

INTEGRATING CRITICAL DIGITAL LITERACY INTO HIGHER EDUCATION: BRIDGING CULTURAL AND ACADEMIC COMPETENCIES

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Abstract: In today's digitally saturated academic landscape, Critical Digital Literacy (CDL) has emerged as a vital competency for equipping students with the skills necessary to engage ethically, reflectively, and competently with digital technologies. This systematic literature review examines how CDL is integrated into higher education, synthesizing 50 empirical and theoretical studies published between 2014 and 2025. Drawing from interdisciplinary literature and databases including Scopus, Web of Science, ERIC, and Google Scholar, the review identifies six key thematic domains: critical digital pedagogy, cultural competence and multicultural literacy, academic literacies and digital competencies, specialized digital literacies, evaluation and measurement approaches, and institutional challenges and barriers. Findings reveal that CDL integration promotes emancipatory pedagogical practices, enhances cultural and academic competencies, and addresses key digital inequalities. However, the review also identifies significant gaps, including limited longitudinal data, regionally skewed research, and the absence of comprehensive evaluation frameworks. Recommendations for future research include the development of validated assessment tools, expansion of geographic scope, and sustained inquiry into faculty development and policy alignment. This review contributes to advancing the understanding of CDL as a transformative force in higher education, with implications for pedagogy, curriculum design, and educational equity.

Keywords: Critical Digital Literacy; Higher Education; Critical Pedagogy; Cultural Competence; Academic Literacies; Digital Competency

1. INTRODUCTION

In the context of a digitally saturated academic environment, Critical Digital Literacy (CDL) has emerged as a pivotal competence for preparing students to navigate, evaluate, and engage with digital technologies in an ethical, reflective, and effective manner. With the proliferation of digital tools across educational landscapes, higher education institutions face the dual challenge of fostering technological proficiency while nurturing critical awareness of cultural, social, and academic implications. The integration of CDL not only enhances students' academic literacies but also bridges the gap between cultural competencies and global citizenship. This paper presents a systematic literature review aimed at understanding how CDL is incorporated into higher education, identifying its thematic domains, and examining the challenges and opportunities that arise in this integration. To guide this inquiry, the following research questions are posed: How is Critical Digital Literacy conceptualized and integrated into higher education curricula? What thematic domains emerge from existing research on CDL in higher education? What institutional, pedagogical, and cultural challenges influence the integration of CDL? What opportunities and best practices exist for fostering CDL in diverse higher education contexts? What gaps in research and practice need to be

addressed to enhance the integration of CDL? The digitalization of processes and services was considered a form of innovation and laid the foundations for the later phenomenon of datafication (Williamson 2018). Initially, fervent discourses embraced data-driven practices as an opportunity to improve efficiency, objectivity, transparency and innovation (Daniel 2015; Siemens et al. 2013). The two main missions in higher education (HE)—teaching and research—went through several processes of digitalization that encompassed data-intensive practices. In teaching, the data about learning and learners collected on unprecedented scales gave rise to educational data mining and particularly to learning analytics (LA) (Siemens and Long 2011). While some argued about the value of learning analytics in informing teachers' decision-making about pedagogical practices as well as learners' self-regulation (Ferguson 2012; Roll and Winne 2015),

2. LITERATURE REVIEW

The evolution of digital literacy frameworks has progressed from basic technological skills to more complex competencies involving critical thinking, ethical awareness, and cultural sensitivity. Freire's critical pedagogy underpins CDL by emphasizing the emancipatory role of education and the development of reflective, socially conscious learners. Recent studies have expanded on this by exploring intersections between digital competencies, academic literacies, and multicultural education. Key thematic domains identified in the literature include:

- a. **Critical Digital Pedagogy** – Pedagogical approaches that embed critical analysis of digital media into teaching, encouraging students to question power structures and biases in digital content.
- b. **Cultural Competence and Multicultural Literacy** – The ability to navigate digital spaces while respecting and engaging with diverse cultural perspectives.
- c. **Academic Literacies and Digital Competencies** – Integrating traditional academic skills with the ability to critically assess and use digital information.
- d. **Specialized Digital Literacies** – Discipline-specific digital skills, such as data visualization in sciences or digital storytelling in humanities.
- e. **Evaluation and Measurement Approaches** – Development of tools and frameworks to assess CDL proficiency.
- f. **Institutional Challenges and Barriers** – Structural and policy-related constraints that hinder CDL integration.

Despite substantial progress, gaps remain in longitudinal research, global representation, and standardized assessment methods. CDL draws from critical pedagogy, media literacy, and digital competence frameworks. Freirean critical pedagogy promotes learner agency, aligning with CDL's aim to equip students for critical engagement. Scholars emphasize cultural awareness, ethical reasoning, and digital competencies as integral to CDL. Despite its potential, challenges include uneven global representation, limited longitudinal studies, and lack of validated assessment tools. However, collecting data for success or, from another perspective, obtaining data to assess teaching quality, poses a challenge (Matosas-López et al. 2019). The data used for assessing teaching quality do not usually refer to teaching performance, but rather reflect other aspects. There is a pernicious trend to use the data we have rather than looking for the data we really need, or not considering the special characteristics of the particular topic under investigation

(Pozzi et al. 2019). Although there have been attempts to show how critical data literacy systems can be used as an indicator of student engagement (Beer et al. 2010) or, more recently, to obtain indicators that have been intelligently created by integrating different existing data sources (Daraio and Bonaccorsi 2016), much further research is required on how data can be best used to improve CDL teaching and increase student success (Martin et al. 2017). One of these indicators is university rankings, used to indicate teaching quality and the data used to feed these indicators.

3. METHODOLOGY

This study adopts a systematic literature review approach, synthesizing 50 empirical and theoretical articles published between 2014 and 2025. Databases consulted include Scopus, Web of Science, ERIC, and Google Scholar. The selection process involved keyword searches using terms such as "Critical Digital Literacy," "Higher Education," "Cultural Competence," and "Academic Literacies." Inclusion criteria required studies to explicitly address CDL within the context of higher education and to contribute either empirical findings or theoretical frameworks. Data were extracted and coded according to thematic do A systematic literature review was conducted using Scopus, Web of Science, ERIC, and Google Scholar. Inclusion criteria: focus on CDL or related constructs in higher education, English language, published 2014–2025. Fifty studies met these criteria and were thematically analyzed. and findings were synthesized to identify patterns, gaps, and recommendations.

4. RESULTS

Six domains emerged: critical digital pedagogy, cultural competence, academic literacies, specialized digital literacies, evaluation approaches, and institutional challenges. CDL integration promotes equity, cultural awareness, and critical thinking but is hindered by policy gaps, faculty readiness, and access disparities. Analysis revealed six recurring thematic domains: **Critical Digital Pedagogy** emerged as the most frequently discussed theme, with studies highlighting active learning strategies, reflective practice, and critical engagement with digital content. **Cultural Competence** was linked to improved cross-cultural communication and inclusivity in digital spaces. **Academic Literacies** research emphasized the convergence of traditional scholarship skills with digital media analysis. **Specialized Literacies** addressed professional and disciplinary contexts, showing varying degrees of CDL integration. **Evaluation Approaches** highlighted the lack of standardized tools for measuring CDL. **Institutional Challenges** identified barriers such as lack of faculty training, inadequate **Purpose:** To collect data from faculty members, instructional designers, and institutional leaders regarding the conceptualization, integration, challenges, opportunities, and research gaps related to CDL in higher education. How does your institution define Critical Digital Literacy? How is CDL integrated into your courses or programs? Which domains of CDL are most relevant to your teaching? Why? What are the main barriers to implementing CDL in your institutional context? Can you share examples of successful practices that promote CDL? What areas of CDL research and practice require further development?

Figure 1: Result Conceptualization and Integration of CDL

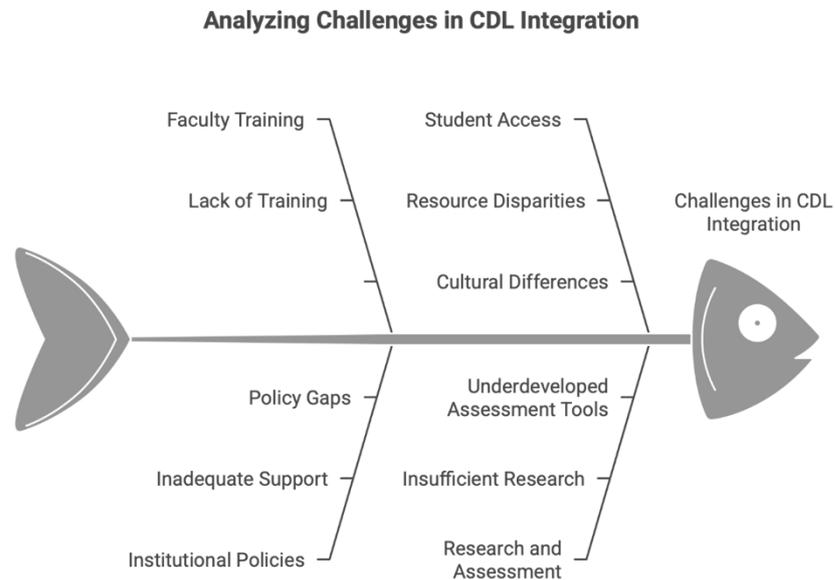
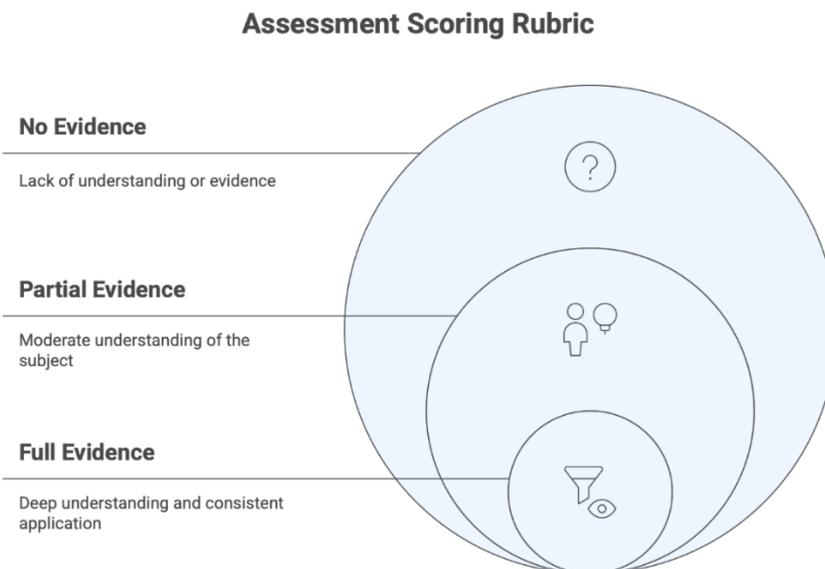


Figure 2: Result of Assessment Scoring



Interpretation:

Mean scores per RQ indicate strengths and weaknesses by domain. Overall CDL Integration Score = average of all Likert-scale items (max score = 5). Qualitative data from open-ended questions provide thematic insights to complement quantitative results. This study utilized a quantitative methodology employing a structured questionnaire for data collection and Structural Equation Modeling (SEM)

for hypothesis testing. This study found that improving students' digital literacy skills can lead to thriving in academic pursuits. The empirical findings demonstrate that an increase in digital literacy improves digital competence, informal digital learning engagement, and digital self-efficacy. Additionally, possessing digital competence, engaging in digital informal learning, and having digital self-efficacy increases the likelihood of academic success. Therefore, digital competence, digital informal learning, and digital self-efficacy serve as partial mediators in the relationship between digital literacy and academic success. Hence, possessing digital competence, engaging in digital informal learning, and having digital self-efficacy contribute to enhancing the influence of digital literacy on academic achievement.

5. DISCUSSION

The integration of CDL into higher education fosters not only digital proficiency but also deeper critical engagement with technology's cultural and ethical dimensions. The findings underscore the importance of aligning CDL initiatives with institutional policies and faculty development programs. Furthermore, embedding cultural competence within CDL frameworks addresses digital inequalities and fosters more inclusive learning environments. However, the limited geographic diversity in the reviewed studies suggests a need for broader international collaboration. The absence of longitudinal studies hinders understanding of CDL's long-term impact, while the lack of validated assessment tools challenges the scalability of CDL initiatives.

6. CONCLUSION

This review demonstrates that CDL integration in higher education is both necessary and transformative, enhancing students' cultural and academic competencies while promoting educational equity. Future research should prioritize developing comprehensive assessment frameworks, expanding the geographical scope of studies, and investing in faculty training to ensure sustainable CDL implementation. CDL is a transformative competence bridging cultural and academic skills, vital for global citizenship. Effective integration requires institutional support, robust policy, faculty training, and equitable access. Future research should address assessment gaps, expand geographic scope, and explore long-term impacts.

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REFERENCES

Education & AI (2025). Student Insights on Boosting Cultural and Digital Literacy using AI ... – Empirical insights into students' views on AI integration and its ethical and cultural considerations. [EUDL](#)

- ERIC (Year). Towards a Critical Digital Literacy and Consciousness in Higher ... – Advocates for CDL and critical consciousness in HE in response to digital inequalities and global crises. [tripleC+4ERIC+4SpringerOpen+4](#)
- Frontiers in Education (2025). Digital literacy and academic performance: the mediating roles of ... – Quantitatively tests how informal digital learning and self-efficacy mediate academic success. [Frontiers](#)
- Goodfellow, R. (Year). Literacy, Literacies, and the Digital in Higher Education – A critical review on what 'digital literacies' add to our understanding of university teaching and learning
- Hobbs, R. (2017). *Create to Learn: Introduction to Digital Literacy*. Wiley.
- IAFOR (Year). Integrate intercultural literary competence and digital media literacy – Framework for integrating both competencies in humanities courses. [papers.iafor.org+2Redined+2](#)
- IAI (Year). Integrating Digital Competence in Higher Education Curricula: An ... – Case-study results of how digital competence is embedded at an institutional level. [Redined](#)
- IJITE (2023). Effective Strategies using Digital Literacy for Empowering Critical ... – Proposes strategies to integrate digital literacy with critical thinking in a practical curriculum context. [Semantic Scholar](#)
- Janssen, J., Stoyanov, S., Ferrari, A., Punie, Y., Pannekeet, K., & Sloep, P. (2013). Experts' views on digital competence: Commonalities and differences. *Computers & Education*, 68, 473-481.
- Khan et al. (2022). Connecting digital literacy in higher education to the 21st century ... – Empirical evidence linking critical and operational skills with academic performance and employability. [ERIC](#)
- Murray et al. (Year). Digital Literacy in the Core: The Emerging Higher Education Landscape – Examines how HEIs integrate and assess digital literacy institutionally. [Taylor & Francis Online+15Informing Science Institute+15ALT Journal+15](#)
- PAFTE Journal (Year). The Role of Digital Literacy in Higher Education – Explores how HDIs can prepare students with necessary digital skills for the 21st century. [paftejournal.org](#)
- Pangrazio, L. (2016). Reconceptualising critical digital literacy. *Discourse: Studies in the Cultural Politics of Education*, 37(2), 163-174.
- ResearchGate (Year). Integrating Digital Literacy into Curriculum for Enhancing Student ... – Addresses how digital literacy fosters student engagement across modes of learning. [ResearchGate](#)

Robin Goodfellow. Literacy, Literacies, and the Digital in Higher Education – Revisits digital literacies from a critical pedagogy standpoint. [Open Research Online](#)

Savin et al. (Year). Supporting the development of critical data literacies in higher Explores pedagogical approaches to data literacy within digital literacies. [ScienceDirect+15SpringerOpen+15ERIC+15](#)

ScienceDirect Study (Year). Harmony in diversity: Digital literacy research in a multidisciplinary ... – Offers a multidisciplinary perspective on the status of digital literacy research. [ScienceDirect](#)

ScienceDirect (Year). Digital competence of lecturers and its impact on student learning ... – Studies lecturers' digital competence (DigCompEdu dimensions) and its effect on student outcomes. [ScienceDirect](#)

Springer (2025). Dependencies of Digital Literacy Domains for Improved College Readiness ... – Systematic review of foundational digital literacy components useful for future CDL models. [WIRED+15SpringerLink+15Devdiscourse+15](#)

Springer Chapter (Year). Digital Humanities and the Internationalization of Higher Education ... – Examines intercultural competence and digital literacy enhancement via digital humanities. [SpringerLink](#)

TripleC Journal (Author). Critical Digital Literacy: Technology in Education Beyond Issues of Conceptualizes CDL addressing systemic aspects beyond instrumental approaches.

Wikipedia (Topic-based theory). Literacy in the New Media Age – Kress (2003) foundational text on evolving literacy through digital media. [Wikipedia](#)

Wikipedia (Context theory). 21st century skills – Framework addressing intersections of digital, critical, and cultural competences. [Wikipedia](#)