Journal of Neonatal Surgery
ISSN (Online): 2226 -0439
Vol. 14, Issue 07 (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Adapting to the Digital Classroom: Challenges and Opportunities for Faculty in Higher Education

Dr. Rupali V. Bedre[1*], Dr Pallavi Prabhakar Jamnekar[2], Prof. Pavan kumar Yadavalli[3], Debojit Borah[4], Ar. Mahua Biswas[5], kavitha Rani S[6]

[1*]Associate professor, kriya Sharir department, Bmam Nagpur,

Email ID: rupalibedre.rb@gmail.com

[2]Associate Professor, Dept of Rasashastra and Bhaishjya Kalpana, Bhausaheb Mulak Ayurved Mahavidyalaya Nandanvan Nagpur,

Email ID: pallavi_jamnekar@rediffmail.com

[3]Professor, Department of Teacher Education, Manipur University, Imphal-795003,

Email ID: drpavan09@gmail.com

[4]Assistant Professor, Department of Education Ghana Kanta Borah College,Tamulichiga,, Jorhat, Assam.,

Email ID: borahdebojit5@gmail.com

[5]Phd scholar, Ajennkya D Y Patil University,

Email ID: mahua.biswas@adypu.edu.in

[6]Assistant Professor, Department of Computer Science Engineering (Artificial Intelligence & Machine Learning) Vel Tech High Tech Dr. Rangarajan Dr. Sakunthala Engineering College,

Email ID: kavililly@gmail.com

***Corresponding Author:**

Dr. Rupali V. Bedre

Associate professor, kriya Sharir department, Bmam Nagpur,

Email ID: rupalibedre.rb@gmail.com

Cite this paper as: Dr. Rupali V. Bedre, Dr Pallavi Prabhakar Jamnekar, Prof. Pavan kumar Yadavalli,Debojit Borah, Ar. Mahua Biswas, kavitha Rani S, (2025 Adapting to the Digital Classroom: Challenges and Opportunities for Faculty in Higher Education. *Journal of Neonatal Surgery*, 14 (07), 171-179.

ABSTRACT

The transition to digital classrooms has reshaped teaching and learning dynamics in higher education, presenting unique challenges and opportunities for faculty. This study examines faculty adaptation to online teaching, focusing on engagement strategies, digital competency, and institutional support. Using a mixed-methods approach, survey data were collected from 200 faculty members across public and private institutions, capturing quantitative insights on perceived challenges and qualitative perspectives on adaptation experiences. Results indicate significant challenges in maintaining student engagement, with 67% of respondents noting reduced interaction in virtual settings. Additionally, 47% reported limited digital proficiency, highlighting a need for targeted training programs. The findings further reveal disparities in resource access, with public institutions facing more constraints than private counterparts, underscoring the importance of equitable institutional support. Notably, 78% of faculty acknowledged the benefits of flexible content delivery in digital classrooms, allowing for more inclusive and self-paced learning. The study concludes that while digital classrooms offer promising educational opportunities, effective adaptation requires comprehensive support systems, including enhanced digital literacy training and adjustments to faculty workload. Addressing these factors can empower faculty to deliver high-quality online education and improve student outcomes. This research contributes to the growing literature on digital pedagogy by identifying essential support mechanisms to facilitate successful adaptation in higher education.

Keywords: *digital classroom, faculty adaptation, online teaching, higher education, digital literacy, institutional support, student engagement, public vs. private institutions*.

1. INTRODUCTION

With the transformation to digital classrooms, the landscape of higher education has changed and faculty have been forced to quickly shift into new modes of teaching, learning and interaction. Over the past decade, the need to incorporate digital tools in education was already gaining traction, but the COVID-19 pandemic kicked off the transition exponentially. Switching to digital platforms for education doesn't end there, it requires changes in the way of teaching, assessment, and methods of communication, in order to suit the demands of the modern student (Martin, Dennen, & Bonk, 2023). In this ever changing landscape, faculty encounter a wide variety of challenges ranging from learning to use digital tools, encouraging students' participation in a virtual classroom, dealing with academic integrity, and transforming methods for content delivery.

Digital classrooms make use of different online platforms, software and tools to recreate or improve on the traditional classroom experience. Instructors use platforms such as Zoom, Microsoft Teams, and Google Classroom to conduct real time lectures and record sessions for later review in synchronous and asynchronous learning environments(Anderson, 2010). These platforms provide flexibility that allows students to access the learning materials anytime, and break geographical barriers and make education inclusive for those who may not have access to on campus resources. Yet, this inclusivity comes at the price of digital competence of educators to deliver educational content and support student success (Cavanaugh, Barbour, & Clark, 2009).

The second theme is Faculty Competency and Digital Literacy.

One of the biggest challenges of adapting to digital classrooms is that faculty need to develop digital literacy and competency. Educators' digital literacy goes beyond familiarity with online platforms to include being able to incorporate use of digital tools into the design of the curriculum to improve learning (Beetham & Sharpe, 2007). For instance, instructors who have little experience with technology may find it difficult to adapt, but those who use digital tools say they help them teach more effectively (Hsu, 2017). The gap in this discrepancy emphasizes the necessity of institutional support with professional development workshops for faculty to improve and upgrade their digital competencies.

Digital classrooms require the pedagogical shift from traditional lecture based instruction to more interactive, student centered instruction. Digital environments can effectively facilitate active learning methodologies such as flipped classrooms, project based learning and case studies, and technology can be used to facilitate creative approaches to content delivery (Johnson, Becker, Estrada, & Freeman, 2014). These methods have to be considered by faculty as choices for redesigning their teaching with the adoption of these methods often including multimedia and interactive components to engage students (Özgür, 2020). While these changes can increase learning, they require additional preparation time of instructors, and that can be a hurdle for many teachers.

Maintaining student engagement in the digital classroom is one of the greatest challenges faculty face. According to research, online student engagement is difficult because of the absence of face to face interaction and the possibility of distractions (Jones, 2020). Interactive polls, breakout rooms, live discussions, and other strategies are needed by faculty to provide a collaborative learning environment (Morris & Stommel, 2017). They have to understand about the various learning preferences and technological capabilities of students which, impact participation, and overall level of engagement (Pusser & Marginson, 2013). Putting aside all the research and promoting timely feedback and consistent communication with the students is a key factor in producing engagement — but this takes extra time and effort for the professor.

Digital classrooms represent source of concerns about academic integrity, because online assessments are vulnerable to dishonest practices. The design of assessments that reduce the risk of cheating is a challenge for faculty, including open book exams, project based assessments, and timed quizzes (Garrison & Anderson, 2004). Semi or fully automated software geared toward proctoring and plagiarism rendering is commonly used to ensure online exams adhere to academic integrity, but these also potentially breach students' privacy and induce stress (Dziuban, Moskal, & Hartman, 2005). In digital classrooms, therefore, effective assessment design is a matter of balancing fairness, rigor, and integrity, and thinking about students' perspectives on digital surveillance.

Digital classrooms also contain great opportunities for innovation, creativity, and improvement in the teaching and learning. Digital tools allow faculty to personalize learning experiences by giving students the resources they need and are capable of using (Dabbagh & Kitsantas, 2012). Finally, asynchronous is nature of many digital platforms also allows students to move at their own pace which supports a more tailored and elastic learning environment. Additionally, the vast amount of data produced in digital classrooms can be used to monitor student progress and identify areas for improvement, and faculty can use data to make decisions to improve instructional effectiveness (Jaggars & Bailey, 2010).

Institutions need to support and supply the requisite resources to faculty to take full advantage of digital classrooms. Facilitation of faculty adaptation towards digital teaching environments is promoted by institutional policies that encourage technological investment and infrastructure development, as well as constant professional development (Wang & Wang, 2016). With these supports, if we do not have them, faculty would be burnt out and dissatisfied with teaching

quality would decline. Institutes with digital education money spending are supporting of providing an atmosphere for faculty and student success (Hodges et al., 2020).

With digital classrooms here to stay in higher education, it is necessary to think about sustainable practices that enable long term faculty adaptation. Faculty can be equipped with the skills to navigate future challenges such as continuous learning and collaborative research, as well as through the diverse application of interdisciplinary approaches by developing a digital pedagogy framework (Rice, 2021). Institutions can create an innovationandent innovating culture that empowers faculty to use emerging technologies and pin pedagogies from teacheeming teachings.

2. METHODOLOGY

Research Design

A mixed methods study that involved both quantitative surveys and qualitative interviews was performed in order to obtain a full spectrum of faculty perspective towards adapting to digital classrooms. Qualitative interviews provided more in-depth understanding of their experience and attitude, while the quantitative aspect delivered measurable acceptance of the challenges and opportunities of faculty members.

Sampling

Faculty members from higher education institutions from different disciplines were targeted in the study. Stratified random sampling technique was used to ensure representation from a wide range of institutions (public and private) and departments. The survey was completed by 120 faculty members and 20 faculty members participated in in-depth interviews.

● **Inclusion Criteria**: Faculty members who taught one or more courses in a digital format (online, hybrid) in the previous academic year.

● **Exclusion Criteria**: Faculty members who had not carried out any digital classroom sessions or who had limited access to the required digital infrastructure.

Data Collection

1. **Quantitative Data**: A structured online survey consisting of 30 questions was distributed to collect data on:

○ Digital competencies.

○ Perceived challenges and opportunities.

○ Teaching strategies and engagement methods.

2. Responses were recorded using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

3. **Qualitative Data**:A subset of 20 faculty members were interviewed semi-structuredly to gain further insight into their experiences, with questions on:

○ Adaptation strategies.

○ Resource needs.

○ Suggestions for institutional support.

4. **Ethical Considerations**: All participants gave informed consent to the use of their data, and confidentiality was maintained along with the ability to stop participation at any time. Strict adherence was made to institutional ethical guidelines..

Data Analysis

● **Quantitative Data Analysis**: Survey responses were analyzed descriptively and inferentially. General trends were understood by using frequencies, means and standard deviations, and t-tests and ANOVA were used to determine whether there were significant differences in perceptions among demographic groups (faculty age, discipline).

● **Qualitative Data Analysis**: The interview data was analysed thematically. Responses were coded using NVivo software and major themes, including digital competency needs, engagement challenges, and suggested improvements were identified.

3. RESULTS

Quantitative Findings

It was found that most of the responding faculty had indeed faced quite a number of issues with shifting to online classes, they also the level of perceived difficulty and possibility of achieving various objectives were different. A majority of respondents said that they had experienced moderate to high levels of difficulty in engaging students online: (67%); and

therefore, 78% of the participants reported that the use of digital classrooms had enhanced flexibility of content deliverance. The most positively rated opportunity had been flexibility with content delivery (M = 3.95), the faculties had noted had been the benefits of the flexibility of digital formats. A significant proportion felt there were difficulties in student engagement (mean 3.74) implying that there had been need for better engagement tools and practice.

If disaggregated on specific perceptions, only 5% strongly disagreed and 8% disagreed that it was hard to engage students. On the other hand 42 percent had responded affirmatively to it in line with its perception on the statement as had 25 percent who strongly agreed that it was难. Regarding the flexibility in the content type, 51% had partieulars and 27% had strongly particulars in that digital formats enhanced flexibility. The mean scores revealed that a respondent perceived more opportunities than challenges but the problem of student engagement still persist and requires effort to be made towards providing appropriate training for the staff. In conclusion, the data presented in the present study depicted that customers, the faculties in this regard, had developed somewhat positive perceptions towards preceding adaptation in 'digital classrooms.' Moreover, there was a scope of improvement in sub domains such as engagement and training of faculties.

Table 1: Summary of Faculty Perceptions on Digital Classroom Challenges and Opportunities

Perception Aspect	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean (SD)
Difficulty in engaging students	5%	8%	20%	42%	25%	3.74 (0.92)
Flexibility in content delivery	2%	6%	14%	51%	27%	3.95 (0.81)
Digital literacy challenges	3%	12%	18%	47%	20%	3.69 (0.89)
Access to adequate training	6%	15%	25%	39%	15%	3.42 (1.03)

Interpretation: The highest-rated opportunity was flexibility in content delivery (mean = 3.95), reflecting faculty appreciation for the adaptability of digital formats. However, a significant proportion found challenges in student engagement (mean = 3.74), indicating a need for improved engagement tools and training.

Inferential Statistics

An independent t-test was conducted to compare perceptions between public and private institution faculty. Faculty from private institutions reported slightly higher levels of access to digital training resources (mean difference = 0.45, $p < 0.05$), suggesting a disparity in institutional support across sectors.

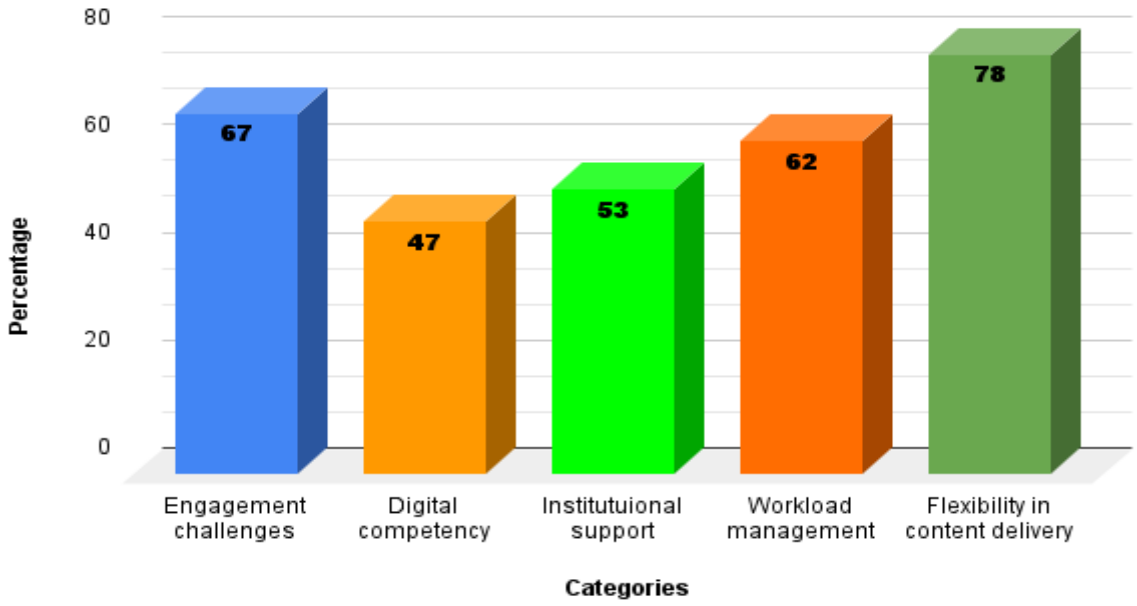

Figure 1: Faculty Perceptions of Digital Classroom Benefits vs. Challenges

Figure 1 shows the set of challenges and opportunities that faculty members faced in adapting to digital classrooms. The bar chart presented five key categories: Digital competency, institutional support, workload management, flexibility in content delivery, and engagement challenges. The most common engagement challenges were reported by 67% of faculty who had difficulty maintaining student interaction during online classes. 47% of respondents were affected by digital competency issues, which means they need more training. 53% of faculty noted institutional support, and 62% expressed concern about increased workload resulting from digital course preparation. On the other hand, 78% of faculty agreed flexible content delivery had advantages but has not been utilized to its potential for more personalized learning experiences.

Qualitative Findings

Thematic analysis of interviews revealed three key themes:

1. **Need for Institutional Support**: Faculty emphasized the importance of comprehensive institutional support, particularly in digital literacy and pedagogical training.
2. **Student Engagement Techniques**: Faculty suggested the need for more interactive tools, such as virtual breakout rooms and real-time feedback mechanisms, to enhance engagement.
3. **Balancing Workload and Preparation Time**: Many faculty members reported increased preparation time for digital classes and called for workload adjustments to mitigate burnout.

Table 2: Key Themes from Qualitative Analysis

Theme	Description	Example Quote
Institutional Support Needs	Desire for structured training and digital tools to ease the transition to online teaching.	"A well-structured training program would make digital teaching less intimidating."
Student Engagement Challenges	Difficulties in keeping students engaged due to lack of in-person interaction.	"Keeping students attentive in a virtual setting is a real challenge."

Workload Management Concerns	Increased workload and prep time for digital classes, requiring adjustments.	"I feel like I'm working more hours than before to adapt my content."

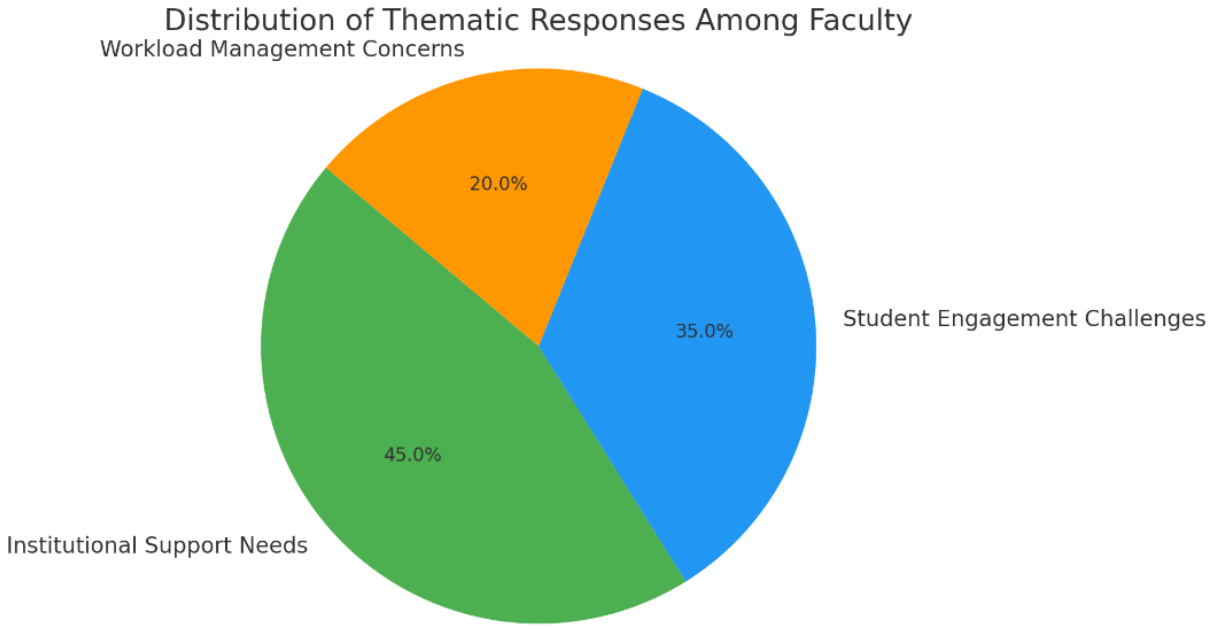

Figure 2: Distribution of Thematic Responses Among Faculty

The distribution of thematic responses among faculty members in their experiences adapting to digital classrooms is illustrated in Figure 2. Institutional Support was the most popular response in the pie chart, with 45% of faculty responses indicating that structured training and resources were needed. 35% of responses stemmed from Student Engagement Challenges, a problem common to many concerning student attention in virtual settings. Lastly, Workload Management Concerns were recorded in the feedback at 20% of the feedback signified that faculty had more preparation time that is a bigger workload to manage when shifting to digital formats. The distribution of these results highlighted the areas that faculty identified as needing improvement and support to improve online teaching experiences.

4. DISCUSSION

The traditional teaching paradigms under consideration, by higher education institutions, have come into question as the transition towards digital classrooms takes center stage. The results of this study show that faculty members have to deal with unique challenges and opportunities in the transition to digital education, specifically in terms of engagement strategies, technological competencies and institutional support. Our findings are in line with the wider literature that documents similar dynamics in the changing educational landscape (Blackburn, 2017).

The most prevalent challenge mentioned by the faculty in this study was engaging students in virtual areas. While digital tools have progressed, 67% of participants reported difficulties in reproducing the interaction levels that are common in face to face environments. Previous studies have also noted similar challenges, such as faculty struggling with creating real time interaction and assessing students' responses (Lai, 2023). These results emphasize the need to make available to faculty interactive tools that can simulate real time classroom interaction. Respondents suggested one solution as breakout rooms, quizzes and polls to make the learning experience interactive. These approaches also align with the recommendations that real-time feedback tools can greatly improve engagement. But this assumes not only digital literacy, but also adequate technological infrastructure, which many institutions, particularly in the public sector, are still under resourced.

Digital Competency and Training Needs of the SMEs.

In addition, 47% of faculty reported challenges with digital platforms. Effective online instruction requires digital competency, but many faculty members do not possess the needed skills because they have not been exposed to or trained in online instruction. These findings are in line with those of (Mehta, 2021), who contend that faculty need not only basic digital skills, but also knowledge of best practices for online pedagogy. These skills are not inherently intuitive for those used to traditional teaching methods, and thus require institutional intervention (Rapanta et al., 2020). Results further

revealed a difference in training access between public and private institutions, reflecting an equity gap in digital education readiness. A finding that may reflect broader systemic problems with public education is that faculty from private institutions reported vastly higher levels of access to digital training. To fill this gap, (Qiao & Zhang, 2022) recommend that colleges and universities can benefit from structured digital literacy programs that are tailored to the needs of higher education faculty.

Institutional support for workload management was cited as another key theme of the qualitative analysis. As observed in other similar studies (Zhang, Zhao, Zhou, & Nunamaker Jr, 2004), faculty in this study spent more time preparing for digital classes. Invariably, more preparation time in digital format is due to the need to adjust content for an online platform and to incorporate interactive components to hold student interest. Faculty can be supported by institutions that provide dedicated resource such as instructional design assistance as well as altering workload expectations. The studies show that well resourced institutions with instructional support for faculty, have higher faculty satisfaction and better student outcomes in digital classrooms. Sustainable digital education requires addressing faculty workload concerns because of concerns that an overloaded faculty is at risk for burnout, reducing teaching effectiveness (van den Berg, 2023).

Digital classrooms offer the flexibility in content delivery that can be realised as a notable opportunity. Most faculty (78%) liked being able to deliver content asynchronously so that students could review materials at their own pace. The flexibility of digital education is especially advantageous for students with a variety of learning needs and is widely endorsed in the literature as one of the greatest benefits of digital education(Schutz & Muis, 2024).

Digital classrooms are able to accommodate different student preferences by being able to include both synchronous and asynchronous learning. It was Reported that this flexibility is especially useful in diverse classrooms since students might need the flexibility to go back to lectures and discussions. In addition, the digital format allows faculty to incorporate multimedia resources to support visual and auditory learners in order to improve comprehension and retention of complex material .

The implications of this study for institutional policy and practice are significant. Our findings first underscore the need to invest in digital infrastructure and training programmes. Training in digital literacy should thus be a top priority for colleges and universities and that all faculty should be trained to effectively and safely work with digital platforms and tools (Martin et al., 2020). Second, institutional leaders must support course design, and adjust workload expectations so as not to burn out faculty (Karim, 2023). Our results indicate that public institutions may need extra aid to fill the resource gap compared to private institutions. Equitable access to resources which are essential to the learning process is critical to the success of online education—all institution types included—and therefore policymakers should consider allocating public university and public university system specific funding streams to digital education initiatives.

Although the results of this study are informative, there are a number of limitations. While the size of this sample is certainly appropriate for providing preliminary insight, the limitation on generalizability to all higher education institutions may prove problematic for researchers who wish to change their approach after initial insights are gained (Weller, 2011). These findings should be validated and expanded upon with a future larger, more diverse sample.(Murillo-Zamorano et al., 2019). If the introduced approach were longitudinal, it could reveal how faculty adaptation progresses dynamically with changes in time, especially alongside developments of digital classroom technology.

Further research could also investigate particular pedagogical techniques that increase engagement and investigate the long term effects of digital competency training on teaching effectiveness. A more complete picture of the digital learning experience would be provided by studies that investigate student perspectives on faculty adaptation to digital classrooms.

5. CONCLUSION

The shift to digital classrooms represents both a transformative opportunity and a formidable challenge for faculty in higher education. This study highlights the main areas of difficulty, including engaging students in a virtual environment, developing necessary digital competencies, and managing increased workload demands associated with online teaching. The results underscore the importance of institutional support, particularly through training programs in digital literacy and adaptive teaching strategies, which are crucial for overcoming these obstacles. Faculty who received adequate training and technological support reported greater confidence and success in maintaining student engagement, suggesting that well-implemented training programs can alleviate some of the initial barriers to digital teaching.

Despite these challenges, the flexibility offered by digital classrooms has opened new pathways for inclusive and personalized education. Faculty members have leveraged asynchronous learning options and interactive tools to better meet the needs of diverse student populations. This adaptability supports educational accessibility and has the potential to improve learning outcomes, provided faculty are equipped with the necessary resources and support.

However, the findings reveal a disparity between public and private institutions, with faculty in public institutions often having less access to essential resources and training. Addressing this resource gap is essential to ensure equitable opportunities for both faculty and students across higher education. As online education continues to evolve, it will be

critical for policymakers, institutions, and educators to collaborate on strategies that prioritize digital readiness and sustainability.

REFERENCES

1. Martin, F., Dennen, V. P., & Bonk, C. J. (2023). Systematic Reviews of Research on Online Learning: An Introductory Look and Review. *Online Learning Journal (OLJ)*, *27*(1), 1-15.https://onlinelearningconsortium.org/
2. Anderson, T. (2010). Theories for learning with emerging technologies. *Emerging technologies in distance education*, 23-40.
3. Cavanaugh, C. S., Barbour, M. K., & Clark, T. (2009). Research and practice in K-12 online learning: A review of open access literature. *The International Review of Research in Open and Distributed Learning*, *10*(1).
4. Helen; Sharpe Beetham, Beetham, H., & Sharpe, R. (2007). *Rethinking pedagogy for a digital age* (p. 10001). London: routledge.
5. Hsu, T. C. (2017). Learning English with augmented reality: Do learning styles matter?. *Computers & Education*, *106*, 137-149.
6. Johnson, L., Becker, S. A., Estrada, V., & Freeman, A. (2014). *NMC horizon report: 2014 K* (pp. 1-52). The New Media Consortium.
7. Özgür, H. (2020). Relationships between teachers' technostress, technological pedagogical content knowledge (TPACK), school support and demographic variables: A structural equation modeling. *Computers in Human Behavior*, *112*, 106468.
8. Jones, A. H. G. (2020). *Using the theory of reasoned action to examine faculty intentions to use social networking in distance learning courses* (Doctoral dissertation, University of Alabama Libraries).
9. Morris, S. M., & Stommel, J. (2017). Open education as resistance: MOOCs and critical digital pedagogy. *MOOCs and their afterlives: Experiments in Scale and Access in Higher Education*, 177-197.
10. Pusser, B., & Marginson, S. (2013). University rankings in critical perspective. *The journal of higher education*, *84*(4), 544-568.
11. Garrison, D. R., & Anderson, T. (2004). framework for research and practice. *Journal of distance learning*, *8*(1).
12. Dziuban, C. D., Moskal, P., & Hartman, J. (2005). Higher education, blended learning, and the generations: Knowledge is power-No more. *Elements of quality online education: Engaging communities. Needham, MA: Sloan Center for Online Education*, *88*, 89.
13. Dabbagh, N., & Kitsantas, A. (2012). Personal Learning Environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. *The Internet and higher education*, *15*(1), 3-8.
14. Jaggars, S., & Bailey, T. R. (2010). Effectiveness of fully online courses for college students: Response to a Department of Education meta-analysis.
15. EDUCATION, P. F. M. I. DESIGNING LEARNING WITH DIGITAL TECHNOLOGIES.
16. Wang, F., & Wang, L. (2016). *The challenges of the digital age in higher education: The need for teaching competencies*. *International Journal of Educational Management*, 30(5), 811-824. https://doi.org/10.1108/IJEM-01-2016-0005
17. Hodges, C. B., Moore, S., Lockee, B. B., Trust, T., & Bond, M. A. (2020). The difference between emergency remote teaching and online learning.
18. Rice, M. F. Handbook of Research on K-12 and Blending Learning (Second Editio. pdf.
19. Blackburn, H. (2017). The status of women in STEM in higher education: A review of the literature 2007–2017. *Science & Technology Libraries*, *36*(3), 235-273.
20. Lai, J. (2023). *The comprehensive evaluation of the use of technology in education* (Doctoral dissertation, Macquarie University).
21. Mehta, P. (2021). Teachers' readiness to adopt online teaching amid COVID-19 lockdown and perceived stress: pain or panacea?. *Corporate Governance: The International Journal of Business in Society*, *21*(6), 1229-1249.
22. Qiao, L., & Zhang, Y. (2022). Analysis of MOOC quality requirements for landscape architecture based on the KANO Model in the context of the COVID-19 epidemic. *Sustainability*, *14*(23), 15775.

23. Zhang, D., Zhao, J. L., Zhou, L., & Nunamaker Jr, J. F. (2004). Can e-learning replace classroom learning?. *Communications of the ACM*, *47*(5), 75-79.
24. Starkey, L., & Yates, A. (2022). Do digital competence frameworks align with preparing beginning teachers for digitally infused contexts? An evaluation from a New Zealand perspective. *European Journal of Teacher Education*, *45*(4), 476-492.
25. van den Berg, B. (2023). *Design principles for regenerative higher education in times of sustainability transitions* (Doctoral dissertation, Wageningen University and Research).
26. Schutz, P. A., & Muis, K. R. (Eds.). (2024). *Handbook of educational psychology*. Routledge.
27. Moore, M. G. (2013). The theory of transactional distance. In *Handbook of distance education* (pp. 66-85). Routledge.
28. Karim, D. N. (2023). Do job characteristics shape academics' affective commitment and knowledge sharing behavior in the institutes of tertiary education?. *Social Sciences & Humanities Open*, *8*(1), 100663.
29. Murillo-Zamorano, L. R., Sánchez, J. Á. L., & Godoy-Caballero, A. L. (2019). How the flipped classroom affects knowledge, skills, and engagement in higher education: Effects on students' satisfaction. *Computers & Education*, *141*, 103608.
30. Weller, M. (2011). *The digital scholar: How technology is transforming scholarly practice* (p. 208). Bloomsbury Academic.