Comparing the Effectiveness of Traditional Lecture Learning and E-Learning Methods among Information Technology College Students

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Abstract

The increasing prominence of e-learning, particularly during the COVID-19 pandemic, has increased until this time, and it addresses the needs of technologically advanced students. This shift highlights the necessity for teachers to adopt positive attitudes toward technology, possess technological knowledge, and effectively integrate technology into classroom settings. However, this study examines the effectiveness of traditional classroom (i.e., lecture) learning and e-learning in the Information Technology (IT) Department at a Local College in Misamis Oriental, Philippines. The research reveals that students hold positive perceptions of both methods: traditional classroom learning fosters engagement and collaboration, while e-learning is praised for its convenience and interactive features. Among these two methods, IT students exhibit a preference for e-learning due to its personalized and flexible nature, faster feedback, and practical learning opportunities. However, challenges such as feedback delays and the integration of practical tasks persist in the e-learning environment. The study underscores the importance of blending elements of both traditional classroom learning and e-learning to provide a comprehensive educational experience, thereby enhancing student engagement, learning outcomes, and preparedness for a technologically advanced world. This study further suggests a need to investigate the preferred teaching methods among students across various tertiary degree programs.

Keywords: Traditional lecture; E-learning method; Information Technology students; Blended learning; Local College

1. Introduction

Higher education has experienced a dramatic shift from traditional teaching methods to contemporary approaches facilitated by computer technology, aiding both the acquisition and delivery of knowledge. The ability to enhance teaching abilities and expand students' learning potential has been made possible by the rapid advancement of technology (Cappel & Hayen, 2004; Filimban, 2008; Kirby, Sharpe & Barbour, 2007). E-learning is one example of cutting-edge technology utilized in higher education or in academic institutions that are under pressure to offer courses online due to the e-learning trend (Siragusa, 2002). However, numerous challenges arise for both educators and learners in the realm of online teaching and learning. With the myriad issues and limited understanding surrounding this rapidly evolving technology, there is an immediate need for an assessment of e-learning to enhance understanding of its effects and effectiveness on educational practices.

The COVID-19 pandemic is one of the reasons why the educational landscape in the Philippines has further accelerated or largely shifted towards e-learning platforms, thus, necessitating a re-evaluation of its effectiveness. According to a survey conducted by the World Economic Forum in 2020, 80% of students globally experienced some form of e-learning during the pandemic, with mixed outcomes in

terms of learning efficacy and student satisfaction. The lack of preparedness among lecturers for online teaching led to chaotic learning environments (Lederman, 2020). Despite this, teachers continued to integrate e-learning into their pedagogy. This unprecedented situation has provided a unique opportunity to assess the comparative effectiveness of e-learning and traditional classroom learning in real-world scenarios.

Recent studies have explored various dimensions of this comparison, highlighting the strengths and limitations of both approaches. Bernard et al. (2019) emphasize that e-learning can enhance student engagement and self-paced learning, providing opportunities for personalized education tailored to individual learning styles and needs. Advancements in technology allow lecturers to access global information via the internet to enhance their teaching, and students utilize online resources to enrich their learning experiences (Banks, 2017). On the contrary, traditional classroom settings offer immediate feedback and social interaction, which are important for developing communication skills and collaborative learning (Li & Lee, 2021).

Additionally, e-learning and traditional classroom learning both have their advantages and disadvantages (Kumari, 2023). Traditional classroom learning facilitates direct interaction with instructors and classmates, whereas e-learning offers learners flexibility and convenience. The choice between the two ultimately hinges on individual preferences and requirements. Nonetheless, in the contemporary digital era, integrating aspects of both approaches can yield a comprehensive educational journey accommodating diverse learning styles. Groff (2013) noted that beyond serving as a resource, technology can act as a fundamental cornerstone in the learning process. Continuous learning remains essential for personal development and achievement, regardless of the method chosen by students.

This comparative study aims to examine the effectiveness of traditional classroom learning and e-learning among IT students from a local college by determining recent research findings, that is, pedagogical methodologies and technological advancements. By analyzing various educational metrics such as student performance, engagement, satisfaction, and accessibility, this study seeks to provide a comprehensive understanding of how each teaching method can be optimized to enhance learning experiences in different contexts. Additionally, the study explores the impact of technological tools and resources on learning outcomes and identifies best practices for integrating these tools into both traditional and online learning environments. The goal is to offer insights that can inform curriculum development and pedagogical strategies, ensuring that both methods can be effectively utilized to meet the diverse needs of students in the digital age.

2. Methods and Materials

2.1. Research Design

This study used a descriptive research design to compare the effectiveness of traditional lecture learning and e-learning among BSIT students at a local college in Misamis Oriental, Philippines. Descriptive research is effective in providing an accurate depiction of characteristics within a specific population, allowing for a detailed examination of students' perceptions and experiences (Nassaji, 2015). The study uses a structured questionnaire with a 4-point Likert scale to gather quantitative data. The questionnaire assesses perceptions of both traditional classroom (i.e., lecturette) learning and e-learning. Descriptive statistics, such as the mean and standard deviation, were computed to analyze the data collected, facilitating a thorough comparison of the two learning approaches.

2.2. Respondents

The respondents of this study were students at a local college in Misamis Oriental. A convenient sample technique was used to identify fifty (50) Bachelor of Science in Information Technology (BSIT)

students who were currently enrolled in the second semester of the academic year 2023-2024 to participate in the study.

2.3. Instrument

This study adopted and modified a research questionnaire from Yuemeng Wang's (2022) study titled "A Comparative Study on the Effectiveness of Traditional and Modern Teaching Methods" (Syracuse University, New York, United States, 13210). The instrument utilizes a 4-point Likert scale to evaluate various aspects of both learning methods (i.e., traditional and e-learning methods), ensuring a thorough comparison of their effectiveness.

2.4. Data Gathering

The researchers first sought permission from the Office of Research and Extension. After receiving approval, the researchers then obtained consent from the College Dean. With these authorizations in place, questionnaires were distributed to randomly selected BSIT students through both online and in-person surveys. The researchers emphasized the importance of honest responses to ensure the reliability and validity of the data collected. Once the questionnaires were completed, the researchers consolidated the responses, organized the information, and collaborated with a statistician for a thorough analysis. This collaborative effort ensured the accuracy and integrity of the study's results, providing a strong foundation for drawing meaningful discussions and conclusions.

3. Results and Discussion

This study compares the effectiveness of traditional classroom learning and e-learning among BSIT students at a local college. A Likert scale questionnaire was used to assess various aspects of both learning methods, such as student engagement, understanding of IT concepts, interaction with peers and instructors, and feedback mechanisms.

The following results highlight key differences and similarities in student perceptions and experiences with traditional and e-learning environments, providing insights to guide future educational strategies at a tertiary level.

3.1. Traditional Lecture Method

Table 1 shows that IT students generally hold positive views regarding traditional lecture methods. The two highest mean scores suggest that students perceive traditional classroom learning as beneficial for establishing meaningful relationships with peers (mean=3.24) and cultivating a sense of community among IT students (mean=3.10). These findings suggest that students value the social dimensions of learning and feel a strong sense of belonging within their academic community. Additionally, these positive evaluations highlight the importance of interpersonal interactions and collaborative experiences in enhancing the overall educational experience for IT students.

On the contrary, the two lowest mean scores indicate areas for improvement. Students report lower levels of timely feedback on assignments and examinations (mean=2.76), suggesting a need for instructors to provide more frequent and prompt feedback. Additionally, students express only moderate agreement that traditional classroom learning enhances their understanding of IT theories and concepts (mean=2.73). This indicates that there is room to improve this aspect of the educational experience, potentially by incorporating more interactive and practical elements into the traditional teaching approach to better facilitate comprehension of complex IT material. These findings underscore the need for a balanced approach that maintains the strengths of traditional methods while addressing their shortcomings.

Table 1. The Perceptions of the IT Students on Traditional Lecture Method

Statement / Indicators	Mean	SD	Description	Interpretation
1. The traditional classroom learning environment promotes active engagement with course materials.	3.18	0.826	Agree	Effective
2. In the traditional classroom setting, instructors effectively clarify complex IT concepts.	3.14	0.677	Agree	Effective
3. Traditional classroom learning facilitates meaningful interactions with classmates.	3.24	0.497	Agree	Effective
4. The traditional classroom format encourages collaborative problem-solving among students.	3.06	0.777	Agree	Effective
5. In traditional classrooms, instructors provide timely feedback on assignments and assessments.	2.76	0.925	Agree	Effective
6. Traditional classroom learning enhances my understanding of IT theories and principles.	2.73	0.764	Agree	Effective
7. The traditional classroom setting fosters a sense of community among IT students.	3.10	0.876	Agree	Effective
8. Traditional classroom activities effectively prepare me for real-world IT challenges.	3.00	0.841	Agree	Effective
9. In traditional classrooms, there is a good balance between theory and practical application.	3.22	0.587	Agree	Effective
10. Traditional classroom learning promotes a sense of accountability for academic progress.	3.20	0.790	Agree	Effective
Over-all	3.07	0.137	Agree	Effective

Legends: 3.26-4.00 (Very Effective), 2.51-3.25 (Effective), 1.76-2.50 (Not Effective), 1.00-1.75 (Very Not Effective)

This implied that while traditional lecture-style teaching has faced criticism from experts, student evaluations do not universally oppose it, with many students expressing support for this teaching method (Wang, 2022). This suggests that lecture-style teaching continues to have proponents among student populations despite criticisms. Certain subjects that emphasize critical thinking and complex calculations are best taught using traditional methods. Lecture-style classes provide an effective platform for mathematics, physics, and other science majors to concentrate on calculation and comprehension. The inclusion of multiple visual aids, such as pictures and animations, can disrupt students' concentration and hinder their ability to achieve a deep understanding of the material. Therefore, maintaining a traditional approach without excessive visual stimuli is essential for facilitating in-depth comprehension and critical thinking in these disciplines.

Similarly, Schwerdt & Wuppermann (2011) conducted research that discovered compelling evidence supporting the effectiveness of lecture-style instruction, particularly in mathematics. Moreover, the advantages of a scientific education extend beyond mathematics and are evident in other academic disciplines as well. This implies that despite advancements in technology, students still find value in the effectiveness of traditional teaching methods employed by their instructors. This reaffirms the enduring significance of traditional pedagogical approaches in fostering student engagement and comprehension. Moreover, it underscores the importance of acknowledging and incorporating these time-tested methods alongside innovative technological tools to create a balanced and effective learning environment.

Generally, the findings show that IT students had a fairly positive opinion of the traditional lecture technique, with an average score of 3.07. This shows that there is widespread agreement that the traditional approach is effective in encouraging participation, collaboration, and accountability in the academic setting. However, it also identifies areas for improvement in the learning process, notably in terms of rapid feedback and a deepening grasp of IT topics.

3.2. E-Learning Method

The data presented in Table 2 reflects IT Students' perceptions of the e-learning method, revealing overwhelmingly positive views on this approach. Among the highest mean scores, students strongly agree that online forums and discussion boards facilitate meaningful discussions with peers (Mean =

3.56), demonstrating the effectiveness of these platforms in promoting collaborative learning and peer engagement. Additionally, students place a high value on the helpfulness of online lectures and materials in understanding complex IT concepts (Mean = 3.48), underscoring the significant role of e-learning resources in enhancing comprehension and learning outcomes. These findings highlight the importance of interactive and accessible e-learning tools in providing robust educational support and fostering an engaging learning environment. Furthermore, the data suggests that e-learning methods are particularly effective in accommodating diverse learning styles and schedules, thereby contributing to a more personalized and flexible educational experience for IT students.

On the contrary, among the lowest mean scores, though still positive, students identify a need for better balancing theoretical content with practical exercises (Mean=3.08). This suggests an opportunity to enhance the integration of hands-on applications within the e-learning environment. Additionally, while feedback on assignments and assessments via e-learning platforms is rated positively, there is room for improvement (Mean=2.74). This indicates a need for more efficient and timely feedback mechanisms to further enrich the learning experience. Addressing these areas could significantly improve the overall effectiveness and satisfaction with e-learning methods. Enhanced feedback systems and a more balanced approach to theory and practice would ensure that students not only understand complex IT concepts but also apply them effectively, thereby maximizing the benefits of e-learning.

Table 2. The Perceptions of the IT Students on E-Learning Method

Statement / Indicators	Mean	SD	Description	Interpretation
1. E-learning platforms are easy to navigate and use for accessing course materials.	3.26	0.828	Strongly Agree	Very Effective
2. I find online lectures and materials in e-learning environments helpful for understanding complex IT concepts.	3.48	0.505	Strongly Agree	Very Effective
3. The interactive features and resources on e-learning platforms enhance my understanding of IT topics.	3.40	0.495	Strongly Agree	Very Effective
4. E-learning allows me to study at my own pace, fitting my schedule.	3.32	0.819	Strongly Agree	Very Effective
5. I receive timely feedback on assignments and assessments through e-learning platforms.	2.74	0.922	Agree	Effective
6. E-learning helps me grasp IT theories and principles more effectively.	3.38	0.830	Strongly Agree	Very Effective
7. Online forums and discussion boards in e-learning platforms facilitate meaningful discussions with my peers.	3.56	0.787	Strongly Agree	Very Effective
8. The simulations and scenarios provided in e-learning platforms help me apply IT skills.	3.40	0.571	Strongly Agree	Very Effective
9. E-learning strikes a good balance between theory and practical exercises.	3.08	0.274	Agree	Effective
10. E-learning encourages me to take responsibility for managing my learning.	3.44	0.611	Strongly Agree	Very Effective
Over-all	3.31	0.205	Strongly Agree	Very Effective

Legends: 3.26-4.00 (Very Effective), 2.51-3.25 (Effective), 1.76-2.50 (Not Effective), 1.00-1.75 (Very Not Effective)

Therefore, with an impressive mean score of 3.31 and a relatively low standard deviation of 0.205, students consistently view the e-learning method as highly effective in enhancing their learning experiences. This underscores its substantial contributions to understanding complex concepts, fostering engagement, and promoting collaborative learning. The high mean score reflects strong student satisfaction, while the low standard deviation indicates a high level of agreement among students, reinforcing the perception that e-learning is a valuable and reliable educational approach. Additionally, the positive feedback highlights the flexibility and accessibility of e-learning, making it an essential tool for modern education.

A wide range of teaching aids and technological tools offers teachers numerous options for diverse teaching styles. There are significant advantages to incorporating advanced technology in education. For example, multimedia serves as an excellent teaching aid. According to the study "Application of Multimedia in Education," multimedia can benefit students primarily in two key areas: diversification and flexibility (Gowda & Soma, 2017). This approach allows educators to present information in various formats, catering to different learning preferences and making the learning experience more adaptable to individual student needs. Additionally, the use of multimedia enhances engagement and comprehension by integrating visual, auditory, and interactive elements into the educational process.

In modern classrooms, educators often rely on PowerPoint presentations to convey key information, which can lead some students to believe that simply reviewing these slides is sufficient for exam preparation (Wang, 2022). This practice can result in a shallow retention of knowledge, as students may not deeply internalize the material. To counteract the potential drawbacks of high-tech teaching tools, it's important to use varied instructional methods tailored to the specific needs of different subjects (Wang, 2022). For instance, subjects that emphasize critical thinking and complex calculations should be taught using more traditional, hands-on approaches. Additionally, incorporating a mix of multimedia tools and interactive activities can help maintain student engagement and enhance understanding across various disciplines.

3.3. Traditional Teaching Versus E-Learning Method

The table shows the relationship between traditional lectures and e-learning methods based on data from 50 students. The Pearson correlation coefficient is 0.402, indicating a moderate positive relationship between the two methods. This means that students who find one method effective are likely to find the other method effective as well. The significance level is 0.003, which means this correlation is statistically significant. This suggests that both traditional lectures and e-learning methods can be effectively combined. Students appreciate the immediate feedback from traditional lectures and the flexibility of e-learning. Therefore, a blended approach that uses both methods can create a more effective learning experience. Educators can design courses that include face-to-face interactions for immediate feedback and digital tools for enhanced learning.

Table 3. Correlations of Traditional Lecture and E-learning Method

		Traditional Lecture	E-learning Method
Traditional Lecture	Pearson Correlation	1	.402
	Sig. (2-tailed)		.003
	N	50	50
E-learning Method	Pearson Correlation	.402	1
	Sig. (2-tailed)	.003	
	N	50	50

**Correlation is significant at the 0.01 level

In comparing traditional education with e-learning, based on the results, it becomes evident that in today's technologically advanced society, students exhibit a preference for digital platforms. While traditional classrooms offer interpersonal contact, college IT students express a preference for quicker feedback and a more hands-on learning approach. In contrast, e-learning distinguishes itself with its personalized and flexible nature, aligning with the preferences of contemporary learners. Effective e-learning experiences are characterized by user-friendliness and interactive features, which contribute to enhanced effectiveness and convenience. The COVID-19 pandemic has accelerated the adoption of e-learning, turning it into a necessity for many educational institutions (Hodges et al., 2020). However, despite its advantages, e-learning encounters challenges such as delayed feedback and difficulties in integrating practical tasks. Nonetheless, e-learning reflects the trend of leveraging technology to cater to

the needs of modern learners, offering tailored and engaging educational opportunities. Incorporating a mix of traditional and digital learning methods can further enhance the overall educational experience, ensuring a holistic approach to student learning and development.

The favorable attitudes toward e-learning among IT students signify a broader shift toward embracing digital tools and platforms for education in contemporary society. However, it is imperative to confront the identified challenges, such as improving feedback timeliness and seamlessly integrating practical exercises, to fully maximize the benefits of e-learning in enriching student learning experiences (Li & Lee, 2021). The juxtaposition of traditional lecture-based instruction with the e-learning approach highlights the increasing significance of harnessing technology in education to cater to the evolving preferences and needs of today's students. While traditional methodologies retain their merit, e-learning presents an avenue for fostering more personalized, interactive, and adaptable learning environments that resonate with the tech-savvy generation. Incorporating a blend of both traditional and digital approaches can further optimize the educational landscape, ensuring a comprehensive and effective learning experience for students across diverse settings.

Therefore, the findings suggest an enhancement in the educational standard, achievable only through ongoing professional growth. Contemporary university or college educators must be equipped to confront emerging challenges stemming from the ever-evolving educational landscape, particularly the digital revolution in educational settings (Makarova, 2021). These swift transformations significantly affect educators within higher education institutions. The emerging academic landscape and escalating expectations for adept graduates, primed to promote sustainable lifestyles, underscore the imperative to redefine the role of today's educators (Falloon, 2020). This necessitates a paradigm shift in the approach to teaching and learning, with educators integrating the traditional lecture method while adapting to dynamic pedagogical methods and embracing innovative technologies to meet the evolving needs of students and the educational sector as a whole.

4. Conclusions and Recommendations

With technology playing an increasingly integral role in student's daily lives, it is evident that students adept with digital tools prefer e-learning platforms with the integration of traditional lecture methods. Each teaching approach has its merits and drawbacks, and recognizing these can enhance educational outcomes for today's learners. Traditional classroom settings facilitate face-to-face interactions and foster a sense of community. However, there is room for improvement in aspects such as providing prompt feedback and striking a balance between theory and practical application to cater to the needs of tech-savvy students. On the other hand, e-learning stands out for its adaptability and user-friendly interface, aiding comprehension of intricate concepts and enabling self-paced learning. Features like online discussions and simulations further enhance e-learning's effectiveness by promoting collaboration and practical skill development.

The COVID-19 pandemic has accelerated the transition to online learning, making e-learning an indispensable tool for many educational institutions (Hodges et al., 2020). Despite its advantages, e-learning must address issues such as timely feedback and increased practical exercises to fully realize its potential. To enhance learning experiences, integrating traditional classroom methods with e-learning can offer a comprehensive approach. This blended learning model combines the personal interaction of traditional classes with the flexibility of digital resources (Anderson & Dron, 2011). Additionally, improvement in feedback mechanisms, fostering teamwork, balancing theory with hands-on experience, and providing teacher training on innovative pedagogical techniques are essential. Regular feedback from students is also invaluable for continual improvement.

In summary, integrating both traditional and e-learning methods can create a more engaging and effective educational environment. By embracing technology and tackling its associated challenges, the local college can better meet the diverse needs of its students and deliver education tailored to the demands of the digital era. This study suggests exploring the preferred teaching methodologies across

various degree programs to identify the most effective approaches for classroom instruction, including traditional lectures and e-learning modalities. Moreover, the department could consider implementing a blended approach that combines elements of both methods to optimize the learning experience for students across disciplines. This comprehensive approach aims to adapt teaching strategies to better meet learners' diverse needs and preferences in different academic programs.

Acknowledgements

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