# Bridging the digital divide: Integrating information literacy instruction to empower distance learners – a five-year systematic literature review (2020–2025)

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## ABSTRACT

The rapid expansion of digital and distance learning modalities has intensified the need for robust information literacy (IL) competencies among higher education students. This 5-year systematic literature review (2020–2025) synthesises 87 peer-reviewed studies to explore how IL instruction can bridge the digital divide and empower distance learners. Findings reveal that distance learners face critical challenges in advanced information search, evaluation, and academic use of digital content. Enablers of IL success include embedded librarianship, scaffolded IL instruction, inquiry-based learning, and discipline-specific IL integration. On the contrary, constraints relate to limited IL policies, weak faculty–librarian collaboration, poor ICT infrastructure, and low learner self-efficacy. The review concludes that integrating IL instruction into distance learning curricula is essential for learner empowerment, academic success, and lifelong learning. The study recommends institutional IL policies, structured collaborations, improved ICT resources, and sustained assessment frameworks to enhance IL outcomes in digital learning environments. Finally, a conceptual model for integrating IL into distance education is proposed, illustrating how inputs, processes, outputs, and learner outcomes interact to reduce the digital divide among learners and leading to enhanced quality of distance education.

**Keywords**: Digital Divide, Distance Learners, Embedded Librarianship, Higher Education, Information Literacy, Systematic Literature Review

## I. INTRODUCTION

Distance education has transformed the global higher education landscape, particularly between 2020 and 2025, as institutions increasingly adopted digital and online learning platforms. This expansion has heightened the importance of information literacy (IL) as a foundational competency enabling students to navigate, evaluate, and ethically engage with digital information (Association of College and Research Libraries, 2016). The Association of College and Research Libraries (ACRL, 2016) defines IL as a set of integrated abilities encompassing the reflective discovery of information, critical evaluation of sources, and ethical participation in scholarly communication. For distance learners, IL is particularly critical because learning is largely self-directed and mediated through digital platforms, electronic databases, and open web resources, often without the immediate support structures available in face-to-face learning environments (Zakharova et al., 2024). Consequently, IL is not merely a supplementary skill but a core enabler of academic engagement and autonomy in distance education.

Existing studies suggest that while technology access has improved, distance learners continue to experience substantial IL gaps, especially in credible source evaluation, academic database use, research ethics, and referencing (Roa González et al., 2025). As institutions increasingly digitise learning environments, understanding how IL instruction bridges digital inequalities becomes essential for improving learner performance, engagement, and retention. Studies conducted during the review period indicate persistent difficulties in identifying credible scholarly sources, navigating academic databases, applying effective online search strategies, understanding research ethics, and using appropriate referencing practices (Roa González et al., 2025). These challenges are frequently compounded by limited exposure to structured IL instruction, uneven collaboration between academic departments and libraries, and assumptions that digital proficiency equates to information literacy. As a result, distance learners may rely heavily on surface-level web searching, exhibit weak critical evaluation skills, and struggle to engage deeply with academic

content, thereby affecting the quality of assignments, research projects, and overall learning outcomes. Universities worldwide adopted learning management systems, digital libraries, and virtual communication tools to ensure continuity of teaching and learning. While these developments increased access to higher education for geographically dispersed and non-traditional learners, they also intensified students' reliance on digital information environments. As a result, the capacity to locate, evaluate, and use information effectively has become central to academic success in distance education contexts.

The rapid digitisation of higher education has also foregrounded longstanding issues related to the digital divide. While access to devices and connectivity has improved in many regions, disparities persist in learners' ability to effectively use digital information resources for academic purposes. IL instruction has therefore emerged as a critical mechanism for addressing not only skills deficits but also broader inequalities in participation, engagement, and academic success. Integrating IL instruction into distance education curricula has been shown to enhance learner confidence, promote independent inquiry, and support persistence in online programmes. However, the extent to which such integration is systematic, scalable, and pedagogically aligned with distance learners' needs varies considerably across institutional and national contexts.

Between 2020 and 2025, a growing body of empirical and conceptual research has examined IL instruction in online and distance learning environments. This literature explores a range of instructional models, including embedded librarianship, online tutorials, credit-bearing IL courses, scaffolded assignments, and discipline-specific interventions. Other studies focus on learner perceptions, competency levels, institutional policies, and technological affordances shaping IL development. Despite this growing interest, the evidence base remains fragmented, with studies dispersed across disciplines, methodologies, and geographical regions. Furthermore, findings are often context-specific, limiting the transferability of insights and hindering the development of coherent, evidence-informed strategies for mainstreaming IL instruction in distance education.

To date, there is limited systematic synthesis that consolidates and critically appraises research on IL instruction for distance learners during this transformative period. The absence of a comprehensive review constrains the ability of educators, librarians, and policy makers to identify effective practices, understand common barriers, and align IL initiatives with the evolving demands of digital higher education. Addressing this gap is particularly important as institutions seek sustainable approaches to supporting distance learners beyond emergency remote teaching and towards more intentional, inclusive, and pedagogically grounded online education models.

This article provides a systematic literature review covering 2020–2025 to examine IL instructional models, learner competencies, institutional barriers, and strategies that empower distance learners.

### 1.1 Statement of the Problem

Information literacy (IL) is widely acknowledged as a critical academic competency that enables distance learners to effectively locate, evaluate, and ethically use information in digitally mediated learning environments. While international frameworks advocate for the integration of IL instruction into higher education curricula, evidence suggests that such integration remains inconsistent and poorly embedded in distance education programmes. Distance learners continue to face challenges including limited engagement with electronic resources, ineffective online search strategies, and inadequate institutional support that will facilitate the development of IL competencies.

The rapid exponential expansion of online and distance learning between 2020 and 2025, accelerated by digital transformation and post-pandemic changes, has generated a growing body of literature on IL instruction. However, this research is fragmented, context-specific, and lacks systematic synthesis, particularly regarding how IL instruction is designed, integrated, and experienced by distance learners. Consequently, higher education institutions lack consolidated evidence to guide effective strategies for mainstreaming IL instruction as a core component of distance education and for addressing persistent digital inequalities.

This systematic literature review addresses this gap by synthesising empirical and conceptual studies published between 2020 and 2025 to examine approaches, challenges, and enabling factors in integrating information literacy instruction to empower distance learners in higher education.

### 1.2 Research Objective

To examine IL instructional models, learner competencies, institutional barriers, and strategies that empower distance learners.

## II. THEORETICAL REVIEW

### 2.1 Threshold Concepts Framework

The Threshold Concepts Framework, as operationalised in the *ACRL Framework for Information Literacy for Higher Education*, conceptualises IL as a set of threshold concepts that shape scholarly inquiry, critical thinking, and research practices (Association of College and Research Libraries, 2016). Drawing on Meyer and Land's (2003) theory of threshold concepts, the framework emphasises that certain core ideas act as conceptual gateways which, once understood, irreversibly alter learners' perceptions of information practices. These concepts are integrative, in that they expose the interrelatedness of ideas; transformative, in that they change learners' ways of thinking; and potentially troublesome, as they often challenge prior assumptions about authority, credibility, and research processes.

Concepts such as "Authority Is Constructed and Contextual" and "Scholarship as Conversation" serve as cognitive gateways that transform learners' engagement with information (Bluemle, 2023; O'Neill, 2021; Rinne, 2016). Within the ACRL Framework, threshold concepts such as *Authority Is Constructed and Contextual* and *Scholarship as Conversation* are particularly salient in digitally mediated and distance learning environments. The concept of authority challenges learners to recognise that information sources derive credibility not from inherent characteristics but from disciplinary norms, social contexts, and power relations. By internalising this concept, learners move beyond simplistic evaluations of information based on surface features and develop the capacity to make nuanced judgments about relevance, reliability, and bias.

Similarly, *Scholarship as Conversation* reframes research as an ongoing, iterative dialogue among scholars rather than a linear process aimed at fulfilling assessment requirements. This threshold concept encourages learners to view themselves as active participants in knowledge construction, capable of synthesising perspectives, tracing intellectual debates, and contributing original insights (Rinne, 2016). For distance learners, this reconceptualisation can be particularly empowering, as it mitigates the sense of isolation often associated with online learning by situating their academic work within broader scholarly communities. Research suggests that instructional approaches grounded in this concept foster deeper engagement with sources, improved argumentation, and more reflective research practices.

Empirical applications of the Threshold Concepts Framework indicate that IL development is non-linear and requires sustained exposure, reflection, and practice. Learners may oscillate between understanding and misunderstanding as they encounter these concepts, especially when prior educational experiences have emphasised procedural skills over conceptual understanding. Consequently, effective IL instruction—particularly in distance education contexts—must be intentionally scaffolded and embedded within disciplinary curricula rather than delivered as isolated, one-off interventions. For the purposes of this systematic literature review, the Threshold Concepts Framework provides an analytical lens for evaluating whether IL instruction reported in the literature addresses surface-level competencies or supports deeper conceptual transformation among distance learners.

### 2.2 Sociocultural Theory

Rooted in Vygotskian principles, the sociocultural theory posits that learning is embedded within social, cultural, and technological environments and shared practices rather than occurring solely as an individual cognitive process (Limberg et al., 2012). From this standpoint, IL is understood as a socially situated practice shaped by learners' participation in academic communities, engagement with digital tools, and access to institutional support structures. For distance learners, sociocultural factors play a decisive role in shaping IL experiences and outcomes. Access to reliable technology, familiarity with digital platforms, institutional expectations, and opportunities for interaction with peers, instructors, and librarians all influence how learners develop and apply IL competencies.

Distance learners' IL experiences are shaped by access to technology, community support, and digital learning ecosystems (Boztaş et al., 2025; Zou et al., 2025). Recent studies highlight that disparities in digital access, support networks, and learning design contribute to uneven IL development among distance learners, reinforcing broader patterns of digital inequality (Boztaş et al., 2025; Zou et al., 2025). Sociocultural theory therefore shifts attention from individual skill deficits to the learning environments and systems that enable or constrain effective information use.

Applying this theory underscores the need for collaborative, context-aware IL instruction integrated into authentic learning tasks. Instructional approaches such as embedded librarianship, collaborative research assignments, and scaffolded online discussions allow learners to develop IL competencies through guided participation and shared meaning-making. In distance education contexts, digital learning ecosystems—including learning management systems, virtual libraries, and communication tools—serve as mediating artefacts that shape how IL is taught and learned. Integrating IL instruction into these ecosystems aligns with sociocultural principles by supporting learning through interaction, feedback, and participation in disciplinary practices.

While the Threshold Concepts Framework foregrounds conceptual transformation in learners' understanding of information, sociocultural theory emphasises the contextual and relational dimensions of IL development. Their combined application enables a nuanced analysis of how IL instruction is conceptualised, delivered, and experienced

by distance learners, and how such instruction can contribute to bridging digital divides and empowering learners in digitally mediated higher education environments.

## III. METHODOLOGY

### 3.1 Research Design

This study adopted a systematic literature review (SLR) approach guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) framework (Page et al., 2021; Sohrabi et al., 2021). The aim was to identify, screen, and synthesise empirical and conceptual evidence on information literacy (IL) instruction for distance and online learners in higher education. A narrative synthesis approach was used to analyse, compare, and thematically integrate findings from the included studies.

### 3.2 Data Sources and Search Strategy

A comprehensive search was conducted across major academic databases covering the period January 2020 to March 2025. The following databases were consulted: Scopus, EbscoHost, JSTOR, and Google Scholar. To identify relevant studies, Boolean search strategies were applied using combinations of key terms and synonyms. Fig. 1 shows the sample search string included in the search:

> "information literacy" AND "distance learners", "digital divide" AND "online learning", "embedded librarianship" AND "higher education", and "information literacy instruction" AND "open and distance learning"

**Figure 1**
*Search String*

Searches were refined using filters for publication date, peer-reviewed status, and subject area relevance. The results from each database are as shown in Table 1:

**Table 1**
*Search Results*

| No | Database | Count |
|---|---|---|
| i | Google Scholar | 610 |
| ii | JSTOR | 321 |
| iii | Scopus | 1227 |
| iv | EbscoHost | 24 |
| | **Total** | **2,182** |

An example of a search query from Scopus is Fig 2:

> *"information literacy instruction" AND "open and distance learning" AND PUBYEAR > 2020 AND PUBYEAR < 2025 AND ( LIMIT-TO ( DOCTYPE , "ar" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) )*

**Figure 2**
*Boolean Search Query from Scopus*

### 3.3 Eligibility Criteria

Studies were screened according to predefined inclusion and exclusion criteria consistent with PRISMA guidelines.

*Inclusion Criteria*
Published between 2020 and 2025
Peer-reviewed journal articles
Focus on information literacy instruction in higher education
Address distance, online, or remote learners
Available in full text and published in English

*Exclusion Criteria*
Conference abstracts, dissertations, book chapters, or non–peer-reviewed work
Studies addressing IL in basic/primary or secondary education
Publications not specifically focusing on IL instruction or not involving distance learners

### 3.4 Screening and Selection Process

The screening process followed the four-step PRISMA model. A PRISMA flow diagram Fig. 3 summarises the selection process, indicating records identified, screened, excluded, and included.

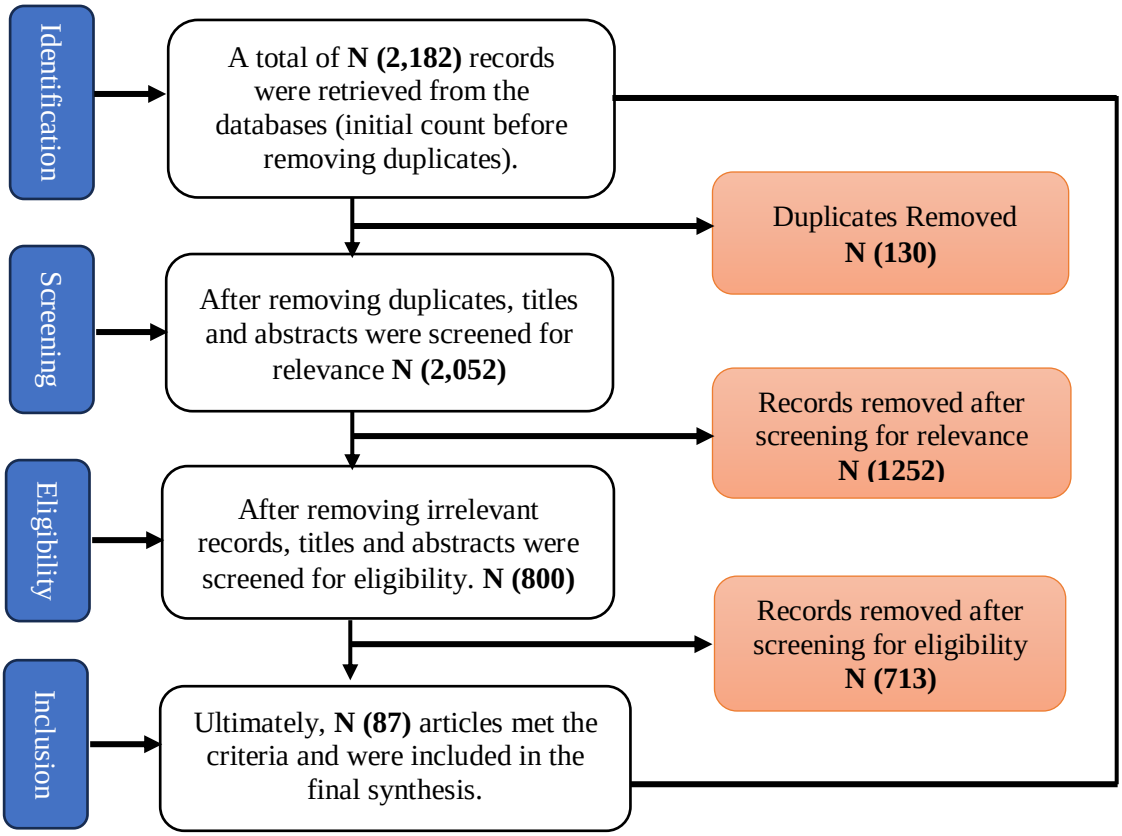


**Figure 3**
*Screening and Selection Process*

A total of N 2,182 records were identified and retrieved from databases (initial count before removing duplicates). A total of N (130) duplicate records were removed. After removing duplicates, 2,052 titles and abstracts were screened for relevance. After screening for relevance using title and abstract combinations, N (1,252) records were excluded from the study. Thereafter n (800) records that met the eligibility criteria (articulated under 3.4) were assessed and, N 713 records were removed as they did not meet the eligibility to be included in the review. Finally only N (87) records met the inclusion and exclusion criteria, and these articles were included in the final synthesis review.

### 3.5 Data Extraction and Analysis

The 87 studies included in the final review were analysed using narrative synthesis, which allowed for the systematic organisation, interpretation, and integration of diverse study designs and contexts. The analysis proceeded in four structured phases.

#### 3.5.1 Phase 1: Preliminary Synthesis

In the initial stage of analysis, the 87 studies were organised according to shared characteristics to establish a foundation for comparison (Table 2).

**Table 2**

*Study Type and Geographical Distribution*

| Study Type | Count | % |
|---|---|---|
| **Empirical investigations** | 47 | 54 |
| **Case studies and programme evaluations** | 24 | 28 |
| **Conceptual or theoretical papers** | 16 | 18 |
| Total | **87** | **100** |
| Geographical Distribution | **Count** | **%** |
| **North America** | 36 | 41 |
| **Europe** | 25 | 29 |
| **Africa** | 10 | 12 |
| **Asia** | 9 | 10 |
| **Australia/Oceania** | 7 | 8 |
| Total | **87** | **100** |

The distribution of study types showed that the majority were empirical investigations (54%), followed by case studies and programme evaluations (28%), and a smaller proportion of conceptual or theoretical papers (18%). Geographically, most studies originated from North America (41%) and Europe (29%), with fewer contributions from Africa (12%), Asia (10%), and Australia/Oceania (8%). The studies also reflected diverse instructional contexts, including fully online learning environments, blended learning programmes, Open and Distance Learning (ODL) systems, as well as MOOCs and virtual learning communities. This preliminary categorisation provided a structured lens through which information literacy instructional trends could be compared across regions, pedagogical environments, and delivery modes.

### 3.5.2 Phase 2: Exploring Relationships Within and Across Studies

The second phase involved a cross-study comparison aimed at identifying recurrent patterns and conceptual linkages. A dominant relationship across the literature was the impact of embedded librarianship, with studies demonstrating that integrating librarians directly into online courses significantly enhanced learner engagement, increased assignment completion rates, and strengthened information literacy competencies. Another notable relationship concerned the digital divide, which emerged as a persistent barrier affecting learners in developing regions, especially in Africa and parts of Asia, where limited internet access, bandwidth constraints, and low digital proficiency impeded effective IL instruction. The analysis further showed that IL programmes designed around established pedagogical frameworks such as Constructivism, the Community of Inquiry model, or Self-Directed Learning were more likely to achieve meaningful learning outcomes. Despite these strengths, the review uncovered notable assessment gaps: while many studies described IL instructional interventions, relatively few evaluated their effectiveness using rigorous or standardised assessment methods.

### 3.5.3 Phase 3: Thematic Synthesis

Three major themes emerged out of the cross-study analysis. The first theme, Pedagogical Approaches to IL Instruction, highlighted the use of multimodal teaching strategies, including videos, guides, and interactive modules as well as the interplay between synchronous and asynchronous methods. Many studies emphasised the importance of scaffolding and offering differentiated IL pathways tailored to diverse learner needs.

The second theme, Technology-Enhanced IL Delivery, centred on the integration of IL modules within learning management systems (LMS), the growing use of AI-driven search tools, and personalised learning pathways. However, this theme also underscored ongoing challenges related to technological interoperability across platforms. The third theme, Instructor–Librarian Collaboration, revealed that strong collaborative models consistently produced higher IL uptake, improved student retention, and more contextualised, discipline-specific IL instruction, demonstrating the pedagogical value of partnership in digital learning environments.

### 3.5.4 Phase 4: Assessing Robustness of the Synthesis

The overall robustness of the synthesis was reinforced by the inclusion of studies from multiple regions and the presence of methodological diversity, encompassing qualitative, quantitative, and mixed-methods designs. The transparent application of the PRISMA framework further ensured credibility and systematic rigour. Nonetheless, certain limitations were evident.

## IV. FINDINGS & DISCUSSION

### 4.1 Approaches to IL Integration in Distance Education

Distance education institutions have implemented multiple strategies to embed IL skills into curricula. Five prominent approaches emerged from the literature:

#### 4.1.1 Embedded Librarianship

Embedded librarians are actively integrated into online courses, providing real-time research support, facilitating learner engagement, and contextualising IL skills within course content (Abbas & Mutula, 2023; Beem & Becker, 2015; Bielema et al., 2005; Inuwa & Abrizah, 2018).

#### 4.1.2 Scaffolded IL Instruction

Scaffolded IL instruction is delivered progressively across programmes and course levels, fostering long-term competency retention and improved learner research confidence (Carroll et al., 2025; Coffman et al., 2023; Zuo et al., 2023).

#### 4.1.3 Inquiry-Based Instruction

Inquiry-based IL situates instruction within authentic research questions and projects. This approach strengthens critical thinking and promotes the practical application of IL skills (Anchunda & Kaewurai, 2025; Hossain & Sormunen, 2025; Lange et al., 2023).

#### 4.1.4 Other Approaches

Other strategies include one-off workshops and self-paced online tutorials (Kumar & Heathcock, 2016). While workshops provide brief exposure, their impact is limited. Online tutorials offer flexibility but rely heavily on learner motivation (Table 3).

**Table 3**

*Summary of IL Instructional Approaches and Reported Outcomes*

| No | Instructional Approach | Description | Reported Outcomes |
|---|---|---|---|
| i | Embedded Librarianship | Librarians integrated into online course delivery | Higher engagement; contextual IL skill development |
| ii | Scaffolded IL | Structured IL instruction across curriculum levels | Long-term competency retention |
| iii | Inquiry-Based IL | Authentic research-driven IL tasks | Stronger critical analysis skills |
| iv | One-Off Sessions | Single IL workshop | Minimal lasting impact |
| v | Online Tutorials | Self-paced IL instruction | Flexible; dependent on learner motivation |

### 4.2 Link of IL Approaches to Theoretical frameworks

At the heart of modern information literacy (IL) practice are two crucial theoretical frameworks, the Threshold Concepts and Sociocultural Theory. How information literacy instructional approaches relate to and operationalise these frameworks is further explained below by asking and answering the following questions:

The Threshold Concepts Framework asks:

> "*Are we helping learners navigate those transformative, irreversible gateways that truly reshape their understanding of information and scholarship*?"

Sociocultural Theory, on the other hand, asks:

> "*Are we embedding this learning in authentic social practices, tools, and communities that are relevant to the learner*?"

Effective instructional learning (IL) for distance learners and all learners, therefore, needs to be both conceptually transformative (TCF) and socially situated (Sociocultural Theory). The most impactful approaches: Embedded, Scaffolded, and Inquiry-Based IL, all effectively combine both frameworks. They place the challenging task of mastering threshold concepts within a collaborative, resource-rich, and authentic learning community. While One-Off Sessions and standalone Online Tutorials can be useful, they often fall short in theory; they need to be intentionally designed and integrated into a broader sociocultural learning context to truly enable the transformative learning that the ACRL Framework advocates. Table 4 summarises the interactions between instructional approaches and IL theoretical frameworks.

**Table 4**

*Instructional approaches and IL theoretical frameworks Interaction*

| Instructional Approach | Threshold Concepts Framework | Link to Sociocultural Theory |
|---|---|---|
| Embedded Librarianship | **Direct application in context.** When integrated into a course or programme, the librarian can determine which threshold concepts—such as "Authority Is Constructed and Contextual" when assessing sources for a literature review, are particularly problematic for students at times. They help students navigate the transitional phase of grasping these ideas in the real-world setting of their field (Godbey et al., 2017; Kumar & Heathcock, 2016). | **Learning as social practice.** The librarian becomes an integral part of the course's community of practice, helping to foster learning within its unique cultural and disciplinary context. They work closely with the instructor to create tasks that reflect real-world scholarly or professional discussions, offering timely support within the learners' digital environment, like LMS and discussion boards (Brooks, 2022; Godbey et al., 2017). |
| Scaffolded IL | **Structured journey through liminality.** Scaffolding helps to demystify the sometimes daunting process of mastering a threshold concept by dividing it into manageable steps. For example, when working on "Research as Inquiry," you might kick things off with a straightforward question and then move on to a more iterative search that's grounded in evidence. This approach allows learners to explore the topic without becoming overwhelmed (Coffman et al., 2023; Lange et al., 2023; Zuo et al., 2023). | **Socially supported progression.** Scaffolding is a fundamental concept in Vygotsky's theory. It involves the librarian or instructor offering support through social interaction within the learner's Zone of Proximal Development. As the learner becomes more comfortable with the practices and language of the academic community, this support is gradually reduced. Typically, this process is facilitated through collaborative, step-by-step assignments (Boztaş et al., 2025). |
| Inquiry-Based IL | **Triggering the threshold.** Inquiry-based learning, such as problem-based or scenario-based approaches, typically introduces a "troublesome" question or issue that our existing knowledge can't resolve. This compels learners to face a crucial concept, like "Searching as Strategic Exploration" or "Scholarship as Conversation," which is essential for their progress. The drive to learn comes from the need to cross that conceptual threshold (Anchunda & Kaewurai, 2025; Francis, 2017; Glazewski & Hmelo-Silver, 2018). | **Learning through authentic activity.** Inquiry is centered around meaningful and often collaborative tasks. Learners engage in the social process of investigation, negotiating meaning and using tools such as databases and citation managers, just like professionals in the field. Their development in information literacy is closely tied to their active involvement in this inquiry community (Anchunda & Kaewurai, 2025; Bell et al., 2010; Zamiri & Esmaeili, 2024) . |
| One-Off Sessions | **Introducing or mapping the portal.** While one-off sessions might not be the best for guiding a complete transformative journey, they can certainly help outline the landscape of threshold concepts. They can identify and frame ideas like "Information Has Value," which helps learners recognise these essential principles. However, there's a risk that they might present these concepts as fixed "knowledge" instead of encouraging a deeper experiential transformation (Association of College and Research Libraries, 2016). | **Limited by decontextualization.** This strategy struggles to connect with the essential tenets of sociocultural theory. When it's removed from a specific community of practice and real tasks, teaching can become just a way to convey generic skills. Its effectiveness is largely dependent on how the learner or instructor applies it socially later in the course (Association of College and Research Libraries, 2016; Rinne, 2016). |
| Online Tutorials | **Asynchronous exploration of troublesome knowledge.** Thoughtfully designed tutorials can leverage multimedia, interactive checkpoints, and reflective prompts to assist learners in understanding the intricacies of a threshold concept at their own speed. For example, they could investigate how authority is formed in different settings. They can also reflect the iterative and nonlinear nature of the research process (Hofer et al., 2018; Townsend et al., 2011). | **Tool-mediated learning in a digital environment.** Tutorials serve as cultural tools, and their design needs to reflect the technological and environmental context of the learners. To be truly effective, they should be part of a larger social learning experience. For instance, a tutorial on "Scholarship as Conversation" could be followed by a discussion forum where learners can actively engage and apply what they've learned (Fadeev, 2019; Rumjaun & Narod, 2020). |

### 4.3 IL Competencies of Distance Learners

A recurring theme across the literature is the persistent gaps in information literacy (IL) competencies among distance learners. While learners generally demonstrate adequate basic digital literacy, such as navigating online platforms and using general productivity tools, they often exhibit weak advanced research skills (Kumar & Heathcock, 2016). This includes challenges in designing effective search strategies, synthesising information, and conducting systematic literature reviews (Bramer et al., 2018; Chigbu et al., 2023; Dekkers et al., 2022; Gusenbauer & Gauster, 2025).

Furthermore, many learners show low familiarity with academic databases and struggle to differentiate between scholarly and non-scholarly sources (Barber & Anderson, 2025; Makondo et al., 2018). Evaluating the credibility, relevance, and authority of sources remains a critical weakness, which can compromise the quality of their research outputs (Rose, 2025; Scharrer et al., 2025). Several studies also note that distance learners often overestimate their IL skills, a phenomenon described as the "illusion of mastery" (Moraleja & Pereja, 2022; Mwiiyale et al., 2025; Prestridge et al., 2025). This overconfidence can reduce engagement with structured IL instruction and limit the development of advanced competencies necessary for independent learning. These findings underscore the need for targeted, scaffolded IL interventions that address both foundational and advanced skills, ensuring learners can navigate the complex digital information landscape effectively.

### 4.4 Perceptions of IL Instruction

The literature also highlights divergent perceptions of IL instruction between students and lecturers, which influences the effectiveness of IL integration.

#### 4.4.1 Students

Distance learners generally value IL instruction, recognising its importance for academic success (Abbas & Mutula, 2023). They often prefer asynchronous learning tools, such as online tutorials and discussion boards, which allow them to learn at their own pace (Culduz, 2024). However, many students underestimate the need for structured IL training, assuming that basic digital literacy is sufficient for research tasks (Daka et al., 2019; Mwiiyale et al., 2025; Svensson et al., 2022). This perception can limit participation in formal IL activities, thereby reinforcing competency gaps.

#### 4.4.2 Lecturers

Lecturers consistently acknowledge the importance of IL in enhancing academic outcomes. Yet, they frequently assume that students already possess basic IL skills, leading to inconsistent or minimal integration in course design (Townsend et al., 2011). Time constraints, heavy teaching loads, and competing curricular priorities further hinder the systematic incorporation of IL instruction into distance learning programmes (Abbas & Mutula, 2023; Leek et al., 2024). This misalignment between lecturer assumptions and learner needs underscores the importance of institutional support and professional development to strengthen IL teaching practices.

### 4.5 Constraints to IL Integration

Despite recognition of its importance, several barriers continue to impede effective IL integration in distance education programmes.

#### 4.5.1 Absence of Institutional IL Policies

Many institutions lack formal policies or strategic frameworks for IL, resulting in ad hoc or fragmented integration across courses (Singun, 2025; Tshuma & Chigada, 2018).

#### 4.5.2 Fragmented Faculty–Librarian Collaboration

Effective IL instruction relies on collaboration between librarians and faculty. However, studies indicate that such partnerships are often inconsistent, leading to uneven delivery of IL content (Abbas & Mutula, 2023; Alabi, 2018; Bielema et al., 2005).

#### 4.5.3 Inadequate ICT Infrastructure

Limited access to online databases, unstable internet connectivity, and insufficient learning management system (LMS) capabilities hinder learners' ability to engage with IL resources effectively (Boztaş et al., 2025; Francisco et al., 2024; Prajveen et al., 2024).

### 4.5.4 Low Learner Motivation

Motivation significantly affects engagement with IL instruction. Distance learners, who often study in isolation, may prioritise immediate course requirements over developing research and information skills (Francis, 2017; Hari Rajan et al., 2024; Kong, 2021). (Carroll et al., 2025; Vyas & Parmar, 2022).

### 4.5.5 Limited IL Staffing and Resources

Insufficient numbers of trained librarians and instructional designers restrict the ability of institutions to provide tailored, discipline-specific IL support (Abbas & Mutula, 2023).

### 4.5.6 Inconsistent Assessment Practices

The lack of standardised assessment tools for IL competencies results in inconsistent evaluation of learners' skills, making it difficult to monitor progress and adjust instruction accordingly (Erlinger, 2018; Miller et al., 2023; Symolka et al., 2022). Collectively, these constraints highlight the critical need for comprehensive institutional strategies, combining policy development, resource allocation, and targeted professional development to ensure IL is meaningfully embedded in distance education curricula (Table 5).

**Table 5**

*IL Integration Constraints and their Impacts*

| No | Constraint | Impact |
|---|---|---|
| i | Weak IL policies | Limited institutional adoption |
| ii | ICT challenges | Low engagement with digital resources |
| iii | Poor collaboration | Inconsistent IL instruction |
| iv | Resource limitations | Restricted IL programming |
| v | Student misconceptions | Reduced participation in IL training |

### 4.6 Models and Frameworks Supporting IL Integration

Several theoretical models support the design and delivery of IL instruction in distance education as indicated in Table 6.

**Table 6**

*Models and Frameworks Supporting IL Integration*

| No | Model / Framework | Description |
|---|---|---|
| i | ACRL Framework (Association of College and Research Libraries, 2016). | Defines core IL competencies for higher education. |
| ii | Big6 Model (Eisenberg & Berkowitz, 1990; Gusriani & Masruri, 2023). | A structured problem-solving approach to IL |
| iii | Evidence-Centered Design (ECD) (Zhu et al., 2020a, 2020b) | Integrates assessment directly into learning objectives. |
| iv | Discipline-Specific IL Integration (Brooks, 2022; Delmond et al., 2024; Lisbon, Scott P. & Wiley, Malia, 2025). | Tailors IL instruction to specific subjects or disciplinary contexts. |

### 4.7 Conceptual Model: Bridging the Digital Divide through IL Integration

Based on the review, a conceptual model was developed to illustrate how IL integration can reduce the digital divide and enhance distance learner outcomes (Table 6). The model links inputs, processes, outputs, and long-term outcomes. This model has been illustrated and explained in detail in Fig. 4.

**Table 6**

*Conceptual Model Components*

| No | Component | Elements |
|---|---|---|
| **i** | Inputs | ICT infrastructure, IL policies, librarian expertise, faculty collaboration |
| **ii** | Processes | Embedded IL instruction, scaffolded curriculum mapping, inquiry-based learning activities, continuous IL assessment |
| **iii** | Outputs | Enhanced IL competencies, increased use of scholarly resources, greater digital navigation confidence |
| **iv** | Long-Term Outcomes | Improved academic performance, reduced digital inequalities, strengthened lifelong learning skills |

### 4.8 Linking IL Pedagogies to the Threshold Concepts Framework and Sociocultural Theory

The integration of information literacy (IL) teaching methods can be better understood through the lens of the Threshold Concepts Framework and Sociocultural Theory (Fig 4). According to the ACRL Framework, IL consists of key threshold concepts, such as '*Authority Is Constructed and Contextual*' and '*Scholarship as Conversation*', that act as transformative gateways, guiding how learners interact with information (Association of College and Research Libraries, 2016; Bluemle, 2023).

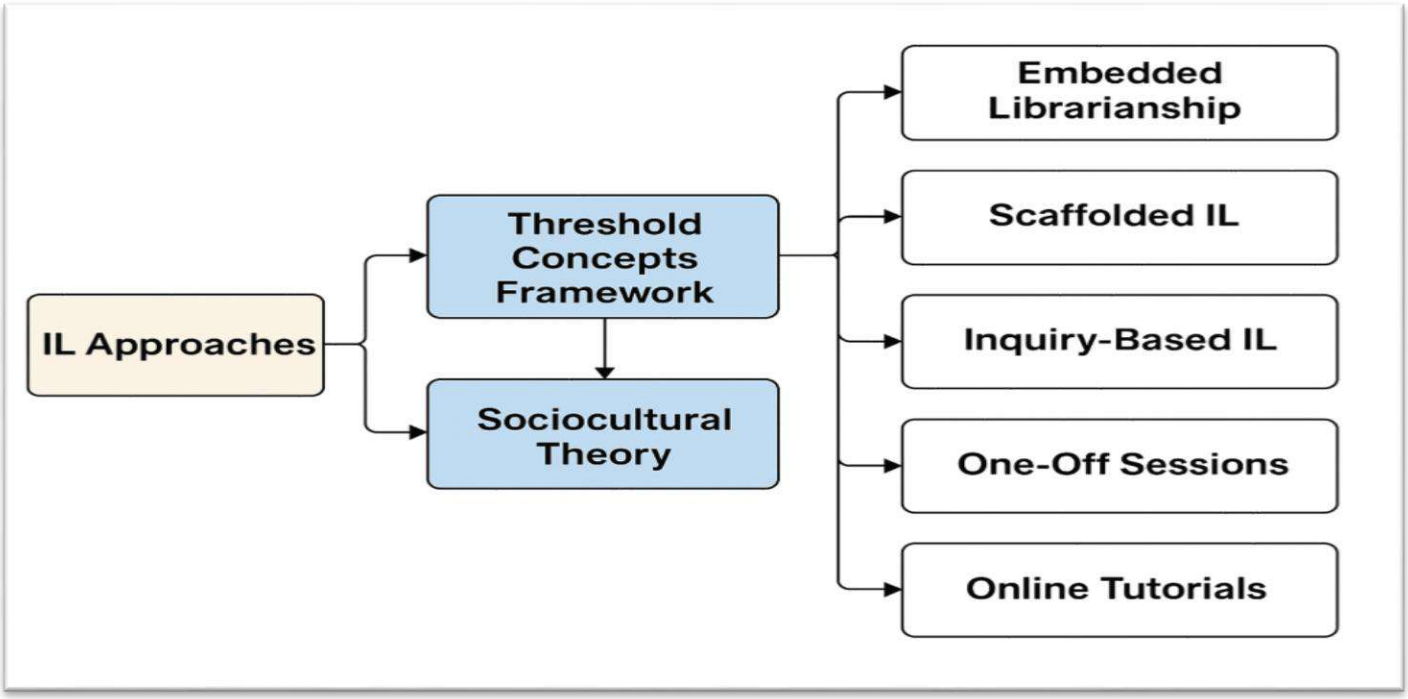


**Figure 4**
*Information Literacy Pedagogies and Theoretical Frameworks*

Approaches like embedded librarianship align closely with these ideas, as having a librarian consistently present encourages ongoing engagement with complex knowledge, allowing learners to move through their conceptual transformations. As conceptualised within sociocultural theory, embedded IL also emphasises that learning is a socially mediated experience influenced by interactions, context, and technology (Limberg et al., 2012; Zou et al., 2025).

Scaffolded instruction in information literacy (IL) plays a crucial role in developing threshold concepts by breaking down learning into manageable stages. This approach helps students grasp complex IL ideas more effectively. Grounded in a sociocultural theory, scaffolding offers focused support within the learner's '*Zone of Proximal Development',* allowing them to build knowledge through collaborative and authentic tasks (Boztaş et al., 2025).

Inquiry-based IL takes this step further by bringing threshold concepts like '*Research as Inquiry to life'*, encouraging students to engage in exploratory, iterative, and reflective research practices. This method is deeply rooted in sociocultural contexts, placing learning within genuine disciplinary communities and utilising collaboration, dialogue, and digital tools as essential resources.

While one-off information literacy (IL) sessions do introduce threshold concepts, they often miss the mark when it comes to providing the ongoing engagement needed for true conceptual transformation. Their limited scope tends to create a disconnect with sociocultural principles, resulting in learning that feels decontextualised and interaction that's quite limited. In contrast, well-designed online tutorials can effectively model these threshold concepts through reflective prompts and scenario-based tasks, offering learners flexible and accessible opportunities. These technology-enhanced tutorials align nicely with sociocultural perspectives on learning within digital ecosystems, especially for those studying from a distance (Limberg et al., 2012).

In summary, IL strategies that are ongoing, socially interactive, and contextually relevant, like embedded, scaffolded, and inquiry-based IL, are the most effective in fostering the deep conceptual changes highlighted in the *Threshold Concepts Framework*, as well as the socially situated learning processes emphasised in the *Sociocultural Theory*.

## V. CONCLUSIONS & RECOMMENDATIONS

### 5.1 Conclusion

This five-year systematic literature review (2020–2025) underscores the pivotal role of Information Literacy (IL) instruction in addressing the digital divide that continues to challenge distance learners. Evidence from the literature reviewed highlights that embedded, scaffolded, and inquiry-based IL approaches consistently fosters learner empowerment, strengthens critical thinking, and contributes to measurable academic success.

Despite these advances, persistent institutional barriers such as fragmented faculty-librarian collaboration, inadequate ICT infrastructure, and the absence of formal IL policies remain significant constraints. Addressing these challenges requires intentional policy formulation, sustained institutional commitment, and targeted resource investment.

### 5.2 Recommendation

IL integration extends beyond enhancing academic performance; it functions as a strategic equity intervention, leveling the digital learning landscape and enabling distance learners to navigate, evaluate, and apply information confidently in increasingly complex digital environments. In this sense, the deliberate incorporation of IL into distance education curricula is both an educational imperative and a social justice strategy, ensuring that all learners have the skills and opportunities to thrive in a digitally connected world.

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