COHERENCE – The Multidisciplinary Research Journal
Volume No: 17, Issue No: 2, Year: 2026 (November)
PP: 76-81
ISSN: 0976-5301
Peer Reviewed & Refereed Journal (IF: 7.85)
Journal Website www.coherencejournal.in

ONLINE EDUCATION AND E-LEARNING IN INDIAN HIGHER EDUCATION: A NARRATIVE REVIEW OF THEORY, OPPORTUNITIES, CHALLENGES AND EQUITY

Jagjit Kaur

Assistant Professor, Department of Computer Science, A. S. College for Women, Khanna, Punjab, India

ABSTRACT

Following closures due to the novel Coronavirus (COVID-19), online education and e-learning have become central parts of higher education in India. With national policies supporting blended learning, this narrative review provides a synthesis of information derived from 32 peer-reviewed and official sources after a structured search. The evidence is organized into three areas of pedagogical theory, constructivism, community of inquiry and self-regulated learning. The information shows that with good design, online and blended learning can be as effective or marginally more effective than traditional learning. However, secondary data shows significant issues remain. Globally there were 2.2 billion people without internet access in 2025. In India less than 34 internet subscriptions per 100 people were present in rural areas compared to over 101 in urban areas. Less than 32% of women in India owned a mobile phone. Only 29.1% of the institutions surveyed had a learning management system. There is a low completion rate on open courses and issues arise with assessment due to generative artificial intelligence. Overall the quality of online learning is not dependent on the technology but the pedagogy, infrastructure, teacher capabilities and gender sensitive policy. Implications are discussed for colleges, policy makers and researchers.

Keywords: Online education, E-learning, Blended learning, Indian higher education, Digital divide, Self-regulated learning

Online Education and E-Learning in Indian Higher Education: A Narrative Review of Theory, Opportunities, Challenges and Equity

INTRODUCTION

Online education is learning and teaching where there is a main focus on the use of the internet to deliver teaching and interaction between teachers and students. During the peak of the novel Coronavirus (April 2020), 188 countries had closed schools nationally impacting over 1.5 billion learners (Vegas, 2020). Most of the teaching during this period was emergency remote teaching. This is very different to planned online learning (Hodges et al., 2020). Therefore, it is important to look at the technology and assess how effective the education has been.

India demonstrates the opportunities and challenges. The All India Survey on Higher Education reported that in 2021-22 there were around 4.33 crore (43.3 million) students, this meant a gross enrolment ratio of 28.4%. There were also 2.07 crore female students (Ministry of Education, 2024). Online education is also supported in higher education with the National Education Policy 2020 encouraging blended learning (Aisha & Ratra, 2023). Platforms such as SWAYAM have increased access to courses (Panja, 2025). However, initial assessments show that issues such as poor internet access, limited digital skills and poor interaction were still prevalent (Adedoyin & Soykan, 2020; Dhawan, 2020).

Often discussions regarding this topic are descriptive and lack any theory or data to back up claims. This review provides a structured review of the literature and secondary data using three different theories of learning. This review will look at the following research questions:

RQ1: What theories best explain how to effectively teach in online learning environments?

RQ2: What is the evidence showing regarding the effectiveness and opportunities of online and blended learning?

RQ3: What are the challenges regarding the quality and equity of online learning, specifically in Indian higher education?

ISSN: 0976-5301
Peer Reviewed & Refereed Journal (IF: 7.85)
Journal Website www.coherencejournal.in

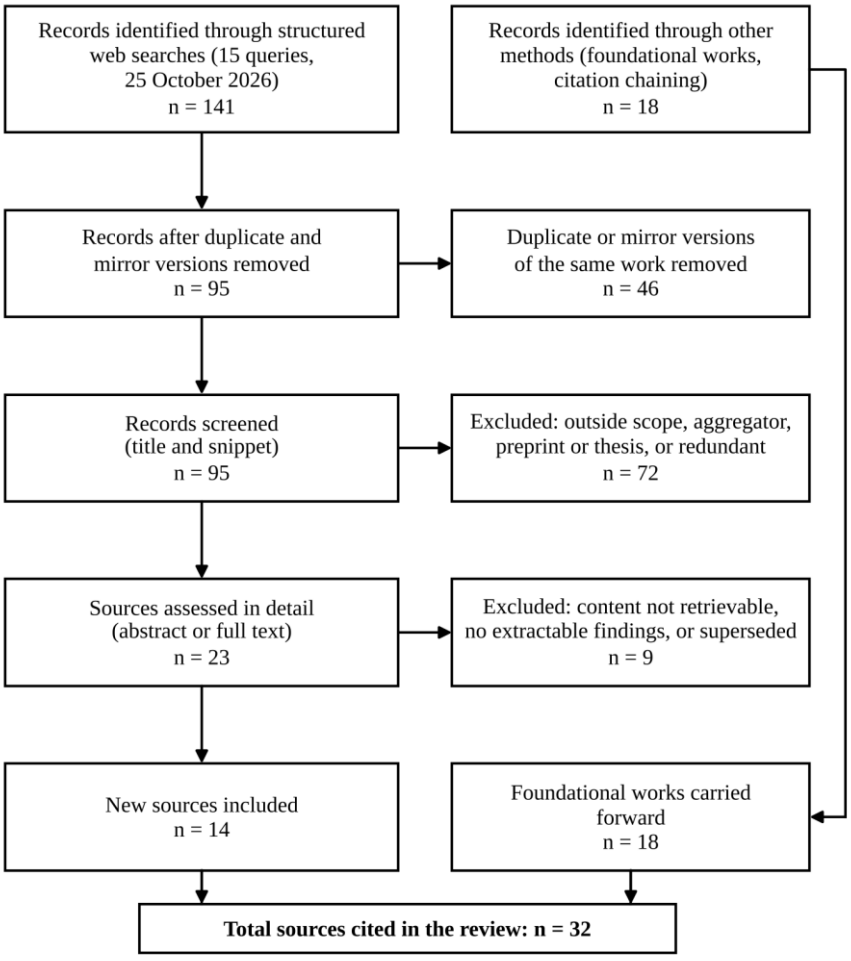
METHODOLOGY

This is a narrative review using a structured search inspired by the PRISMA model (Snyder, 2019). This is a suitable method to use for this review due to the variety of data available. A total of 15 searches were performed on 25th October 2026. Ten searches related to the main topic of online learning in higher education. The main searches were: online learning in Indian higher education; blended learning and the National Education Policy 2020; SWAYAM and MOOCs; digital divide; gender and online learning; generative AI; assessment integrity; self-regulated learning; learning analytics; and national enrolment statistics. Five searches were performed to identify specific data sets. See Figure 1 below.

A total of 141 sources were identified. 46 were duplicates or mirrored sources. There were 95 sources reviewed using the title and snippets. 23 sources were analyzed using the abstract/whole source. Sources were selected if they related to online or blended learning in higher education and contained empirical or synthesized data. The sources were only considered if they were written in English and were available. Preference was given to recent sources (2022-2026). Older sources were only included if they were foundational or not outdated. A total of 14 new sources were identified. Eighteen sources were identified using citation chasing. This provided a total of 32 sources. The data has been reported as found. Table 1 below contains a summary of the secondary data.

Figure 1

Source identification, screening and inclusion



Note: Data reflects a single searcher searching on 25th October 2026 using a general web search.

ISSN: 0976-5301
Peer Reviewed & Refereed Journal (IF: 7.85)
Journal Website www.coherencejournal.in

Table 1

Secondary data used within the review

Indicator	Value	Source
Learners affected by national school closures, April 2020	More than 1.5 billion learners in 188 countries	Vegas (2020)
People using the internet worldwide, 2025	6 billion online; 2.2 billion offline	ITU (2025)
Internet use, urban vs. rural areas, 2025	85% vs. 58%	ITU (2025)
Higher education enrolment in India, 2021–22	4.33 crore; GER 28.4%; 2.07 crore female students	Ministry of Education (2024)
Internet subscriptions per 100 people, rural vs. urban India	Fewer than 34 vs. more than 101	Oxfam India (2022)
Women vs. men owning a mobile phone, India	Fewer than 32% vs. more than 60%	Oxfam India (2022)
Rural Indian children with a smartphone at home, 2018 to 2021	36.5% to 67.6%	ASER Centre (2021)
Of these, children with no access to the smartphone, 2021	26.1%	ASER Centre (2021)
Institutions with a learning management system; with adequate facilities (faculty survey, n = 848)	29.1%; 32.1%	Srinivas & Yadav (2025)
Mean effect size, online vs. face-to-face (studies 1996–2008)	+0.24 overall; +0.35 blended; +0.14 fully online	Means et al. (2010)
MOOC completion rate (221 courses)	Median 12.6% (range 0.7%–52.1%)	Jordan (2015)
SWAYAM average completion rate	About 4.6%	Singh (2022)
Students who engaged in contract cheating	About 15.7%	Newton (2018)

Note: Data has been reported as found in sources. Different data was collected from different sources relating to different years, populations and methods. ITU = International Telecommunications Union. GER = Gross Enrolment Ratio. ASER = Annual Status of Education Report. MOOC = Massive Open Online Course.

THEORIES

Constructivism

Constructivism focuses on learners creating knowledge through activity and interaction and reflection (Vygotsky, 1978). Online learning would consist of problem based activities, group work and discussion. Creating an active webpage would help a computer science student to learn more about the markup language.

Community of Inquiry

Community of Inquiry (Garrison, et al., 2000) is a theory that suggests meaningful learning occurs with an overlapping of three elements teaching presence, social presence and cognitive presence. This focuses more on the interaction and how the learning is designed rather than just the technology. If any of these factors are lacking e.g. an unresponsive tutor or a quiet forum then it will not be successful.

Self-Regulated learning

As learners are often left to learn independently online, self-regulated learning is vital. The learners will set goals, monitor progress and evaluate (Zimmerman, 2002). A systematic review of online learning in higher education showed that time management, metacognition, effort regulation and critical thinking were positively

ISSN: 0976-5301
Peer Reviewed & Refereed Journal (IF: 7.85)
Journal Website www.coherencejournal.in

correlated with outcomes (Broadbent & Poon, 2015). Courses should encourage self-regulated learning by providing milestones, progression and structured feedback.

These theories compliment each other. Constructivism tells you what learners should be doing, Community of Inquiry explains how the interaction will help learners and self-regulated learning explains what the learner is doing. This addresses RQ1.

Effectiveness and Opportunities

The most frequently cited synthesis is the meta-analysis from the U.S. Department of Education. Fifty-one independent effects were analyzed from studies between 1996 and 2008. Results showed that online learning had slightly better outcomes than face-to-face learning (Means et al., 2010). Blended learning had a larger effect size (+0.35) than purely online learning (+0.14). This is often due to additional learning time and learning elements present. Another meta-analysis showed that self-regulated learning interventions had a positive effect on academic achievement with an effect size of 0.69 (Xu et al., 2023). Another meta-analysis showed that there was a moderate effect on learning outcomes from 15 studies between 2017-2022 (Guntur & Purnomo, 2024).

There is limited evidence from India but findings were consistent. A survey of 451 students showed online and blended learning were significantly correlated with increased satisfaction. Face to face learning had no significant correlation (Qamar et al., 2024). Platforms have increased access to learning. An analysis of SWAYAM showed that 95% of courses were within higher education and around 74% of courses were from two providers. The platform tended to target STEM learners (Panja, 2025).

Learning analytics can be used to improve outcomes. Time spent, completion and quiz results can be tracked to help those struggling early on (Siemens & Long, 2011). There is little evidence of this. A systematic review showed that only 11 papers evaluated interventions using analytics. They concluded they have potential but were of moderate quality (Sønderlund et al., 2019). This addresses RQ2 as online and blended learning can be effective. However it depends on the design.

CHALLENGES

Access and Gender

The first challenge is access. In 2025 it was estimated that 2.2 billion people did not have internet access. 96% of these were from low and middle income countries. Urban areas had 85% of people using the internet, compared to rural areas with only 58% (ITU, 2025). This can be seen in India. Rural areas had less than 34 internet subscriptions per 100 people compared to urban areas with over 101 (Oxfam India, 2022). The percentage of enrolled children in rural areas with a smartphone at home increased from 36.5% (2018) to 67.6% (2021). However, 26.1% of children could not access it (ASER Centre, 2021).

There is also a gender gap. Less than 32% of women in India had a mobile phone compared to over 60% of men (Oxfam India, 2022). A qualitative study of 52 final year student teachers found that girls were disadvantaged due to the move to online learning. Out of 22 homes with a laptop or larger, 16 had brothers using the device (Bassi, 2022). Colleges targeting female students need to consider shared devices within the home.

Infrastructure and Completion

There is a disparity in infrastructure. A survey of 848 faculty members found that only 32.1% of institutions had sufficient online learning facilities and 29.1% had a learning management system in place. 6.6% of respondents had no internet connection (Srinivas & Yadav, 2025). There is also a completion issue. Of 221 MOOCs, the completion rate ranged from 0.7% to 52.1%, with a median of 12.6% (Jordan, 2015). The average completion rate on SWAYAM was around 4.6%. Learners who dropped out cited poor tutor engagement, teaching in English only, long lectures and a lack of motivation. However many did not intend to gain a certificate (Singh, 2022).

Social Interaction, Wellbeing and Practical Elements

Due to less face to face interaction there can be a lack of social presence and delayed feedback. This is predicted by the Community of Inquiry theory (Garrison et al., 2000). Prolonged video conferencing can cause fatigue and this is due to close eye contact, cognitive load, constant self-view and limited movement (Bailenson, 2021). This is a theoretical argument and needs to be tested. Subjects that require lab or clinical practice cannot be fully replicated.

ISSN: 0976-5301
Peer Reviewed & Refereed Journal (IF: 7.85)
Journal Website www.coherencejournal.in

Assessment Integrity and Generative AI

A systematic review found around 15.7% of students engaged in contract cheating (Newton, 2018). Generative AI creates issues. A survey of 23,218 students from 109 countries found that they mainly used ChatGPT for idea generation and summarisation. However, they supported regulation as cheating and plagiarism were risks (Ravšelj et al., 2025). A scoping review of 11 studies found that there is poor transparency for using AI in assessment. Proportionality, clarity and alignment to the assessment helped (Pérez Pérez et al., 2026). This addresses RQ3 as the main challenges are access, gender, infrastructure, completion and assessment. The biggest challenge is access.

Future directions

New technologies are expected to heavily influence online learning. These include AI, adaptive, virtual and augmented reality and mobile/micro learning. A review of 146 articles found that AI can be used for profiling/prediction, assessment, adaptive/personalisation and intelligent tutoring (Zawacki-Richter et al., 2019). However there was limited links to pedagogical theory and little consideration of ethical risks. UNESCO concluded that high quality unbiased evidence was lacking (UNESCO, 2023). The outcomes depend on how the technology is used. Remote learning during the novel Coronavirus did not reach at least 31% of students globally, this includes 72% of the poorest students. Mobile learning may be suitable for those with mainly smartphone access to the internet. However, this will be limited due to shared devices. Virtual and augmented reality was not explored in this review and should be. This has pedagogical value.

Implications

Colleges should invest in a reliable infrastructure and training for teachers to design online courses. Using the community of inquiry to design your teaching, social and cognitive presence. Blended learning is a practical option, especially for practical subjects. Courses should encourage self-regulated learning, provide materials in regional languages and short lectures to reduce drop out. Assessments should be redesigned to reduce the amount of independent recall. Colleges for women can provide devices and internet access on campus as girls are disadvantaged by shared devices.

Policy makers should consider that access will affect quality, cost and skills. Support should be put in place for rural and low income learners. This can be done by providing affordable data, community centres and digital literacy programmes. Strong data protection policies should be in place. Researchers should focus on longitudinal studies within Indian colleges, gender analysis and causal evidence for AI.

LIMITATIONS

This is a narrative review meaning sources may have been chosen based on judgement. The search was performed using a general search engine and not an indexed search engine such as Scopus/Web of Science. The sources were also screened by one person using the title and snippets. Therefore the numbers in figure 1 reflect this. The secondary data varies as it comes from different years, populations and methods. The ITU data is global estimates, the ASER data is from rural India and was collected using a phone survey in 2021. Finally, the effect sizes from Means et al. (2010) are from studies completed prior to 2009. Many sources from India were small studies or descriptive. Sources not written in English were not included. The data is indicative.

CONCLUSION

Online education and e-learning are now a permanent part of higher education in India. The evidence shows that online and blended learning can be effective if using good pedagogy. With self-regulated learning, flexibility and learning analytics there are real opportunities. However, there are issues with access as many learners do not have reliable internet access. Women are disadvantaged due to the lack of devices. Most institutions do not have a learning management system. There is a high drop out on open courses. Generative AI causes issues with assessment integrity. To make online learning successful there needs to be collaboration between infrastructure, teacher capabilities, support for learners, assessment design and gender sensitive equity policies.

REFERENCES

1. Adedoyin, O. B., & Soykan, E. (2020). Covid-19 pandemic and online learning: The challenges and opportunities. *Interactive Learning Environments*, *31*(2), 863–875. https://doi.org/10.1080/10494820.2020.1813180
2. Aisha, N., & Ratra, A. (2023). NEP 2020: Blended learning: The road ahead for higher education in India. *Global Journal of Enterprise Information System*, *15*(3), 42–46. https://gjeis.com/index.php/GJEIS/article/view/736

ISSN: 0976-5301
Peer Reviewed & Refereed Journal (IF: 7.85)
Journal Website www.coherencejournal.in

3. ASER Centre. (2021). *Annual status of education report (rural) 2021*. Pratham. https://img.asercentre.org/galleries/aser2021_final.pdf
4. Bailenson, J. N. (2021). Nonverbal overload: A theoretical argument for the causes of Zoom fatigue. *Technology, Mind, and Behavior, 2*(1). https://doi.org/10.1037/tmb0000030
5. Bassi, T. (2022). Pandemic and online pedagogy: An exploratory study of impact of gender on teaching-learning process. *Indian Journal of Educational Technology, 4*(2), 201–214. https://journals.ncert.gov.in/IJET/article/view/486
6. Broadbent, J., & Poon, W. L. (2015). Self-regulated learning strategies & academic achievement in online higher education learning environments: A systematic review. *The Internet and Higher Education, 27*, 1–13. https://doi.org/10.1016/j.iheduc.2015.04.007
7. Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems, 49*(1), 5–22. https://doi.org/10.1177/0047239520934018
8. Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*(2–3), 87–105. https://doi.org/10.1016/S1096-7516(00)00016-6
9. Guntur, M., & Purnomo, Y. W. (2024). A meta-analysis of self-regulated learning interventions studies on learning outcomes in online and blended environments. *Online Learning, 28*(3). https://doi.org/10.24059/olj.v28i3.4025
10. Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020, March 27). The difference between emergency remote teaching and online learning. *EDUCAUSE Review*. https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning
11. International Telecommunication Union. (2025, November 17). *Global number of internet users increases, but disparities deepen key digital divides* [Press release]. https://www.itu.int/en/mediacentre/Pages/PR-2025-11-17-facts-and-figures.aspx\