study was meticulously planned and executed to ensure accuracy and reliability. The first step involved obtaining permission from the Principals or Heads of the selected institutions. This was a crucial part of the process, as it established formal approval for conducting the research within these institutions and ensured that all necessary ethical guidelines were followed. Once permission was secured, the investigator reached out to the students for their participation. The cooperation and willingness of the students were sought to ensure that the data collection process proceeded smoothly. A total of 310 Online and 305 Traditional students were randomly selected from participating institutions to form a representative sample for the study. After data cleaning, the final sample consisted of 300 Online and 300 Traditional students.

The data collection itself was conducted personally by the investigator. Prior to administering the research tools, each student received a set of instructions outlining how to complete the instruments. These instructions included guidance on how to fill out the tools and emphasized the importance of responding to every item. Each student

was provided with two research tools along with a personal data sheet. The tools were designed to capture a range of information relevant to the study, and the personal data sheet collected demographic details. To facilitate accurate responses, the investigator took time to explain each statement on the tools in simple terms, ensuring that all students fully understood the questions. This step was particularly important for clarifying any complex or ambiguous items, which helped to minimize misunderstandings and improve the quality of the data collected.

Students were instructed to complete their responses in the designated spaces or columns provided in the tools. The investigator closely monitored this process to ensure that all items were addressed. In cases where students needed further clarification, the investigator provided additional explanations as needed, helping them to accurately complete the tools. After the students finished responding to the tools, the completed instruments were collected by the investigator. This process was carried out systematically to ensure that all data was gathered efficiently and securely. The same procedure was uniformly followed across all institutions involved in the study, maintaining consistency in the data collection process. By following these detailed procedures, the investigator ensured that the data collected was comprehensive, reliable, and valid, providing a solid foundation for the research findings.

1. Findings Related to Learning Outcomes in Online and Traditional Learning

1. **Knowledge Acquisition:** Traditional students scored slightly higher (Mean = 20.92) than online students (Mean = 20.44), but the difference was statistically insignificant ($t = -1.609$, $p = 0.108$). This suggests that the mode of learning does not significantly impact knowledge acquisition.
2. **Communication Skills:** Traditional students significantly outperformed online students (Mean = 21.51 vs. 20.48; $t = -3.694$, $p < 0.001$). This indicates that Traditional learning may better foster communication skills, possibly due to increased face-to-face interaction and real-time discussions.
3. **Collaborative Skills:** Traditional students achieved significantly higher scores (Mean = 20.68 vs. 19.05; $t = 5.24$, $p < 0.001$). Traditional students displayed

more consistent collaborative skills ($SD = 3.32$) compared to online students ($SD = 4.23$), reflecting the structured environment of traditional classrooms.

4. **Ethical and Social Responsibility:** Both groups performed similarly (Online Mean = 21.52, Traditional Mean = 21.62; $t = -0.402$, $p = 0.688$). The mode of learning did not significantly impact ethical and social responsibility.
5. **Digital Literacy:** Online students scored significantly higher (Mean = 20.91 vs. 18.35; $t = 7.85$, $p < 0.001$). The greater variability in online students' scores ($SD = 4.27$ vs. 3.69) suggests diverse levels of digital skills among online learners, possibly due to varying exposure to technology.
6. **Leadership Skills:** Scores were similar between groups (Online Mean = 21.11, Traditional Mean = 21.48; $t = -1.294$, $p = 0.196$), with not statistically significant differences.
7. **Adaptability:** There was no significant difference between groups (Online Mean = 20.71, Traditional Mean = 21.14; $t = -1.399$, $p = 0.162$). Both online and Traditional students showed comparable levels of adaptability.
8. **Self-Discipline:** Online and Traditional students performed similarly (Online Mean = 20.97, Traditional Mean = 21.38; $t = -1.307$, $p = 0.192$), indicating no significant influence of learning mode.
9. **Analytical Skills:** No significant differences were observed (Online Mean = 21.32, Traditional Mean = 21.59; $t = -0.86$, $p = 0.39$). Analytical skills were equally developed across both learning modes.
10. **Project Work:** Both groups achieved similar scores (Online Mean = 21.71, Traditional Mean = 21.81; $t = -0.346$, $p = 0.729$), with no significant differences in project-related tasks.
11. **Overall Learning Outcomes:** Traditional students reported slightly higher overall scores (Mean = 213.85 vs. 209.78), but the difference was not statistically significant ($t = -1.75$, $p = 0.081$). The variability in outcomes was higher among Traditional students ($SD = 32.74$ vs. 23.34).

- **Significant Differences:** Traditional students scored significantly higher in communication skills and collaborative skills, while online students outperformed in digital literacy.
- **No Significant Differences:** For the characteristics, including information acquisition, ethical and social responsibility, leadership abilities, flexibility, self-discipline, analytical skills, project work, and overall results, the differences were not statistically significant.

2. Findings Related to Learning Outcomes and Gender

1. **Knowledge Acquisition:** Mean scores: Males (20.55), Females (20.83), t-value = -0.955, p-value = 0.340. No significant difference; both genders perform similarly.
2. **Communication Skills:** Mean scores: Males (20.87), Females (21.15). t-value = -0.993, p-value = 0.321. No significant gender differences.
3. **Collaborative Skills:** Mean scores: Males (20.89), Females (20.83). t-value = 0.212, p-value = 0.832. Gender has no significant effect.
4. **Ethical and Social Responsibility:** Mean scores: Males (21.57), Females (21.57). t-value = 0.026, p-value = 0.979. Both genders perform identically.
5. **Digital Literacy:** Mean scores: Males (21.18), Females (21.08). t-value = 0.313, p-value = 0.754. No significant difference was observed.
6. **Leadership Skills:** Mean scores: Males (21.47), Females (21.09). t-value = 1.317, p-value = 0.188. No significant gender effect.
7. **Adaptability:** Mean scores: Males (21.02), Females (20.81). t-value = 0.683, p-value = 0.495. Gender does not affect adaptability.
8. **Self-Discipline:** Mean scores: Males (21.03), Females (21.35). t-value = -1.013, p-value = 0.311. No significant difference between genders.

9. **Analytical Skills:** Mean scores: Males (21.32), Females (21.61). t-value = -0.946, p-value = 0.344. No statistically significant disparity.
10. **Project Skills:** Mean scores: Males (21.73), Females (21.79). t-value = -0.236, p-value = 0.813. No gender-related differences.
11. **Overall Learning Outcomes:** Mean scores: Males (211.57), Females (212.11). t-value = -0.230, p-value = 0.818. Gender has no significant impact on overall outcomes.

The analysis across various dimensions of learning outcomes reveals that there are no statistically significant differences between male and female students. The results of the t-tests across dimensions “knowledge acquisition, communication skills, collaborative skills, ethical and social responsibility, digital literacy, leadership skills, adaptability, self-discipline, analytical skills, project skills, and overall learning outcomes” consistently show p-values greater than the standard threshold of 0.05.

3. Findings Related to Learning Outcomes and Locality

Knowledge Acquisition: Mean scores: Rural (20.86), Urban (20.44), t-value = 1.405, p-value = 0.161. The difference is not statistically significant. Both groups show comparable levels of knowledge acquisition.

Communication Skills: Mean scores: Rural (22.14), Urban (20.81), t-value = 4.690, p-value = 0.000. This indicates a statistically significant difference, with rural students outperforming urban students in communication skills.

Collaborative Skills: Mean scores: Rural (20.93), Urban (20.78), t-value = 0.471, p-value = 0.638. No significant difference was found between rural and urban students.

Ethical and Social Responsibility: Mean scores: Rural (19.55), Urban (21.58), t-value = 7.680, p-value = 0.000. A statistically significant difference exists, with urban students scoring higher than rural students.

Digital Literacy: Mean scores: Rural (21.32), Urban (20.88), t-value = 1.329, p-value = 0.184. The difference is not statistically significant.

Leadership Skills: Mean scores: Rural (21.58), Urban (20.92), t-value = 2.270, p-value = 0.024. The difference is statistically significant, with rural students reporting higher leadership skills.

Adaptability: Mean scores: Rural (21.10), Urban (20.69), t-value = 1.307, p-value = 0.192. No statistically significant difference was found.

Self-Discipline: Mean scores: Rural (21.37), Urban (20.91), t-value = 1.443, p-value = 0.150. The result is not statistically significant.

Analytical Skills: Mean scores: Rural (21.73), Urban (21.09), t-value = 2.105, p-value = 0.036. A statistically significant difference exists, with rural students performing better in analytical skills.

Project Skills: Mean scores: Rural (21.92), Urban (21.54), t-value = 1.282, p-value = 0.200. No statistically significant difference exists between the groups.

Overall Learning Outcomes: Mean scores: Rural (213.52), Urban (209.55), t-value = 1.692, p-value = 0.091. Although rural students have a slightly higher mean score, the difference is not statistically significant.

Analysis shows that significant differences were observed in four dimensions of learning outcomes. Rural students outperformed Urban students in Leadership Skills (LO_D6), Analytical Skills (LO_D9), and Communication Skills (LO_D2), while Urban students reported higher levels in Ethical and Social Responsibility (LO_D4). No significant differences were found in the majority of other dimensions, such as Knowledge Acquisition (LO_D1), Collaborative Skills (LO_D3), Digital Literacy (LO_D5), Adaptability (LO_D7), Self-Discipline (LO_D8), and Project Work (LO_D10), indicating that Rural and Urban students perform similarly in these areas.

Overall, while Rural students seem to have an edge in certain domains like Communication, Leadership, and Analytical Skills, and Urban students demonstrate stronger Ethical and Social Responsibility, locality does not significantly affect most

dimensions of learning outcomes. These findings suggest that while contextual differences exist, they do not broadly impact student learning experiences across the board.

4. Findings Related to Learning Satisfaction in Online and Traditional Learning

This section examines the learning satisfaction of online and Traditional students across multiple dimensions, revealing statistically significant differences in several areas while highlighting areas of similarity:

1. **Classroom Engagement:** Traditional students reported significantly higher classroom engagement (Mean = 21.43) compared to online students (Mean = 20.45), with a t-value of -3.687 and a p-value of 0.000. This indicates that the interactive and participative nature of Traditional learning enhances engagement more effectively than online modalities.
2. **Learning Resources:** Traditional students had significantly better access to learning resources (Mean = 28.02) compared to online students (Mean = 26.50), as indicated by a t-value of -4.704 and a p-value of 0.000. Traditional learning likely offers more comprehensive and diverse resource availability, contributing to greater satisfaction in this dimension.
3. **Assessment and Feedback:** Online students showed higher satisfaction with assessment and feedback (Mean = 28.09) compared to Traditional students (Mean = 26.76), with a t-value of 4.153 and a p-value of 0.000. This highlights that online platforms may provide timely, detailed, and varied feedback, though scores among online learners were more variable (higher standard deviation).
4. **Technology Usage:** Online students reported significantly greater usage of technology (Mean = 23.29) than Traditional students (Mean = 20.99), with a t-value of 8.10 and a p-value of 0.000. This is expected given the reliance on digital tools in online learning environments.

5. **Course Satisfaction:** No significant difference was observed in course satisfaction between online (Mean = 20.53) and Traditional students (Mean = 20.84), with a t-value of -1.083 and a p-value of 0.279. Both groups expressed similar levels of satisfaction with the content and structure of their courses.
6. **Overall Learning Satisfaction:** Traditional students reported significantly higher overall learning satisfaction (Mean = 123.38) compared to online students (Mean = 117.53), with a t-value of -4.762 and a p-value of 0.000. The higher satisfaction in Traditional learning likely stems from advantages in engagement, resource access, and the physical classroom experience.

The analysis indicates significant differences in satisfaction between online and Traditional learners across dimensions such as classroom engagement, learning resources, assessment and feedback, technology usage, and overall satisfaction. Traditional students consistently reported higher satisfaction, particularly in engagement and resources, while online students excelled in assessment and feedback. Both groups showed similar levels of course satisfaction, suggesting that content quality is comparable across modalities. These findings suggest that while each mode has distinct strengths, blending practices from both may optimize student satisfaction.

5. Findings Related to Learning Satisfaction and Gender

The analysis of gender differences in learning satisfaction across six dimensions also shows no statistically significant disparities between male and female students. The mean scores, standard deviations, t-values, and p-values consistently indicate that gender does not play a significant role in determining learning satisfaction.

1. **Classroom Engagement:** Mean scores: Males (20.76), Females (21.16). t-value = -1.474, p-value = 0.141. significant gender differences.
2. **Learning Resources:** Mean scores: Males (27.09), Females (27.48). t-value = -1.189, p-value = 0.235. Gender does not influence satisfaction with learning resources.

3. **Assessment & Feedback:** Mean scores: Males (27.23), Females (27.65). t -value = -1.288, p -value = 0.198. No meaningful differences in satisfaction with assessment and feedback.
4. **Technology Usage:** Males reported a mean score of 23.9177 (SD = 3.49345), and females reported a slightly higher mean of 24.4118 (SD = 3.64569). The t -value of -1.691 and p -value of 0.091 indicate no statistically significant gender difference in satisfaction with technology usage.
5. **Course Satisfaction:** Males had a mean score of 20.6646 (SD = 3.40763), and females had a similar mean of 20.7022 (SD = 3.62488). The t -value of -0.131 and p -value of 0.896 suggest no significant gender differences in course satisfaction.

The findings across the examined dimensions of learning satisfaction reveal that male and female students are equally satisfied with their educational experiences. No statistically significant gender differences were observed, supporting the idea that the learning environment and resources are equitable for both genders.

Overall Learning Satisfaction: Male students scored a mean of 119.6646 (SD = 14.67373), and females scored slightly higher at 121.4044 (SD = 16.01124). The t -value of -1.387 and p -value of 0.166 confirm no significant gender difference in overall learning satisfaction.

6. Findings Related to Learning Satisfaction and Locality

Rural students scored significantly higher in *Classroom Engagement*, *Learning Resources*, *Assessment & Feedback*, *Course Satisfaction*, and *Overall Learning Satisfaction* compared to urban students. Overall Learning Satisfaction: Rural (M = 122.807) vs. Urban (M = 117.3333), $t = 4.403$, $p = 0.000$.

7. Findings Related to Online and Traditional Grade Scores in Course Achievement

Traditional students had a significantly higher mean grade score (3.797, SD = 1.2358) than online students (1.643, SD = 0.4798). The t -value of 28.135 and p -value

of 0.000 indicate a statistically significant difference, with Traditional students outperforming online.

1. D1: Knowledge Acquisition ($p = 0.059$):

- No significant difference ($p > 0.05$). Mean scores range from 19.4821 (F) to 21.1262 (A+), suggesting similar knowledge acquisition across grades, though A+ students perform slightly better.

2. D2: Communication Skills ($p = 0.000$):

- Significant difference ($p < 0.05$). A+ students (21.7897) outperform others, while F students (19.4643) score lowest. Strong communication skills correlate with higher grades.

3. D3: Collaborative Skills ($p = 0.028$):

- Significant difference. A+ (21.4112) and B++ (21.3548) students score highest, while F students (19.7679) score lowest, indicating collaboration skills vary by grade.

4. D4: Ethical and Social Responsibility ($p = 0.002$):

- Significant difference. B (22.3333) and A+ (22.1355) students score highest, while F students (20.6250) score lowest, suggesting ethical awareness is stronger among higher-performing students.

5. D5: Digital Literacy ($p = 0.030$):

- Significant difference. B students (22.4000) score highest, followed by A+ (21.6121), while F students (20.1607) score lowest. Digital literacy varies, with B students excelling.

6. D6: Leadership Skills ($p = 0.014$):

- Significant difference. A+ students (21.8551) score highest, while F students (20.0714) score lowest, indicating leadership skills align with higher grades.

7. D7: Adaptability ($p = 0.157$):

- No significant difference ($p > 0.05$). Mean scores range from 20.0357 (F) to 21.6000 (B), suggesting adaptability is consistent across grades.

8. D8: Self-Discipline ($p = 0.203$):

- No significant difference. Mean scores range from 20.1964 (F) to 21.5888 (A+), indicating self-discipline does not vary significantly by grade.

9. D9: Analytical Skills ($p = 0.023$):

- Significant difference. A+ students (21.9907) score highest, while B++ (20.5806) score lowest, suggesting analytical skills are stronger among top performers.

10. D10: Project ($p = 0.009$):

- Significant difference. A+ students (22.2804) score highest, while B++ (20.9032) score lowest, indicating project performance aligns with higher grades.

11. Overall Learning Outcomes ($p = 0.003$):

- Significant difference. A+ students (217.1402) have the highest overall scores, while F students (201.3273) have the lowest. Higher grades correlate with better overall learning outcomes.
- **Significant Differences:** Seven dimensions (D2, D3, D4, D5, D6, D9, D10) and overall learning outcomes show significant differences ($p < 0.05$), with A+ students consistently scoring highest and F students scoring lowest. This suggests that higher academic performance is associated with stronger competencies in communication, collaboration, ethics, digital literacy, leadership, analytical skills, and project work.

- **Non-Significant Differences:** Knowledge acquisition, adaptability, and self-discipline show no significant differences ($p > 0.05$), indicating these competencies are relatively consistent across grades.
- **Traditional Modality Advantage:** The traditional modality's higher AA Score (74.58% vs. 72.62%) aligns with the trend of higher-performing students (A+, A) excelling in key competencies, possibly due to enhanced engagement in in-person settings.

8. Correlation Analysis (Learning Outcomes & Learning Satisfaction)

Positive and statistically significant correlations were observed between specific dimensions of learning outcomes and learning satisfaction. This suggests that improvements in learning outcomes may directly enhance overall satisfaction.

9. Findings Related to the Correlation Matrix Between Learning Outcomes (LO) and Learning Satisfaction (LS) Dimensions

- 1 **General Trends in Correlations:** Most correlations between Learning Outcomes (LO) and Learning Satisfaction (LS) dimensions are positive and statistically significant at the 0.01 level. This indicates a general trend where improvements in learning outcomes are associated with higher learning satisfaction.
- 2 **Strong Correlations Among LO Dimensions:** The correlations between LO dimensions are moderate to strong, with the highest being between LO_D6 and LO_D7 ($r=0.67$) and LO_D9 and LO_D10 ($r=0.67$). This suggests a strong interdependence among learning outcomes, indicating cohesive development across dimensions.
- 3 **Notable LO and LS Associations:** Among LO and LS dimensions, LO_D6 and LS_D5 show the strongest positive relationship ($r=0.42$), suggesting that improvements in LO_D6 are particularly impactful on LS_D5. Moderate correlations exist between LO_D3 and LS_D3 ($r=0.40$),

LO_D4 and LS_D3 ($r=0.45$), and other similar pairs, highlighting consistent positive interactions across dimensions.

- 4 **Weaker Correlations Highlight Areas for Improvement:** Weaker relationships, such as LO_D4 and LS_D2 ($r=0.29$), suggest that not all learning outcomes equally influence satisfaction dimensions. These lower correlations indicate potential areas where interventions may be required to enhance alignment and impact.
- 5 **Overall Implications:** The analysis reinforces the hypothesis that better learning outcomes are strongly linked to higher satisfaction. However, the variability in correlation strength suggests that tailored strategies may be needed to address specific weaker associations to ensure a holistic improvement in both learning outcomes and satisfaction dimensions.

10. Findings Related to Gender Influence on Learning Outcomes

1. **Overall Significance:** The ANOVA results indicate that the overall model is not statistically significant ($F=1.065$, $p=0.363$). This implies that the factors analyzed (type of student, gender, and their interaction) do not account for a significant portion of the variance in overall learning outcomes.
2. **Type of Student Effect:** While the effect of the type of student (online vs. Traditional) approaches significance ($F=3.100$, $p=0.079$), it does not meet the threshold for statistical significance. This suggests that differences in learning outcomes between online and Traditional students are minimal and require further investigation.
3. **Gender Effect:** Gender showed no significant impact on overall learning outcomes ($F=0.002$, $p=0.961$). This finding indicates that male and female students achieve similar learning outcomes, regardless of the educational modality.

4. **Interaction Effect:** The interaction between type of student and gender also lacks significance ($F=0.139$, $p=0.709$ $F = 0.139$, $p = 0.709$ $F=0.139$, $p=0.709$). This suggests that gender does not moderate the relationship between learning modality and outcomes.
5. **Variance Explained:** The R-squared value ($R^2=0.005$ $R^2 = 0.005$ $R^2=0.005$) indicates that the model explains only 0.5% of the variance in overall learning outcomes, highlighting the influence of other unmeasured factors.

11. Findings Related to Locality Influence on Learning Outcomes in Online vs. Traditional Learning

1. A Univariate ANOVA revealed no significant impact of learning modality (online vs. Traditional) or locality (rural vs. urban) on overall learning outcomes.
2. The overall model was not statistically significant ($F(3, 595) = 1.217$, $p = .303$), with an R-squared value of .006, indicating that these variables explain only a minimal variance in learning outcomes.
3. Main effects for learning modality ($F(1, 595) = 0.791$, $p = .374$) and locality ($F(1, 595) = 0.389$, $p = .533$) were non-significant.
4. The interaction between learning modality and locality was also non-significant ($F(1, 595) = 0.056$, $p = .814$).

12. Findings Related to Gender Influence on Learning Satisfaction in Online vs. Traditional Learning

1. ANOVA results revealed a significant overall model ($F(3, 596) = 8.876$, $p < .001$), with an R-squared of .043, showing that the independent variables explain 4.3% of the variance in learning satisfaction.
2. Learning modality had a significant effect ($F(1, 596) = 19.398$, $p < .001$), with Traditional students reporting higher satisfaction compared to online students.
3. Gender was not a significant factor ($F(1, 596) = 0.549$, $p = .459$).

4. The interaction between learning modality and gender approached significance ($F(1, 596) = 3.406, p = .065$), indicating a trend worth further investigation.

13. Findings Related to Locality Influence on Learning Satisfaction in Online vs. Traditional Learning

1. The overall model was significant ($F(3, 596) = 8.913, p < .001$), with an R-squared value of .043, showing that 4.3% of the variance in satisfaction is explained by these factors.
2. Learning modality significantly influenced satisfaction ($F(1, 596) = 4.124, p = .043$), favouring Traditional students.
3. Locality had a significant effect on satisfaction ($F(1, 596) = 3.860, p = .050$), with rural students reporting higher satisfaction compared to urban students.
4. The interaction between learning modality and locality was not significant ($F(1, 596) = 0.908, p = .341$).

14. Findings Related to Course Influence on Learning Satisfaction in Online vs. Traditional Learning

1. The overall model was significant ($F(3, 596) = 9.887, p < .001$), with an R-squared value of .047, suggesting that 4.7% of the variance in satisfaction is explained by these factors.
2. Learning modality significantly impacted satisfaction ($F(1, 596) = 17.768, p < .001$), with Traditional students reporting higher satisfaction.
3. Course also had a significant effect ($F(1, 596) = 5.071, p = .025$), with MBA students reporting different satisfaction levels compared to BBA students.
4. The interaction between learning modality and course was not significant ($F(1, 596) = 1.874, p = .171$).

15. Findings Related to Student and teacher Opinions and Suggestions on Traditional and Online Learning: Interview

1. Teacher: The interview findings reveals that traditional classrooms enhance knowledge acquisition, communication, collaboration, discipline, and student satisfaction through real-time interaction and structured learning. In contrast, online learning improves digital literacy and technology usage but often lacks engagement and personalized feedback. While traditional learning offers deeper understanding and interpersonal connection, online learning provides flexibility and access to diverse resources. A blended approach combining both modes is recommended to minimize the learning outcomes and meet diverse student needs.

2. Students: Students preferred traditional learning for its structured environment, face to face interaction, and immediate feedback, which enhanced knowledge acquisition, communication, collaboration, and leadership skills. They found classroom engagement and assessment more effective in physical settings, contributing to higher satisfaction. While online learning offered flexibility and improved digital skills for some, it often lacked personal interaction and timely support. Digital literacy and access to learning resources were seen as similar in both modes. Most students recommended a blended learning model, combining the strengths of the both approaches to meet diverse academic and personal needs.

DISCUSSIONS

1. Learning Outcomes:

1. Knowledge Acquisition: The mean scores for Traditional (20.92) and online students (20.44) were similar, with no significant difference ($t = -1.609$, $p = 0.108$). This finding aligns with prior research indicating that, while the mode of delivery can influence learning, it may not drastically affect content retention or knowledge acquisition (Ally, 2004). The lack of a significant difference suggests that both modes of delivery can facilitate effective knowledge acquisition, provided the material is well-structured and engaging.

2. **Communication and Collaborative Skills:** Traditional students significantly outperformed online students in both communication ($t = -3.694, p < 0.001$) and collaborative skills ($t = 5.24, p < 0.001$). These results align with studies suggesting that face-to-face interactions in Traditional learning environments enhance communication and collaboration (Meyer, 2002). The more structured nature of Traditional learning environments likely fosters better interpersonal interactions and collaborative group work (Bates, 2015).
3. **Digital Literacy:** Online students scored significantly higher (Mean = 20.91) than Traditional students (Mean = 19.35), highlighting the importance of technology in online learning environments. This finding supports research that emphasizes the role of digital tools in developing digital literacy (Martin & Miller, 2019), reflecting the frequent engagement online students have with digital platforms.
4. **Ethical Responsibility, Leadership, and Adaptability:** There were no significant differences in ethical responsibility ($t = -0.402, p = 0.688$), leadership ($t = -1.294, p = 0.196$), or adaptability ($t = -1.399, p = 0.162$). This suggests that both Traditional and online environments support the development of these skills, though the ways in which they are cultivated may vary. Traditional learning environments may provide more real-world scenarios for leadership and ethical decision-making, while online students benefit from the autonomy and adaptability required to navigate digital spaces (Collis & Moonen, 2001).
5. **Project Work and Analytical Skills:** Both groups showed similar performance in project work ($t = -0.346, p = 0.729$) and analytical skills ($t = -0.86, p = 0.39$), with no significant differences. This aligns with the idea that well-designed project-based learning can be equally effective in both online and Traditional settings (Trowler, 2010).

2. Learning Outcomes (Rural vs. Urban Students)

Rural students outperformed urban students in leadership ($t = 2.270$, $p = 0.024$) and analytical skills ($t = 2.105$, $p = 0.036$). However, dimensions such as classroom engagement and adaptability showed no significant difference. These findings align with Research by Oyinlola and Oloruntoba (2019) supports these findings, suggesting that rural students may demonstrate greater resilience and adaptability due to the resource-constrained environments they navigate, which enhances their problem-solving and leadership capacities.

3. Learning Satisfaction

1. Classroom Engagement: Traditional students reported significantly higher satisfaction with classroom engagement (Mean = 21.43 vs. 20.45, $t = -3.687$, $p = 0.000$). This finding is consistent with previous research that highlights the benefits of face-to-face interactions for student engagement and motivation (Zhao, Lei, & Li, 2022). The ability to engage in real-time discussions and immediate feedback likely contributes to this higher satisfaction.
2. Learning Resources: Traditional students also reported higher satisfaction with learning resources (Mean = 28.02 vs. 26.50, $t = -4.704$, $p = 0.000$). This suggests that Traditional students have better access to physical resources, such as libraries, labs, and in-person tutoring. While online resources can be extensive, they may lack the immediacy and diversity offered by Traditional settings (Seaman, Allen, & Seaman, 2018).
3. Assessment and Feedback: Interestingly, online students reported greater satisfaction with assessment and feedback (Mean = 28.09 vs. 26.76, $t = 4.153$, $p = 0.000$). This could be due to the more frequent and detailed feedback typically provided in online courses, where instructors are often more deliberate in delivering assessments and feedback in a timely manner (Anderson, 2008).
4. Technology Usage: Online students expressed higher satisfaction with technology usage (Mean = 23.29 vs. 22.99, $t = 8.10$, $p = 0.000$), as expected

due to the pervasive role of digital tools in their learning experience. This reflects the growing importance of technological proficiency in higher education (Jaggars & Bailey, 2010).

5. Course Satisfaction: There was no significant difference in course satisfaction ($t = -1.083$, $p = 0.279$), indicating that both online and Traditional students were similarly satisfied with the course content and structure. This finding supports the idea that course design, rather than delivery method, is more influential in shaping course satisfaction (Garrison & Vaughan, 2008).
6. Overall Learning Satisfaction: Finally, Traditional students reported significantly higher overall learning satisfaction (Mean = 123.38 vs. 117.53, $t = -4.762$, $p = 0.000$). This higher satisfaction can likely be attributed to the more holistic and interactive nature of Traditional learning experiences, which provide a more integrated and supportive learning environment (Tinto, 2012).

The study reveals that Traditional students tend to have higher scores in communication, collaboration, and overall learning satisfaction, likely due to the advantages of face-to-face interaction, direct access to learning resources, and increased classroom engagement. However, online students performed better in digital literacy and showed higher satisfaction with assessment and feedback, reflecting the strengths of digital platforms in fostering self-paced learning and providing detailed feedback.

These findings underscore the importance of tailoring educational experiences to leverage the strengths of both online and Traditional learning environments. Future research could explore strategies to integrate the best of both modes, enhancing the overall learning experience for students in MBA and BBA programs.

4. Learning Satisfaction: Rural vs. Urban Students

Rural students scored higher in overall learning satisfaction ($M = 122.807$ vs. $M = 117.3333$, $t = 4.403$, $p < 0.001$), including classroom engagement and course satisfaction. The higher satisfaction levels among rural students may be attributed to their appreciation for structured learning opportunities, as noted by Davis and Francis

(2018). Urban students, despite having better access to resources, often face distractions that reduce perceived satisfaction.

5. Grade Scores: Traditional vs. Online Students

Traditional students achieved significantly higher grades ($M = 3.797$, $SD = 1.2358$) compared to online students ($M = 1.643$, $SD = 0.4798$), as demonstrated by a highly significant t-value ($t = 28.135$, $p < 0.001$). This aligns with the findings of Xu and Jaggars (2013), who reported that students in traditional classroom settings often outperform their online counterparts due to better engagement, direct feedback, and structured environments. Additionally, Johnson et al. (2021) highlighted that the challenges of maintaining discipline and focus in online learning contribute to lower academic outcomes.

6. Gender and Modality Influence

Gender differences in both learning outcomes and satisfaction were negligible (ANOVA, $F = 0.002$, $p = 0.961$). Traditional students reported higher satisfaction across modalities ($F = 19.398$, $p < 0.001$). Studies such as those by Ameen et al. (2020) also observed minimal gender differences in educational satisfaction, attributing it to increasingly equitable educational practices. However, Traditional modalities consistently rank higher in satisfaction due to interactive and immersive experiences.

7. Correlation Between Learning Outcomes and Learning Satisfaction

Positive correlations were observed between learning outcomes (e.g., LO_D6) and satisfaction (e.g., LS_D5; $r = 0.42$). However, weaker correlations (e.g., LO_D4 and LS_D2; $r = 0.29$) indicate areas for targeted improvements. These findings resonate with the framework proposed by Kahu (2013), which emphasizes the interconnectedness of learning engagement, outcomes, and satisfaction. Strengthening weaker correlations through tailored interventions could enhance overall student experiences.

8. ANOVA Results: Modality and Locality Effects

Learning modality and locality showed no significant impact on overall learning outcomes ($F(3, 595) = 1.217, p = 0.303$), but modality significantly influenced satisfaction ($F(1, 596) = 19.398, p < 0.001$). While academic performance may remain consistent across modalities and localities, satisfaction is often higher in traditional settings, as highlighted by Means et al. (2014), due to the social and interactive benefits of in-person learning.

9. Suggestions from Teachers and Students

Students and teacher emphasized face-to-face interactions and discipline as key strengths. Flexibility and accessibility were primary benefits, though issues like isolation and delayed feedback were challenges. Students favoured hybrid models combining the strengths of both modalities, consistent with O'Flaherty and Phillips' (2015) recommendation for blended learning approaches.

1. **Traditional Superiority:** Traditional students significantly outperform online learners academically and in satisfaction due to structured environments and immediate feedback.
2. **Rural-Urban Disparities:** Rural students exhibit stronger leadership and analytical skills and report higher satisfaction, underscoring the role of locality in educational outcomes.
3. **Gender Neutrality:** Gender differences in outcomes and satisfaction are negligible, reflecting progress toward equitable education.
4. **Modality Impact:** Traditional learning enhances satisfaction, while tailored strategies are necessary to address the weaker correlations in online learning environments.

These findings underscore the need for hybrid models, targeted urban interventions, and strategies to enhance online learning experiences. Further research could explore innovative pedagogical techniques to bridge the gaps in outcomes and satisfaction across modalities.

Implications

1. Traditional learning may enhance interpersonal skills such as communication and collaboration due to more direct interaction.
2. Online learning may better support digital literacy development due to greater reliance on technology.
3. The mode of learning appears to have a limited impact on most other dimensions of learning outcomes, suggesting that factors beyond delivery mode may play a more critical role in student performance and development.
4. The lack of significant effects from gender or modality suggests that these factors alone are insufficient to explain differences in learning outcomes. Future research should explore additional variables, such as instructional design, individual learning preferences, and socioeconomic factors, to better understand the determinants of student success.

These findings indicate that hybrid learning models may combine the strengths of both modalities, optimizing learning outcomes and satisfaction. For MBA and BBA programs, emphasizing interactive and collaborative activities Traditional while integrating advanced digital tools online can enhance overall effectiveness.

Major Recommendations Based on Findings

The study's findings underscore key areas for improvement and optimization across Traditional and online learning modalities. Recommendations are as follows:

1. **Enhance Traditional Learning with Digital Integration:** Integrate more digital tools and activities in Traditional settings to enhance digital literacy without compromising interpersonal skills development. Incorporating blended learning strategies can bridge this gap.
2. **Strengthen Online Learning Interactivity:** Encourage interactive activities, such as live discussions, virtual breakout rooms, and project-based

collaborations. Use innovative teaching methods like gamification and real-time polls to foster engagement.

3. **Foster Leadership and Adaptability Equally Across Modalities:** Design cross-modality programs emphasizing these skills through real-world challenges, leadership workshops, and adaptability training sessions.
4. **Tailor Feedback Mechanisms for Traditional Learning:** Implement regular, detailed feedback mechanisms in Traditional learning environments, utilizing digital tools where appropriate to ensure timeliness and personalization.
5. **Address Variability in Traditional Learning:** Standardize core teaching practices and resource availability across Traditional classrooms to ensure a consistent learning experience while maintaining flexibility for diverse student needs.
6. **Promote Equity in Rural and Urban Learning:** Enhance leadership and analytical skill-building in urban settings while replicating successful engagement and resource strategies from rural programs in urban contexts.
7. **Gender-Inclusive Educational Strategies:** Maintain gender-neutral strategies, ensuring continued equity while incorporating diverse perspectives in curriculum and pedagogy.
8. **Increase Correlation Between Learning Outcomes and Satisfaction:** Focus on dimensions with weaker correlations (e.g., ethical responsibility and satisfaction) by tailoring curricular content and pedagogy to enhance perceived relevance and satisfaction.
9. **Optimize Online and Traditional Blended Models:** Leverage a hybrid model that combines the flexibility and feedback strengths of online learning with the interpersonal and engagement benefits of Traditional learning.

10. **Improve Grade Performance in Online Learning:** Incorporate structured academic support programs for online learners, including virtual tutoring, self-discipline training, and progress tracking.
11. **Invest in Technology Accessibility:** Enhance access to high-quality digital tools and internet connectivity for both Traditional and online students to level the playing field.
12. **Enhance Leadership and Analytical Skills Development for Rural Students:** Design tailored programs leveraging the natural leadership potential of rural students, such as project-based learning and team activities. Integrate advanced analytical tools and techniques in curricula to sustain and expand their skills.
13. **Address Classroom Engagement Disparities Between Urban and Rural Students:** Institutions should identify and address disparities in classroom engagement between urban and rural students by providing equitable access to learning resources, tailored academic support, and context-sensitive teaching strategies. Targeted interventions such as preparatory workshops, mentorship programs, and localized learning materials can help bridge the engagement gap and ensure inclusive learning experiences for all students.
14. **Enhance Engagement Among Urban Students Through Participatory Learning:** To boost engagement among urban students, institutions should incorporate participatory learning methods such as interactive workshops, peer-led discussions, and collaborative projects. Additionally, curricula should be designed to strengthen adaptability skills, ensuring that urban students derive comparable benefits to their rural counterparts in terms of learning outcomes and satisfaction.
15. **Literature Alignment:** Research emphasizes that participative and collaborative teaching models improve engagement across demographics.
16. **Link Learning Outcomes with Satisfaction:** Educational institutions should leverage the observed correlations between learning outcomes and student

satisfaction to design more effective teaching strategies and enhance overall student performance. Positive correlations between learning outcomes and satisfaction suggest that improved academic performance boosts student satisfaction.

17. **Strengthen Feedback and Mentorship:** Institutions should implement active feedback mechanisms and establish structured mentorship programs to improve academic outcomes and enhance student satisfaction.
18. **Gender-Neutral Curriculum Enhancement:** Although gender showed no significant effect on learning outcomes, slight modality-specific trends in satisfaction levels were observed. Therefore, it is recommended that institutions develop gender-inclusive learning materials and incorporate diverse perspectives in course content to ensure equal engagement across all gender identities. Additionally, conducting gender-focused workshops can help raise awareness and address unconscious biases in both online and traditional learning environments.
19. **Maximize Traditional Learning Satisfaction Benefits:** Introduce hybrid learning systems combining the flexibility of online learning with the engagement of Traditional classes. Incorporate recorded lectures and resources in Traditional settings to bridge convenience gaps.
20. **Cater to Rural Students' Higher Satisfaction Levels in Online Learning:** Expand online course offerings targeted at rural areas, with localized content and language options to suit community contexts. Develop community-based digital hubs to support rural students with limited technological access.
21. **Address Weak Correlations to Foster Holistic Improvement:** Focus on underperforming dimensions, such as LO_D4 (Adaptability) and LS_D2 (Learning Resources), by revising and enriching content in these areas. Conduct training sessions for educators on tailoring content to align better with student expectations. Enhance online learning platforms with interactive features such as live Q&A, collaborative tools, and structured assessments.

Offer specific professional development courses online to cater to MBA students' expectations.

22. **Promote Feedback-Centred Learning Strategies:** Implement robust feedback mechanisms in both online and Traditional settings to provide actionable insights for students. Train faculty to deliver constructive and timely feedback to improve student outcomes.
23. **Explore Locality-Specific Interventions:** Customize interventions to urban settings by addressing challenges like commuting times and classroom infrastructure. Facilitate cross-learning opportunities between rural and urban students to promote shared experiences.

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