

Students' Satisfaction in Online Learning - A Systematic Review

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Abstract. *In recent times, educational geography has been dramatically transformed by the arrival of technology, particularly with the rise of online literacy. Knowing pupil happiness in these conditions becomes vital since further educational institutions offer courses as well as virtual literacy surroundings on internet platforms. The always-shifting realm of online education is delved into in this paper, together with how it influences pupil happiness and the several factors impacting their experiences. Global events similar to the COVID-19 epidemic have accelerated the move to online literacy, so transubstantiating the delivery of education. This metamorphosis brought both benefits and challenges for preceptors as well as for scholars.*

Keywords: *Online learning, E-learning, Student Satisfaction, Digital Education, Student Experience, Learning Engagement, Educational Technology, Student Perceptions, Academic Success, Student Engagement, Online literacy, Student Performance*

1. Introduction

In recent times, online education is becoming an integral part of education, by transforming how scholars involve and engage with their studies. The fast-changing landscape of digital technology and the integration of various online platforms have led academic institutions worldwide to embrace virtual literacy surroundings, offering further flexible and inclusive educational openings (Allen & Seaman, 2017; Dhawan, 2020). This change has allowed various scholars with diverse experiences and distinct locations to continue their education without any constraints of standard or traditional classrooms. As online literacy keeps growing, it is mandatory to understand what contributes to student satisfaction in these virtual settings.

Satisfaction on the part of the students is not just an indicator of successful online education but also one of the measures where it has a significant impact on academic performance, drop-out rates, and

even global literacy issues (Kuo, 2014; Pei-Chen Sun et al., 2008). Some recent studies discuss some basic elements of something similar to service quality such as the online literacy confines that taken together have a huge impact on student satisfaction in terms of blended environments with their resource use (Istenci, A, 2024). The surveys show that some improvement has occurred regarding student satisfaction in online education; however, the challenge continues to have these experiences engaging and motivating (Times Higher Education, 2023). These findings emphasize the significance of effectively managing factors like educator support, course design, technology quality, and peer commerce to enhance pupil satisfaction.

Despite the increasing research on online education, there exists a demand to explore the mediating and moderating relationships between different factors influencing students' satisfaction. The aim of this paper is to provide a systematic literature review, with a key focus on the elements that drive student satisfaction in online learning environments. By understanding these relationships, this study offers various inputs for educators and policymakers to enhance the quality and success of online education.

2. Literature Review

According to Nashaat et al. (2021), advanced educational institutions offer online courses for students as a part of their academic plan factors. Online mode of courses connect a varied range of tools, similar to social networks, and the classes are accessible online through different platforms of learning, such as Blackboard, Moodle, etc.

Joseph Nyandusi Nyachae's (2011) findings provide a clear link between students' perceived learning and the other factor social presence. This study reveals social presence plays an important part in student satisfaction. When scholars feel connected and engaged with their peers and preceptors, they're more likely to view their literacy experience appreciatively and feel satisfied with their education. This highlights the significance of fostering social connection in educational settings to enhance both literacy issues and overall student satisfaction.

Almusharraf, N., & Khahro, S. (2020) investigated the adequacy of teaching and learning encounters through students' discernment of the activities taken by educators, staff individuals, and the institution amid online education. This article concludes that the students are fulfilled with the college staff and workforce individuals, to utilize the evaluation framework, evaluation alternatives, training workshops, and online specialized support.

Jiménez-Bucarey, C et al.(2021) put forward that the online tools utilized along with data and information innovations, are utilized in various aspects to meet distinctive needs. The main objective of this article is to contribute to the progress in online learning quality as of now advertised by HEIs. The assessment of students in advanced digital changes which HEIs will proceed to handle.

Wright, G., Volodarsky, S., Hecht, S., and Saxe, L. (2023) recommend that educators ought to be cautious when extending online learning to maintain student satisfaction. Whereas online instruction offers unused conceivable outcomes, it is vital to execute it keenly to assure the quality of the student experiences. By carefully adjusting advancement with student needs, teachers can guarantee that online learning improves instruction without compromising the fulfillment and engagement of their students.

Melanie DiLoreto et al. (2022) point out that students' learning and fulfillment generally depend on four fundamental variables: the instructor's presence, how well the course is organized, student engagement, and interaction with other learners. When instructors are actively involved, courses are easy to follow, and students feel connected and engaged, their learning experience becomes more positive. This appears that clear course structure and supportive education play an enormous part in making a difference in students' satisfaction and success in their ponders, particularly in online learning environments.

Gray, J.A. and Diloreto, M. (2016) described positive suggestions to give courses that incorporate openings for learners and to associate with each other in expansion to a high level of association given by the instructor. Students have a more positive viewpoint around what they studied and general satisfaction in the course while they get an opportunity to interact with each other and also with their teachers who are present.

Rochmawati (2023) indicated the presence of a strong correlation between social presence and understudy fulfillment in online learning. After assessing the collected samples or assessment errors, somebody may be able to compare social presence with students' satisfaction in online learning.

Ashok Kumar Bishnoi et al. (2021) found that E-learning has ended up being a noteworthy strategy in education for its capability to instruct with lower costs, easy accessibility anytime and anyplace, and to overcome numerous conventional educational issues. E-learning does not equally benefit all conventional class strategies concerning students' progress, knowledge, and performance. In any case, the effect of digital learning strategies on the satisfaction of students, inspiration, and self-assessment is more noteworthy when it has been coordinated with customary methods.

Regie F. Aguirre et al. (2022) expressed that the quality of learning, utilization of technology, and learning issues altogether affect students' (customers) satisfaction. It is fundamental to accept the specialized challenges in utilizing the new learning tools. To viably utilize online tools to improve student outcomes, teachers must clearly understand the potential of synchronous and asynchronous online instruction to move forward with educational services that specifically impact institutional strategies and also student satisfaction levels.

According to Rajabalee, Y.B. et al. (2020), students' satisfaction and engagement play a key part in forming their learning experiences. The study bolstered that technical problems and limited tutor support can lead to dissatisfaction, indeed when students perform well scholastically. For educational institutions offering e-learning, it is critical to give persistent and solid educational services. This is fundamental for making strides in both learning results and the overall student experience in the long run.

Sl. No.	Author & Year	Country/ Industry	Approach	Result
1	Zahir Osman, Harvinder Kau, 2023	Malaysia / Education	Empirical research	The decision for using online learning platforms depends upon social presence, subjective usefulness, and easy usage. Student satisfaction and technical

				support quality significantly influence continued engagement in online education.
2	Deborah L. Taylor, 2014	United States / Education	Empirical research	Meaningful online interactions improve engagement, performance, and satisfaction. Active participation in forums, group work, and real-time discussions fosters community and enhances academic success.
3	Van Dat Tran, 2022	Vietnam / Education	Empirical research	Student satisfaction in online education depends on perceived learning effectiveness. Academic self-efficacy, clear materials, and reliable technology play crucial roles, particularly during emergency shifts like the COVID-19 pandemic.
4	Norah Almusharraf, Shabir Khahro, 2020	Saudi Arabia / Education	Empirical research	Platform flexibility, course content, and instructor communication shape satisfaction in online learning. Clear guidelines, regular feedback, and engaging environments are essential for positive student experiences.
5	Carmen Jiménez-Bucarey , Sheyla Müller-Pérez , Luis Aguilar-Gallardo, Ángel Acevedo-Duque , Elena Cachicatari Vargas and Miguel Mora-Moscoso 2021	Mexico / Education	Empirical research	Online learning quality is measured by course effectiveness, instructor engagement, and technical support. Enhancing these factors increases student satisfaction and promotes online education as a viable option.
6	Graham Wright Sasha Volodarsky Shahar Hecht Leonard Saxe, 2023	Israel / Education	Empirical research	Long-term success in online education relies on student satisfaction. Effective course design, technical support, and personalized learning experiences help institutions sustain engagement and positive outcomes.
7	Melanie DiLoreto, Julie Anne Gray, Joshua Schutts, 2022	United States / Education	Empirical research	Student satisfaction strongly correlates with perceived learning outcomes. Quality content, responsive instructors, and

				collaborative environments enhance experiences, improving academic performance and knowledge retention.
8	Madison Foerderer, Natalie Schneider, Sarah Hoffman, and J. Roxanne Prichard, 2021	United States / Education	Empirical research	Predicting online learning satisfaction depends on course design, instructor responsiveness, and technical support. Effective communication and user-friendly platforms are key to fostering student engagement.
9	Ashok Kumar, Nimarta Rana, Nipin Kalal, Vikas Choudhary, Himanshu Vyas Raj Ran, 2021	India / Education	Empirical research	Nursing students appreciate online learning's flexibility but face challenges like limited practical exposure and technical difficulties. Clear communication, structured content, and strong support services enhance satisfaction.
10	A.F, GAYOD, D.H, AGUIRRE, R. F., CERBITO, 2022	Philippines / Education	Empirical research	The success of online learning transitions depends on material accessibility, instructional quality, and communication. Unresolved technical issues and limited peer interaction reduce satisfaction.
11	Mohammad Issack Santally, Yousra Banoor Rajabalee, 2020	Mauritius / Education	Empirical research	Engagement directly affects satisfaction and academic performance. Active participation boosts learning outcomes, making interactive course design and institutional support crucial for success.
12	DORIS U. BOLLIGER & TREY MARTINDALE, 2004	United States / Education	Empirical research	Course quality, communication, and technical support determine online learning satisfaction. Prioritizing these aspects enhances student retention and improves learning experiences.
13	Dwi Puspita Sari, Dimaz Cahya Ardhi, Dheo Rimbano, Jumroh, Muhammad Nur Farih, and Muhammad Nabil Arifin, 2023	Indonesia / Education	Empirical research	Teaching materials and digital infrastructure impact student satisfaction. Well-structured content, seamless access, and responsive support ensure engagement in higher education.

14	Vasile Gherhes, Claudia E. Stoian , Marcela Alina Fărcasiu and Miroslav Stanici , 2021	Romania / Education	Empirical research	Some students prefer online flexibility, while others favor social interaction. Blended learning combines both, maximizing satisfaction and academic success.
15	Muhammad Zaheer, Dr. Masroor Elahi Babar, Uzma Hanif Gondal, Mubasher Majeed Qadri, 2015	Pakistan / Education	Empirical research	Interactive content, instructor feedback, and user-friendly technology shape e-learning satisfaction. Institutions focusing on these elements improve student experiences, success, and retention.
16	Dr.M.Sumathy, Sujith. T.S, Jisha TP, 2022	India / Education / Education	Empirical research	Online classes are effective when designed for student needs and supported by strong technical assistance. Flexibility, structured content, and faculty engagement ensure positive outcomes.
17	Florence Martin, Doris U. Bolliger, 2022	India / Education	Systematic review	Course quality, instructor responsiveness, and technical support define online learning satisfaction. Research highlights their impact on student success.
18	Joseph Nyandusi Nyachae, 2011	Kenya / Education	Empirical research	Online learning social presence enhances perceived learning and also satisfaction. Real-time interactions, collaboration, and instructor engagement create a connected virtual space.
19	Rochmawati Rochmawati , 2021	Indonesia / Education	Meta Analysis	Enhanced social presence increases satisfaction and perceived learning. Collaborative tools and discussions close gaps, enhancing engagement and academic performance.
20	Nouran NASHAAT, Marwa ABDEL AZEEM , Rasha ABD EL AZIZ, 2024	Egypt / Education	Empirical research	Satisfaction links course design, technical support, and academic commitment. Higher satisfaction increases persistence and success in online programs.

21	Montgomery Van Wart, Pamela Medina, Anna Ni, Jesus Canelon, Jing Zhang Melika Kordrostami and Yu Liu, 2020	United States / Education	Empirical research	Student feedback enhances course design, improving satisfaction and learning. Addressing concerns about technology, content clarity, and communication strengthens online education quality.
22	Melika Kordrostami & Victoria Seitz , 2022	United States / Education	Empirical research	Faculty proficiency in online platforms influences student engagement and satisfaction. Well-trained instructors foster positive learning environments through clear communication and timely feedback.
23	Long Pham, , Trung K. Bui, Hien T. Nguyen, Yam B. Limbu and Huong T. Pham , 2019	Vietnam / Education	Empirical study	Reliable technology and responsive support significantly impact e-learning satisfaction and loyalty. Investing in these areas improves engagement, retention, and academic success.

3. Methodology

The present review examines the factors that affect students' satisfaction with online learning, concentrating on how these factors may interact through mediators and moderators. This study includes empirical research papers published in peer-reviewed journals within 10 years, between 2013 and 2022. For a broader array of literature, we searched the reputable databases Mendeley, Google Scholar, ResearchGate, Scopus, Emerald Insight, and ScienceDirect. Keywords searched either on their own or in combinations included "students' satisfaction in online learning," "online learning experience," "student engagement," "e-learning satisfaction," and "factors influencing online learning satisfaction."

Inclusion Criteria

To ensure the relevance and quality of the studies, only peer-reviewed empirical research that addressed at least one of the following areas was included:

- Mediators in relation to learning factors and students' satisfaction in online learning.
- Moderators between learning factors and online learning students' satisfaction.
- Mediators between students' satisfaction and learning outcomes in online learning.
- Moderators concerning students' satisfaction and learning outcomes in E-learning.
- A combination of mediating and moderating relationships between these factors.

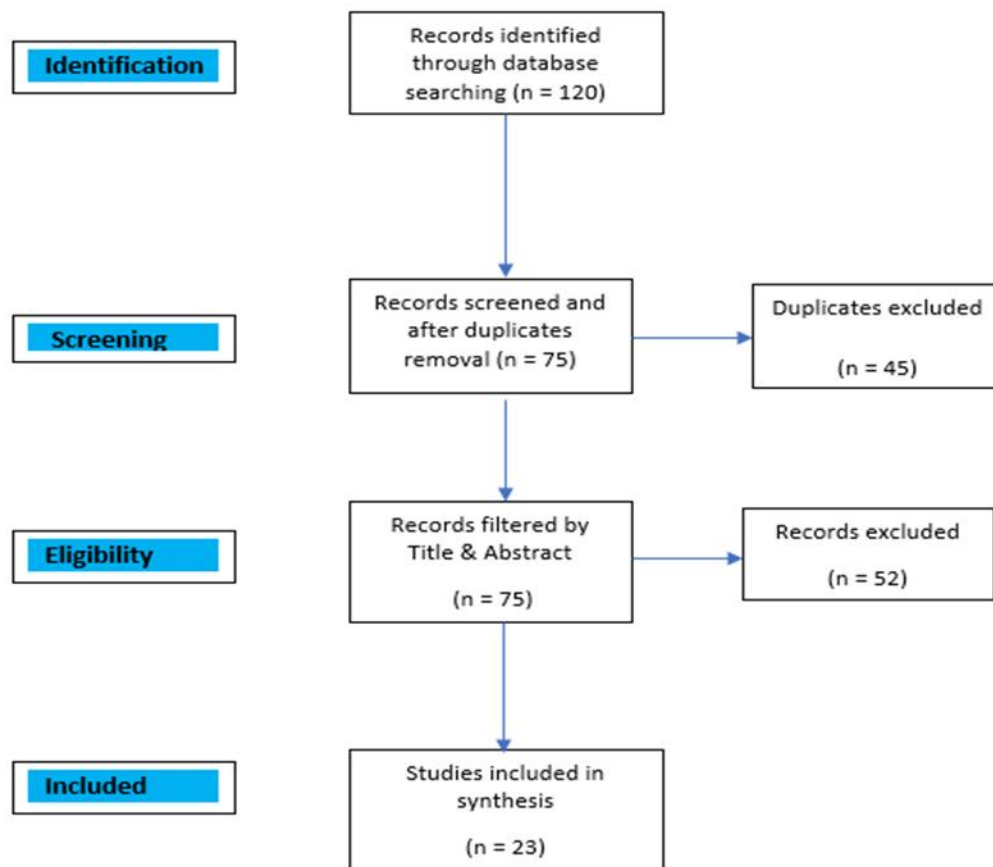
Studies that did not meet these criteria or lacked empirical evidence were excluded. This approach ensures a focused and meaningful analysis of how different factors influence students' satisfaction in

E-learning environments

Process flow for Systematic review

A PRISMA flow chart is designed to describe the process flow used in selecting articles, as depicted in Fig. 3.1. The initial search has resulted in 120 full-text articles related to students' satisfaction in online learning that were gathered from multiple academic databases. After eliminating duplicate studies and those that did not directly align with the research focus, 75 articles were shortlisted. Based on their titles and abstracts, these 75 articles were screened, and of these, 52 articles were eliminated. Finally, 23 articles were chosen for a more in-depth analysis due to their explicit exploration of the factors that influence students' satisfaction in online or E-learning environments.

Fig. 1. PRISMA flow diagram for article selection

**4. Findings**

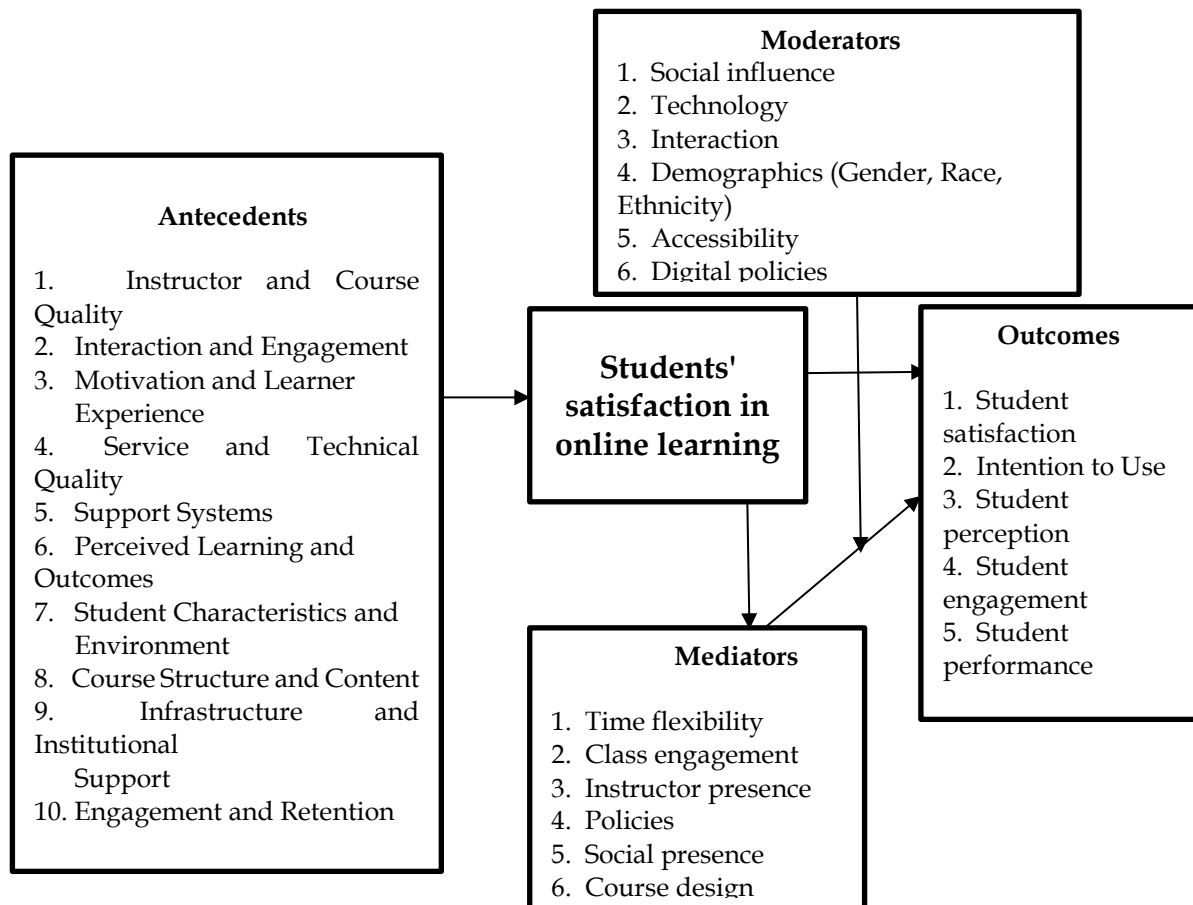
The findings from this study show that factors like instructor support, course design, technological ease of use, and peer interaction significantly shape students' satisfaction with online learning. Students who reported higher satisfaction often experienced clear communication from instructors, well-structured courses, and user-friendly technology that allowed seamless access to learning materials. Additionally,

engagement with peer groups as well as a sense of community within the virtual environment were found to enhance the overall learning experience.

The review also identified student engagement, flexibility, and learning outcomes as important mediators and moderators in these relationships. For example, students who felt a stronger sense of connection and engaged in their coursework were more open in expressing greater satisfactory levels. Similarly, the ability to balance studies with personal commitments through flexible learning options significantly impacted their overall experience. To ensure a thorough analysis, a snowballing method was used to manually list the review references of the selected articles, but no further studies that met the required criteria were found.

Overall, the findings suggest that creating a positive online learning environment requires a holistic approach—one that combines effective instructional practices, robust technological support, and opportunities for meaningful peer interaction. These insights provide a valuable foundation for educators and institutions looking to improve student satisfaction and also the broader E-learning experience.

Fig. 2. Synthesis of main antecedents & consequences of Students' satisfaction in Online or E-learning and its main mediators and moderators



5. Discussion

Overall, the findings suggest that more attention needs to be given on exploring how mediators and moderators influence the association between factors affecting students' satisfaction in online or digital learning and learning outcomes compared to other areas. We also propose several potential variables that could provide an in-depth understanding of the processes driving students' satisfaction in online learning environments and how these factors interact to either enhance or weaken the connection between learning conditions, student satisfaction level, and academic success rate.

Understanding the vital role of mediators and moderators helps educators and institutions design better online learning experiences. By addressing moderating factors like technology and accessibility, institutions can foster a more inclusive and encouraging learning space for all students. At the same time, enhancing mediating factors like instructor presence and course design will directly improve both student engagement and satisfaction.

As online learning continues to evolve, these insights can provide direction for future research and educational practices to ensure that students not only succeed academically but also enjoy and benefit from their online learning experiences.

5.1 Mediators and Moderators in Motivational Factors – Students' Satisfaction in Online Learning

When it comes to understanding what makes students satisfied with online learning, there's more at play than just course content or technology. Two key factors that shape students' experiences are mediators and moderators. While mediators explain the process or pathway through which one factor affects another, moderators change the strength or direction of these relationships (Baron & Kenny, 1986). In simpler terms, mediators tell us why something happens, and moderators explain when or for whom it happens. Exploring both gives us a clearer picture of how different aspects of online learning contribute to student satisfaction.

Moderators in Students' Satisfaction

Moderating factors shape how strongly certain aspects of online learning influence satisfaction. Some important moderators include social influence, technology, interaction, demographics (gender, race, and ethnicity), accessibility, and digital policies (Bolliger & Halupa, 2018; Sun et al., 2008).

Social Influence: The support and encouragement that the students receive from their peers, instructors, and also from their families can significantly impact their level of satisfaction with online learning. When students feel connected and supported, their motivation level and engagement increase (Kuo, Y. C. et al., 2014). On the other hand, a lack of social support can make them feel isolated and frustrated in the online learning environment.

Technology: The crucial element for a smooth online learning experience is the access to reliable and user-friendly technology. If students face technical problems like poor internet connectivity or outdated platforms, their satisfaction drops (Al-Fraihat et al., 2020). Providing modern, accessible learning platforms can help improve the online experience.

Interaction: Engagement with their instructors and fellow students is a key factor in measuring learners' involvement in online education. Regular interactions through virtual discussions, live sessions, and timely feedback help students feel connected and involved (Richardson et al., 2017).

Demographics (Gender, Race, Ethnicity): Student satisfaction may differ from various demographic groups. Factors like cultural differences, language barriers, and access to resources can impact the comfort level and success of students in online learning (Christopher A. Martin et al., 2020). Addressing these differences by offering personalized support can improve satisfaction for all students.

Accessibility: All students do not have the same method of accessing digital learning resources. For physically challenged students, those who live in remote areas, or those without reliable internet, online learning can be challenging (Alqurashi, 2019). Providing easily accessible course materials and support services can help to create a more inclusive learning environment.

Digital Policies: Clear and fair digital policies, such as rules for participation, data privacy, and academic integrity, can also impact satisfaction. Students are more likely to feel secure and supported when institutions establish transparent guidelines (Kebritchi et al., 2017).

Mediators in Students' Satisfaction

Mediating factors explain how or why specific aspects of online or digital learning lead to high student satisfaction. As part of remote education, key mediators include time flexibility, class engagement, instructor presence, policies, social presence, and course designs (Kuo, Y. C. et al., 2014; Richardson et al., 2017).

Time Flexibility: A highly regarded benefit of online learning is the flexibility it offers for self-paced study. Time flexibility aids students in balancing academic responsibilities with work or family commitments. This freedom increases their holistic satisfaction with the educational experience (Lee & Choi, 2011).

Class Engagement: Active participation in discussions, assignments, and collaborative projects helps students feel more involved in their learning. When students are engaged, they tend to engage more in the learning process and attain higher outcomes (Kebritchi et al., 2017).

Instructor Presence: A visible and supportive instructor can make a big difference in student satisfaction. When instructors provide timely feedback, facilitate discussions, and show that they care, students feel more connected and supported (Richardson et al., 2017).

Policies: Clear policies at both the institutional and course levels shape how students experience online learning. Policies that prioritize student welfare, academic fairness, and accessibility contribute to a positive as well as satisfying E-learning environment (Kebritchi et al., 2017).

Social Presence: In a virtual environment, students may often struggle with isolation. Creating a sense of community through group discussions, collaborative activities, and open communication helps reduce feelings of loneliness and enhances satisfaction (Richardson et al., 2017).

Course Design: How a course is designed can have a major impact on student satisfaction. Clear objectives, diverse learning materials, and interactive content help students stay engaged and

motivated. When courses are well-structured and easy to navigate, students report higher levels of satisfaction (Kuo, Y. C. et al., 2014).

6. Conclusions

While this article examines the existing literature about the satisfaction of students with online and digital learning, further research is needed to broaden our understanding about the factors shaping students' experiences and outcomes. Based on our findings, we argue that the satisfaction of students with online learning is impacted by a variety of factors which include technological, social, personal, and institutional elements. The previous literature reviewed in this study indicates that these factors act as antecedents to student satisfaction levels in E-learning environments. Moreover, the outcomes of students' satisfaction with online learning, as explored in prior research, include academic performance, learning engagement, retention rates, perceived learning quality, and overall learning experience. These outcomes highlight the significance of understanding what drives satisfaction, as satisfied students are likely to engage actively, obtain better results, and continue their educational journey.

From the existing literature, moderators such as social influence, technology, interaction, demographics (gender, race, and ethnicity), accessibility, and digital policies were identified as influencing elements for the relationship between the learning factors and student satisfaction level. These moderators either strengthen or weaken the effectiveness of various learning experiences on student satisfaction. For example, access to reliable technology and strong social support enhances satisfaction, while limited accessibility and unclear digital policies may hinder positive experiences. Additionally, mediators like time flexibility, class engagement, instructor presence, institutional policies, social presence, and course design play a critical role in explaining how and why certain factors influence student satisfaction. When students have flexible learning schedules, engaging course designs, and supportive instructor interactions, which are likely to report higher satisfaction level. However, the existing literature reveals limited evidence on mediator or moderator relationships between students' satisfaction and its antecedents. The future scope of this research is to investigate these relationships in-depth for a clear understanding of how different variables interact to shape student experiences.

The findings of this study will provide valuable perspectives for not only educators, but also for institutions, and policymakers to aim in improving online education. By identifying importance of both mediating and moderating factors, institutions can specially design more inclusive, effective learning environments that will enhance student satisfaction and academic success. A better understanding of these factors can guide future investigations into the direct and indirect relationships that influence students' satisfaction and encourage the development of new policies that will foster a nurturing and more effective digital learning experience.

Researchers are encouraged to explore new mediators and moderators in future models of students' satisfaction to reveal a deeper understanding of how the online education system can better meet the diverse learning needs of the students. This approach will not only improve student experiences, but also enhance more balanced, accessible, effective, and prosperous online learning environments in the long term.

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