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Mapping Evidence on Persistence and Retention Strategies for Non-Traditional Students in Online Higher Education: A Scoping Review

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Abstract

Non-traditional learners, often balancing employment, caregiving, and academic responsibilities, now constitute a growing majority of students in higher education (National Center for Education Statistics, 2024). Although their persistence and retention are central to institutional effectiveness, the evidence base informing institutional responses remains fragmented and unevenly conceptualized. Guided by the Joanna Briggs Institute (JBI) framework for scoping reviews, this study synthesized empirical and conceptual literature published between 2013 and 2025 to map how persistence and retention among non-traditional students are defined, examined, and measured in online higher education (Hadie, 2024). Findings indicate a strong reliance on age- and employment-based definitions of non-traditional status, frequent use of composite outcome measures centered on persistence and institutional retention, and limited differentiation between student-level continuation and institution-level metrics. Analysis identified five interrelated thematic domains spanning instructional, learner, and institutional levels, with an emergent emphasis on technology- and AI-mediated practices. By producing a comprehensive evidence map, this review clarifies dominant patterns, methodological tendencies, and persistent gaps in the literature, offering direction for future research and institutional practice aimed at advancing educational equity and student success in online higher education.

Keywords: Non-traditional students; online higher education; persistence and retention; scoping review; conceptualization and measurement; institutional practices; adult learners

Introduction

Online higher education has expanded rapidly over the past two decades, reshaping access, participation, and institutional accountability across postsecondary education. As online programs have scaled, they have increasingly served non-traditional learners whose enrollment patterns reflect adult age, employment and caregiving responsibilities, delayed entry, and financial independence (National Center for Education Statistics, 2024). This shift has intensified institutional attention to persistence and retention as indicators of educational quality and student success (Bawa, 2016; Cordano, 2025; Stephen, 2022).

Persistence and retention are longstanding concerns in higher education research, particularly in online learning contexts where attrition has often been reported at higher rates than in face-to-face settings. Much of the literature has emphasized learner-level explanations of persistence, such as motivation, grit, or self-regulation, while giving comparatively less sustained attention to the institutional, instructional, and structural conditions shaping students' capacity to remain enrolled (Ellis, 2019; Stephen, 2022; Walsh et al., 2024). Such framing is especially limiting for non-traditional learners, whose participation is embedded within intersecting personal, professional, and financial demands extending beyond the boundaries of the learning environment.

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Although research on online student success is substantial, fewer studies examine persistence and retention specifically among non-traditional online learners. Moreover, the evidence base is dispersed across disciplines and methodologies, with inconsistent definitions of adult learner populations and considerable variation in how persistence and retention-related outcomes are conceptualized and measured. As a result, it remains difficult to synthesize findings or compare conclusions across studies. During the same period, institutions have expanded technology-mediated support strategies (e.g., learning analytics, early alert systems, and AI-supported advising), yet research examining how these strategies are embedded within instructional and institutional systems supporting adult online learners remains uneven (Seery et al., 2021; Stephen, 2022).

Prior Reviews of Persistence and Retention in Online Learning

Prior reviews have established online attrition and retention as multifactorial concerns shaped by learner motivation, self-regulation, instructional design, faculty presence, institutional support, technology access, and students' external responsibilities (Bawa, 2016; Seery et al., 2021). Reviews focused on adult learners further demonstrate online participation is shaped by work and family responsibilities, time constraints, limited institutional support, insufficient interaction, technological barriers, and isolation (Kara et al., 2019). Related reviews of online academic support also identify advising, engagement, access to services, satisfaction, motivation, self-efficacy, retention, and completion as dimensions of online student success (Walsh et al., 2024).

Although these reviews provide important foundations, they examine online learners broadly or focus on barriers, supports, or learner characteristics, as opposed to centering non-traditional students in online higher education. Existing reviews tend to emphasize either student-level attributes or specific support strategies, with less attention to how instructional practices, institutional structures, learner life contexts, and technology-mediated practices interact across levels. In addition, persistence, retention, completion, and engagement are often treated as related outcomes without consistently distinguishing student-centered continuation from institutionally defined retention metrics.

Contribution of the Present Scoping Review

This scoping review responds to these limitations by centering non-traditional online learners and mapping persistence and retention across instructional, institutional, learner-context, support, psychological, and technology-mediated domains. This review extends prior work by clarifying how persistence and retention are defined, measured, and supported in relation to non-traditional students' life contexts.

By integrating this literature, the review helps disentangle learner-level explanations of persistence from course-level pedagogical practices and institution-level structures shaping persistence and retention in online programs. Accordingly, this scoping review maps how persistence and retention among non-traditional online learners are conceptualized, investigated, and supported.

Review Questions

The purpose of this scoping review is to identify and categorize existing research on strategies, interventions, and institutional practices intended to support the persistence and retention of non-traditional students in online higher education. Consistent with scoping review methodology, the review aimed to map the breadth and characteristics of the evidence base.

Primary Review Question:

1. What strategies, interventions, and institutional practices have been examined in the research literature to support the persistence and retention of non-traditional students in online higher education?

To support systematic mapping of the evidence base, the following secondary review questions guided data extraction and synthesis:

2. How does the research literature describe institutional and instructional factors associated with student persistence in online higher education?
3. How are the characteristics and life stressors of non-traditional learners described in relation to persistence and retention in online higher education?
4. How does the literature describe features of the online learning environment associated with persistence and retention for non-traditional students, including instructional design, faculty presence, peer interaction, and technological support?

Methods

Scoping Review Design

This scoping review mapped the breadth, characteristics, and scope of existing literature examining strategies, interventions, and institutional practices supporting the persistence and retention of non-traditional students in online higher education. The review was conducted in accordance with Joanna Briggs Institute (JBI) guidance for scoping reviews and is reported in alignment with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) (Hadie, 2024).

Eligibility Criteria

Eligibility criteria were developed using the Population–Concept–Context (PCC) framework.

Population

The population included non-traditional students enrolled in online higher education. Eligible studies examined student populations with one or more non-traditional characteristics, including adult age (24 years or older), delayed enrollment or return to higher education after a significant break, full-time employment, financial independence, and/or caregiving responsibilities (National Center for Education Statistics, 2024).

Concept

The concept of interest was student persistence and retention in online higher education. Included studies examined strategies, interventions, or institutional practices intended to support continued enrollment, academic progression, or program completion. Studies examining proxy outcomes (e.g., engagement, continuity, progression) were included only when these outcomes were explicitly linked to persistence or retention.

Context

The context was limited to online higher education environments. Studies focusing exclusively on face-to-face, blended, or hybrid modalities were excluded.

Types of Sources

Peer-reviewed, empirical, and conceptual studies were included. Editorials and commentaries were excluded. Additional eligibility criteria required studies to be published between 2013 and 2025, written in English, and available in full text. Table 1 presents the inclusion and exclusion criteria used to guide study selection, organized according to the PCC framework.

Table 1

Study Inclusion and Exclusion Criteria

Criteria	Inclusion Criteria	Exclusion Criteria
Time	Published between 2013 and 2025	Published before 2013 or after 2025
Population	Non-traditional students in online higher education	Traditional students or populations not identifiable as non-traditional by the stated characteristics
Concept	Studies examining persistence and retention in online higher education, including strategies, interventions, or institutional practices.	Studies focused on outcomes not linked to persistence or retention.
Context	Online higher education environments	Face-to-face, blended, or hybrid modalities
Language	English	Articles published in languages other than English
Types of Sources	Peer-reviewed empirical and conceptual studies; full text available	Editorials, commentaries, studies not available in full text

Search Strategy

A comprehensive search strategy was developed to identify literature related to persistence and retention among non-traditional students in online higher education. Searches were conducted in ERIC, Education Source, and Google Scholar. ERIC and Education Source were selected because of their focus on education research, while Google Scholar was used to

broaden retrieval across interdisciplinary higher education literature. Search terms were organized around three concept groups:

1. non-traditional or adult learners
2. online higher education
3. persistence, retention, or institutional support mechanisms

Keywords within each concept were combined using the Boolean operator OR, and concept groups were combined using AND. The complete search strategy is provided in the online Supplemental Materials, S1 Boolean Search Strategy.

Study Selection

Study selection followed a structured, multi-stage process consistent with JBI guidance for scoping reviews (Hadie, 2024). To support systematic management of a large interdisciplinary evidence base, relevance-ranking features in ERIC and Education Source were used to prioritize records most closely aligned with the search parameters. Google Scholar results were limited to the first 10 pages for feasibility and relevance-ranking considerations.

Titles and abstracts were screened independently by two reviewers against the PCC eligibility criteria. Records were excluded if they did not focus on higher education, were not situated in online learning environments, did not include non-traditional or adult learners, or were not conceptually related to persistence, retention, or institutional support strategies. Full-text screening was conducted for all records meeting inclusion criteria at the title and abstract stage. Any disagreements at either stage were resolved through discussion and consensus. Reasons for exclusion at the full-text stage were documented to support transparency and reproducibility. Microsoft Excel was used to organize records, log reviewer screening decisions, and document full-text exclusion reasons.

Data Charting

Data charting was conducted using a structured, tiered approach aligned with the review questions. A structured charting form was developed in Microsoft Excel to support consistent extraction across source types. The form was piloted on an initial subset of included sources and refined through reviewer discussion to improve clarity, consistency, and alignment with the PCC framework. Coding decisions and refinements were documented throughout the charting process.

Tier 1 charting was applied to all included sources of evidence and captured bibliographic information, year of publication, country of origin, study type, population characteristics, definitions of non-traditional learners, level of intervention or strategy focus, and persistence or retention-related outcomes. Proxy outcomes, including engagement, progression, continuity, or completion, were charted only when study authors explicitly linked them to persistence or retention.

When differences arose in the interpretation or application of charting categories, reviewers discussed the coding decision until consensus was reached. No inter-rater reliability statistics were calculated because the purpose of data charting was descriptive mapping.

Tier 2 charting was applied to empirical studies only and captured methodological characteristics relevant to descriptive mapping, including research design, data sources, and conceptual framing. Conceptual papers and literature-based reviews were charted at the Tier 1 level only, as methodological characteristics were not applicable to these source types. Tier 1 and Tier 2 data charting tables are provided in the online Supplemental Materials, S2 Tier 1 Data, and S3 Tier 2 Data.

Data Synthesis & Reporting Standards

Extracted data were synthesized using descriptive and thematic analytic approaches. Descriptive synthesis was used to summarize publication characteristics, study designs, population definitions, and categories of institutional strategies and interventions.

A descriptive thematic analysis was conducted to identify recurring patterns in how non-traditional learners were conceptualized, how studies framed responsibility for persistence and retention (e.g., as primarily individual, instructional, or institutional), and how persistence and retention outcomes were defined and operationalized. Thematic analysis emphasized the organization and mapping of conceptual and methodological patterns across the evidence base rather than the evaluation of effectiveness of intervention. Consistent with JBI guidance for scoping reviews, no formal critical appraisal of study quality was conducted. Across study selection, data charting, and synthesis, no digital automation tools were used to determine eligibility, extract or chart data, code themes, or analyze findings.

Conceptual Framework

To interpret the mapped evidence, this review drew on two established persistence frameworks as analytic lenses: the Model of Non-traditional Student Attrition (Bean & Metzner, 1985) and the Composite Persistence Model for Online Learning (Rovai, 2003). These frameworks did not determine study inclusion but guided coding and interpretation by foregrounding (a) external life-context and institutional fit, and (b) conditions specific to online learning environments. Applying these frameworks analytically supported examination of how responsibility for persistence was framed (individual, instructional, or institutional) and how interventions and outcomes were positioned across levels.

Model of Non-traditional Student Attrition

Bean and Metzner's (1985) Model of Non-Traditional Student Attrition (MNSA) foregrounds the role of external life context in shaping persistence, including employment, financial constraints, family responsibilities, and other environmental stressors. The model conceptualizes attrition as strongly influenced by misalignment between institutional structures and learners' lived realities. In this review, the model informed analysis of whether studies accounted for external constraints when defining non-traditional learners and interpreting persistence or retention outcomes, as well as how responsibility for persistence was framed across institutional and individual levels (Ellis, 2019; Motte, 2020).

Composite Persistence Model for Online Learning

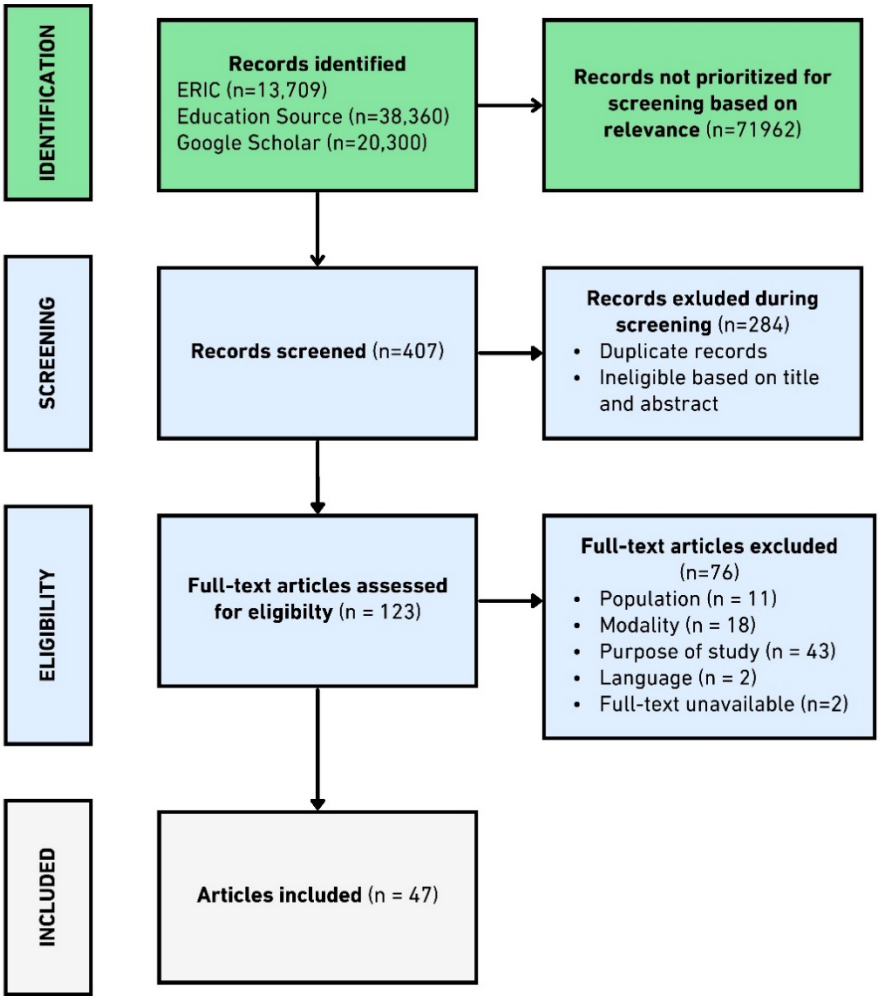
The Composite Persistence Model for Online Learning (CPMOL), developed by Rovai (2003), incorporates conditions specific to online learning environments, including academic integration, social presence, technological infrastructure, and institutional support. The model informed analysis of how instructional and institutional strategies were described across studies, particularly with respect to course design, faculty presence, peer interaction, and access to academic and student support services. The model also supported examination of how persistence and retention outcomes were defined and measured (Belt et al., 2025; Choi & Park, 2018). Integrated, these frameworks provided a complementary analytic structure for interpreting the literature by situating external life context alongside online learning design and institutional support, enabling examination of persistence as a multi-level and system-mediated outcome.

Results

The database search yielded 72,369 records (ERIC: 13,709; Education Source: 38,360; Google Scholar: 20,300). To manage retrieval volume, database relevance-ranking features were used to prioritize records for screening, resulting in 407 records retained for title and abstract screening. Of these, 284 records were excluded due to duplication or failure to meet PCC eligibility criteria. Full-text reports were retrieved for 123 articles assessed for eligibility. Following full-text review, 76 articles were excluded due to population mismatch, modality misalignment, or scope misalignment (e.g., studies focused on technical tool evaluations or conceptual frameworks without explicit application to persistence or retention outcomes). In total, 47 studies met the inclusion criteria and were included in the review. The study selection process is summarized in the PRISMA-ScR flow diagram, Figure 1.

Figure 1

PRISMA-ScR: Flow of Records Through the Scoping Review Process



Characteristics of Included Studies

The 47 included studies were published between 2013 and 2025, with volume increasing over time. Early publications were limited, followed by more consistent representation from 2018 onward, reflecting sustained scholarly attention to persistence and retention among non-traditional students in online higher education.

Most studies were conducted in the United States (U.S.) (n = 40). International contexts were less frequently represented, including Australia (n = 2), Belgium (n = 1), South Korea (n = 1), Sri Lanka (n = 1), and multinational or international samples (n = 2).

With respect to level of analysis, studies most often examined persistence and retention at the institutional level (n = 18), followed by the program level (n = 14) and course level (n = 11). Fewer studies addressed multiple levels (n = 3) or did not clearly specify a level of analysis (n = 1).

The studies included quantitative (n = 16), qualitative (n = 16), and mixed-methods (n = 7) designs; conceptual and literature-based studies accounted for a smaller subset of the evidence base (n = 8). Quantitative studies primarily relied on institutional administrative data and survey measures, while qualitative studies commonly used interviews, focus groups, and program artifacts. Mixed-methods studies integrated multiple data sources using sequential or convergent designs. Table 2 summarizes key characteristics of the included studies, contextualizing the scope and composition of the literature. The Appendix provides visual summaries of the descriptive characteristics of the included studies, including database distribution, publication year distribution, non-traditional student descriptors, and reported outcome domain.

Table 2

Characteristics of Included Studies

	Characteristic	Frequency (*n*)
Publication Period	2013-2016	12
	2017-2020	14
	2021-2025	21
Country	United States	40
	Australia	2
	Belgium	1
	South Korea	1
	Sri Lanka	1
	Multinational	2
Level of Analysis	Institutional level	18
	Program level	14
	Course level	11
	Multiple levels	3
	Not specified	1
Methodological Approach	Quantitative	16
	Qualitative	16
	Mixed methods	7
	Conceptual / literature-based	8

Characteristics and Definitions of Non-Traditional Students

Definitions of non-traditional students varied in explicitness but followed a largely consistent pattern across studies, most often operationalized through composite criteria rather than a single defining characteristic. While all included studies focused on non-traditional learners, the degree of definitional clarity varied, with some studies articulating formal inclusion criteria and others relying on descriptive inference. Explicit definitions were provided in a substantial subset of studies (*n* = 20), most commonly combining adult learner status (typically age 24 or older) with full- or part-time employment and frequently supplemented by caregiving responsibilities.

Across the evidence base, adult age and employment status emerged as the dominant defining characteristics of non-traditional students. The majority of studies incorporated employment status (n = 37) and adult learner status (n = 30), often treating these criteria as sufficient indicators of non-traditional status. Family or caregiving responsibilities were also commonly included (n = 19), though typically as an additional layer rather than a primary defining feature. In contrast, enrollment trajectory characteristics, such as delayed enrollment, or extended time to degree completion were referenced less frequently (n = 8). Capacity- or access-related constraints (e.g., academic readiness, digital access, language proficiency, or technology skills) appeared in only a small subset of studies (n = 6). Definitions of non-traditional students were heterogeneous and multidimensional, with substantial variation in how characteristics were combined and operationalized across studies. Table 3 summarizes the frequency and operationalization of descriptors used across studies to define non-traditional student populations.

Table 3

Frequency of Non-Traditional Student Descriptors

Descriptor	Frequency (*n*)	Operationalization
Full-time employment	37	Concurrent employment while enrolled
Adult learners (Age 24+)	30	Mature or adult learner designation
Family/caregiving responsibilities	19	Childcare or dependent care obligations
Enrollment patterns	8	Delayed enrollment, extended time to completion
Capacity, readiness, access	6	Academic readiness, digital access

Note. Frequencies reflect non-mutually exclusive categories; studies frequently used multiple descriptors in combination.

Conceptualization and Measurement of Persistence and Retention

Persistence and retention were central outcomes across the included studies and were most often examined in combination with one another. Persistence was the most frequently reported outcome domain (n = 34) and was typically defined as continued enrollment, term-to-term continuation, or sustained participation. Persistence was commonly operationalized using enrollment continuity indicators or self-reported persistence measures.

Retention was reported as a primary or co-primary outcome (n = 24) and was generally framed as an institutionally defined metric. Retention measures most often relied on administrative indicators such as enrollment status, re-enrollment rates, or year-to-year continuation. Persistence and retention were used interchangeably or reported together (n = 14) without clear distinction between student-level continuation behaviors and institution-level retention metrics.

Across studies, the most frequently reported outcome domains were persistence and continuation, followed by completion and engagement-related outcomes. Completion outcomes (e.g., course completion, graduation, credential attainment) were reported (n = 13). Engagement, integration, or belonging outcomes appeared (n = 11), while satisfaction or perceived learning outcomes were reported less frequently (n = 6). Academic performance indicators like grades, or grade point average (GPA) were least commonly examined (n = 5). Outcome measurement was predominantly multi-dimensional, with variation in outcome combinations, temporal scope, and data sources ranging from short-term course-level indicators to institution-level metrics and incorporating both self-reported and administrative data. Table 4 illustrates the frequency of outcome domains examined across the included studies, highlighting how persistence, retention, and related constructs were operationalized and reported.

Table 4

Frequency of Reported Outcome Domains

Outcome Description	Frequency (*n*)
Persistence, continuation	34
Institutional retention, re-enrollment	24
Completion, graduation, attainment	13
Engagement, integration, belonging	11
Satisfaction, perceived learning	6
Academic performance	5

Note. Frequencies reflect non-mutually exclusive categories; studies report multiple outcome domains.

Identified Thematic Domains

Analysis of the charted data identified recurring patterns in how persistence and retention among non-traditional students were examined across the online higher education literature. Studies frequently contributed to multiple domains, reflecting the interconnected nature of persistence and retention across learner, instructional, and institutional levels.

As presented in Table 5, five interrelated thematic domains were identified: (1) learning environment and pedagogical design, (2) learner characteristics and life contexts, (3) institutional structures and policy, (4) support strategies and interventions, and (5) psychological capital and self-regulation. An emergent sixth theme, technology and AI-mediated practices, captured enabling infrastructures supporting instructional delivery, monitoring, and coordinated outreach in online learning environments.

Table 5

Thematic Domains with Framework Alignment

Theme	Description	Frequency (*n*)	RQ Alignment	Framework Alignment
Learning Environment & Pedagogical Design	Course-level instructional and relational practices through which institutional support is enacted, including instructor presence, communication, and pedagogical design.	38	4	CPMOL: Academic integration; Social presence
Learner Characteristics & Life Contexts	Demographics as contextual factors, role conflict, and lived realities.	47	3	MNSA: External life context
Institutional Structures & Policy	Institutional policies, infrastructures, and delivery models shaping access, continuity, and learner progression.	35	2	MNSA: Institutional fit and responsiveness
Support Strategies & Interventions	Structured institutional practices connecting learners to academic systems, expectations, and resources.	32	1	CPMOL: Institutional support; Social integration
Psychological Capital & Self-Regulation	Grit, self-regulation, motivation, and human agency.	29	3	MNSA, CPMOL: Learner agency
Emergent: Technology & AI-Mediated Practices	Enabling infrastructures supporting instructional delivery, monitoring, and coordinated outreach.	11	4	CPMOL: Technological infrastructure

Note. Categories are non-mutually exclusive.

Discussion

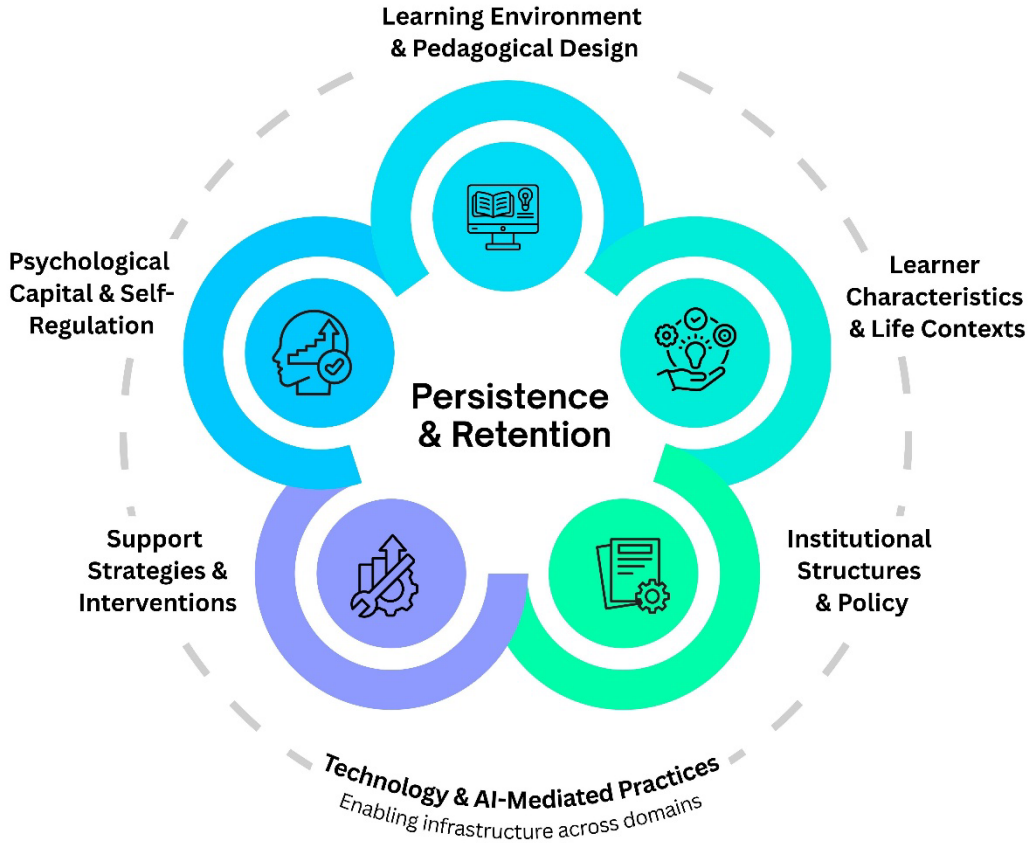
Persistence and retention among non-traditional online students are best understood as outcomes produced through the interaction of institutional structures, instructional environments, coordinated supports, and learner agency (Lehan et al., 2018; Stephen, 2022). Across the mapped evidence, continuation depended on how effectively course-level practices, institutional policies, and support systems aligned with learners' external responsibilities and life circumstances; when alignment weakened, structural friction disrupted sustained progression (Chaffin & Shatila, 2023; Motte, 2020; Sutton, 2014). Interpretation of these findings is complicated by the frequent conflation of persistence, retention, attrition, and completion across the literature, as well as by the strong concentration of studies within the U.S. context, which shapes how these constructs

are defined, measured, and reported. When these constructs are used interchangeably or without explicit definition, it becomes difficult to distinguish learner decision-making from instructional design effects, policy constraints, or institutional accountability, particularly within the U.S.-based reporting frameworks such as the Integrated Postsecondary Education Data System and the National Center for Education Statistics, which rely on standardized time-to-degree metrics and may underrepresent non-linear enrollment patterns common among non-traditional learners (De Paepe et al., 2018; Haydarov et al., 2013). These patterns align closely with established persistence frameworks foregrounding external life context, institutional fit, (Bean & Metzner, 1985) and conditions specific to online learning environments (Bean & Metzner, 1985; Rovai, 2003), while maintaining the descriptive and mapping purpose of a scoping review.

Synthesis reflects a shift away from explanations of attrition grounded in learner motivation or preparedness and toward a systemic framing emphasizing environmental fit, institutional responsiveness, and intentional design (Chaffin & Shatila, 2023; Stephen, 2022). The literature converges around five interrelated domains organized by how persistence and retention were conceptualized: learning environment and pedagogical design; learner characteristics and life contexts; institutional structures and policy; support strategies and interventions; and psychological capital and self-regulation. The following domains functioned together: courses translated institutional intent into lived experience, support mechanisms mediated complexity across systems, and psychological resources were activated or constrained by the alignment among course design, institutional policy, learner life context, and support availability. Technology and AI-mediated practices emerged as an enabling infrastructure, strengthening or weakening alignment depending on how tools are embedded in instructional and institutional routines. Figure 2 presents an applied visual synthesis of the thematic domains identified in the scoping review, illustrating persistence and retention as system-level outcomes produced through the interaction of instructional environments, institutional structures, learner contexts, coordinated supports, and psychological capital, with technology functioning as enabling infrastructure.

Figure 2

Applied Synthesis of Persistence and Retention Domains



Learning Environment and Pedagogical Design

The learning environment operates as the primary site where institutional commitments to persistence were enacted and experienced by non-traditional online learners. Across the literature (n = 38), course-level instructional and relational practices, particularly instructor presence, communication, and pedagogical design, were consistently framed as mechanisms through which institutional support becomes tangible in everyday learning experiences (Bedford, 2023; Belt et al., 2025; Rosser-Majors et al., 2022). These practices positioned persistence as co-produced within instructional relationships, distributing responsibility across faculty, learners, and institutional design.

Instructor presence emerged as a prominent pedagogical condition shaping persistence aligning with Community of Inquiry research. Recent studies further extend this work, suggesting emotional presence and care-oriented facilitation are associated with student satisfaction and short-term persistence (Jiang & Koo, 2020; Stone & Springer, 2019). Teaching presence (intentional design and facilitation), social presence (humanizing the virtual space), and cognitive presence (supporting meaning-making through sustained discourse) structured learners'

experience of clarity, connection, and academic direction in online learning environments (Chaffin & Shatila, 2023; Oregon et al., 2018). Emerging attention to emotional presence further highlighted the role of care, empathy, and responsiveness in shaping learner confidence and satisfaction (Bedford, 2023). Presence was conveyed through both direct communication (e.g., individualized outreach, timely feedback) as well as cues embedded in course organization, instructional media, and instructor persona.

Relational connection was reinforced through predictable communication patterns, transparent expectations, and feedback functioning as a primary relational anchor. Peer interaction also contributed to social integration, including forms of "passive collaboration" through which non-traditional online learners developed a sense of belonging by observing and engaging with others' work (Belt et al., 2025; McNeil et al., 2025; Trespalacios & Uribe-Florez, 2020). Relational practices reduced isolation and lowered affective barriers, positioning faculty as key conduits through which institutional structures were experienced interpersonally.

Pedagogical effectiveness was closely tied to the stability and coherence of course design. Although flexibility was widely emphasized, the literature distinguished between flexibility intentionally embedded in course structures and discretionary accommodations enacted on an ad hoc basis (Chaffin & Shatila, 2023; Rosser-Majors et al., 2022). Courses that built flexibility into their structure through modular organization, predictable assessments, and clear extension policies were more consistently associated with student persistence. Studies of program redesign and course structure similarly emphasized predictable rhythms and modular designs reduced administrative burden and improved continuation among non-traditional learners (Aversa & MacCall, 2013; Rosser-Majors et al., 2022; Sutton, 2014). Predictability emerged as a consequential, though often understated, feature of effective design: stable interaction rhythms, clear timelines, and consistent procedures reduced cognitive and administrative load for learners balancing work, caregiving, and financial responsibilities (McNeil et al., 2025; Rosser-Majors et al., 2022; Sutton, 2014). In this domain, the reliability of the learning environment appeared to function as a stabilizing force for persistence.

Learner Characteristics and Life Contexts

Learner characteristics and life contexts constituted a central analytic domain across the literature ($n = 47$), with studies consistently treating demographics as situated and dynamic conditions shaping educational participation rather than as fixed predictors of persistence (Ellis, 2019; Kara et al., 2019; Stephen, 2022). This perspective marked a move away from deficit-oriented interpretations of attrition, framing persistence as a contingent outcome unfolding within the limits and possibilities of learners' lived circumstances. Non-traditional learners were most often portrayed as managing competing roles, commonly as students, employees, and caregivers, within constrained temporal, financial, and emotional environments (Bourdeaux & Schoenack, 2016; Burke, 2020; Shatila, 2023).

Although non-traditional status was frequently operationalized using broad demographic and role-based descriptors, these characteristics functioned primarily as contextual labels rather than as analytically differentiated conditions. The literature emphasized substantial heterogeneity beneath the non-traditional umbrella, shaped by employment intensity, caregiving responsibilities, prior educational disruption, and gendered distributions of domestic labor

(Banerjee & Zhang, 2024; Dumais et al., 2013). Role conflict emerged as a pervasive barrier, particularly for women, whose academic participation was often negotiated alongside primary responsibility for childcare, eldercare, and household management (Burke, 2020). International studies suggest additional context-specific factors, including socio-political conditions or culturally grounded conceptions of belonging, may also shape persistence in ways less frequently captured in U.S.-focused literature. Employment demands, frequently involving full-time or variable schedules, further limited learners' capacity to meet rigid academic timelines.

Within this context, withdrawal and stop-out were commonly framed as deliberate and rational life decisions rather than indicators of academic failure. Disengagement tended to occur when the cumulative demands of work, family, health, or financial instability exceeded available capacity, with many learners exhibiting non-linear patterns across time and institutions (Ellis, 2019; Layne et al., 2013; Sylvester, 2025). Spatial and environmental factors further shaped persistence, including unstable broadband access, limited technology, lack of private study space, and the relational isolation associated with online learning environments (Cordano, 2025; Swartzwelder et al., 2023).

Despite widespread acknowledgment of external life demands, these realities were infrequently translated into instructional or institutional design decisions (Brown, 2017; Walsh et al., 2024). When misalignment was framed primarily as a learner-level challenge, responsibility shifted away from institutional systems and practices. Persistence was therefore conceptualized as a situated process emerging from the interaction between learners' lived realities and instructional, institutional, and environmental conditions highlighting the limits of context-light approaches and calling for intentional alignment with the lives of non-traditional learners (Cato Parnell, 2022; Walsh et al., 2024).

Institutional Structures and Policies

Institutional structures and policies shaped access, continuity, and learner progression across the literature (n = 35). Policies, infrastructures, and delivery models were consistently framed as institutional infrastructure; the invisible scaffolding mediating the fit between learners' complex lives and academic requirements. Within this domain, persistence and retention were understood as consequences of organizational design, with persistence treated as a student-centered behavior and retention as an institutional metric (Motte, 2020; Stephen, 2022).

Academic flexibility functioned as a central structural enabler, particularly through accelerated formats and asynchronous delivery. These features addressed the temporal and physical constraints faced by working adults and caregivers, enabling coursework to be integrated into complex and shifting schedules (Burke, 2020; Cordano, 2025; Tolouian et al., 2022). By contrast, rigid academic calendars, densely packed semesters, and inflexible pacing structures repeatedly emerged as sources of institutional friction. Policies governing course load expectations, grading timelines, withdrawal procedures, and satisfactory academic progress often operated as gatekeeping mechanisms when misaligned with learners' lived realities (Motte, 2020; Stephen, 2022).

Financial scaffolding also played a significant role in enrollment continuity, particularly within the U.S.-based studies where federal aid systems such as Pell Grants are frequently

examined as primary drivers of persistence, reflecting a founding model not directly comparable to centralized or publicly funded systems in other national contexts. Financial aid, including Pell Grants and layered funding supports, was described as supporting credit accumulation and reinforced academic momentum, whereas financial uncertainty constrained learners' ability to remain enrolled over time (Dello Stritto et al., 2025; Sutton, 2014). Administrative clarity and institutional integrity further shaped persistence. Transparent onboarding processes, recognition of prior learning, and alignment between institutional mission and enacted practice facilitated navigation of academic systems (Motte, 2020; Walsh et al., 2024). Digital infrastructure including intuitive learning management systems and accessible technical support extended institutional commitment into the virtual environment, whereas poorly designed systems contributed to frustration and disengagement (Dello Stritto et al., 2025; Preuss et al., 2023).

Although institutional policies were frequently referenced, they were more often described than analytically examined. Institutional friction was typically inferred through accounts of stop-out or withdrawal attributed to "external factors," obscuring how policy design itself shaped persistence trajectories. Where institutional responsiveness was addressed, it appeared uneven and was supported by limited empirical evaluation (Cato Parnell, 2022; Stephen, 2022; Walsh et al., 2024). Overall, the literature reflects a gradual shift toward recognizing persistence as a shared institutional responsibility, contingent on the interaction of governance practices, administrative systems, and delivery models with non-traditional learners' life circumstances.

Support Strategies and Interventions

Support strategies and interventions formed a key domain across the literature (n = 32), centering on structured practices connecting non-traditional learners to academic systems, expectations, and resources. These practices were consistently conceptualized as *bridging mechanisms*: intentional, personalized interventions mediating the relationship between learners' complex lives and institutional demands. Support operated as a relational layer translating institutional structures into guidance and reduced isolation across the student lifecycle (Amundsen, 2023; Motte, 2020; Seery et al., 2021; Walsh et al., 2024).

Proactive and strength-based approaches were most prominent, particularly intrusive advising models using risk indicators to initiate outreach before disengagement occurred. Advising was frequently described through a concierge model, in which a single, consistent point of contact supported learners in navigating academic, administrative, and personal challenges. In this role, advisors and coaches served as interpretive interfaces, helping learners make sense of institutional rules, timelines, and expectations while reducing uncertainty around progression (Gaytan, 2013; Kish, 2025; Preuss et al., 2023).

Academic coaching was distinguished from advising by its emphasis on developing learner competence and self-directed learning skills, including time management, study strategies, and academic planning. Coaching addressed barriers often invisible within formal academic systems yet consequential for persistence (Motte, 2020; Preuss et al., 2023). Scaffolded onboarding and transition supports extended assistance beyond initial entry facilitating academic integration and later-stage mentoring. Credit for prior learning functioned as both a structural and symbolic bridge, reducing time-to-degree while validating learners' professional experience and identity (Motte, 2020; Sylvester, 2025).

Despite their prevalence, support strategies were unevenly integrated across the student lifecycle. Many were described as episodic interventions activated at specific moments. Limited alignment across faculty, advising, financial aid, and student services constrained the capacity of supports to address cumulative challenges, particularly for learners managing fluctuating work, caregiving, or financial conditions. As a result, the effectiveness of support strategies depended less on their presence than on their coordination and coherence within the broader institutional system (Motte, 2020; Walsh et al., 2024).

The literature positions support strategies as connective tissue between institutional structures and course-level experiences. When integrated and aligned, these practices support persistence as an institutionally mediated process rather than an individual burden.

Psychological Capital and Self-Regulation

Psychological capital (n = 29) emerged as a distinct analytic domain across the literature, encompassing non-cognitive, motivational, and self-regulatory resources through which learners enact agency in online learning environments. This domain emphasized the psychological stamina required to sustain commitment amid the demands and uncertainty characterizing non-traditional students' educational trajectories. Across studies, psychological resources were framed as operating in relation to instructional and institutional conditions rather than as independent determinants of persistence (Gullixson, 2015; Shatila, 2023).

Grit and long-term stamina, defined as sustained passion and perseverance toward superordinate goals, were associated with higher GPA and program completion, particularly when learners understood education as a prolonged endeavor (Cross, 2013; Louie, 2024; McClendon et al., 2017). A "marathon mindset" was especially salient in graduate and doctoral contexts, where progress unfolds over extended timeframes and interruptions are common (Ellis, 2019; Stephen, 2022). Grit was frequently distinguished from momentary self-discipline, functioning instead as persistence oriented toward long-horizon goals.

Persistence was also linked to mechanisms of human agency, including self-regulation, self-direction, and online learning self-efficacy. Learners' capacity to set goals, manage time, monitor progress, and navigate technological environments independently supported continued enrollment, particularly in highly autonomous online contexts (McNeil et al., 2025; Stephen, 2022). Locus of control further shaped persistence trajectories, with learners who attributed success to their own actions more likely to persist through challenge than those who perceived outcomes as externally determined (Su & Waugh, 2018; Yoo & Huang, 2013).

Motivational orientation reflected a balance between intrinsic motives, such as personal fulfillment, identity development, and role modeling, and problem-centered extrinsic goals related to workplace application and career advancement (Beattie, 2022; Sylvester, 2025). Persistence was strongest when learners perceived clear relevance and utility in their academic work. At the same time, psychological constructs were often treated as stable individual traits, detached from the environments in which they were activated. Experience-based measures such as engagement and satisfaction were frequently used as proxies for persistence, limiting insight into sustained enrollment (Bawa, 2016; Louie, 2024).

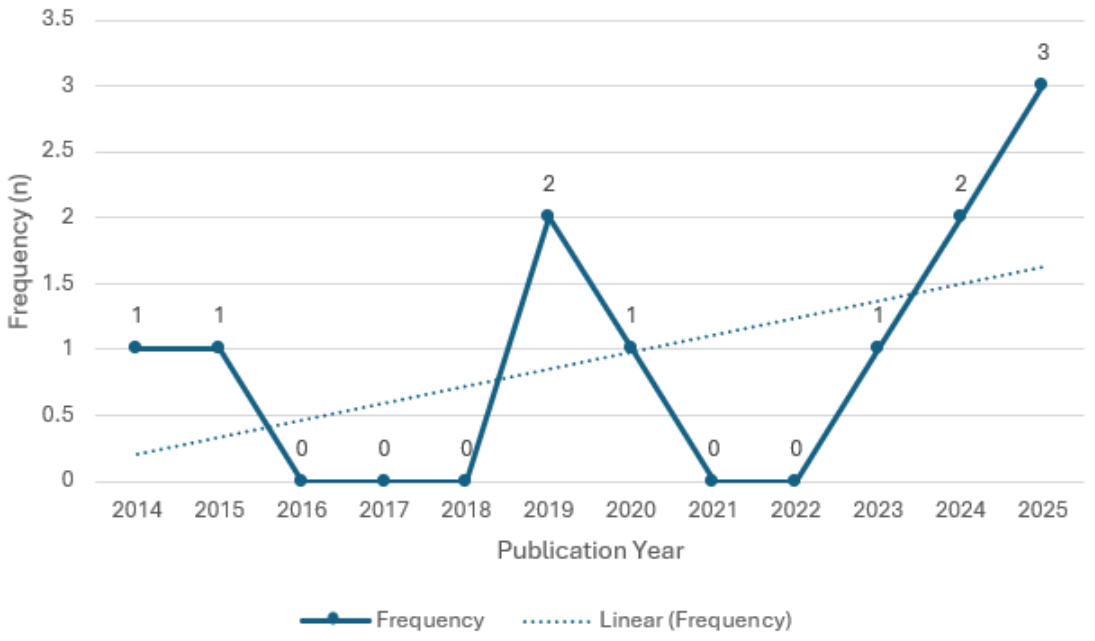
The evidence suggests psychological capital functions most meaningfully within supportive educational contexts. When institutional and pedagogical systems reduce uncertainty and friction, learners are better positioned to mobilize psychological resources in service of persistence (Lehan et al., 2018; Motte, 2020; Walsh et al., 2024).

Emergent Theme: Technology and AI-Mediated Practices

Technology extended the system-level pattern evident across the preceding domains by coordinating instructional, institutional, and support practices in online learning environments. Technology and AI-mediated practices appeared as an emergent domain in the literature (n = 11), most often described as background conditions supporting instructional delivery, engagement monitoring, advising coordination, and administrative response. Learning management systems, analytics tools, and early alert mechanisms augmented the work of faculty and advisors by facilitating timely communication and targeted outreach (Choi & Park, 2018; Kish, 2025; Rosser-Majors et al., 2022). Across the mapped evidence, these tools were not framed as independent solutions to attrition; instead, they linked course activity, advising workflows, institutional policy, and learner outreach. Figure 3 illustrates that this domain became more visible in recent publications.

Figure 3

Technology and AI–Mediated Practices by Publication Period



The cross-cutting nature of this domain was evident in its connection to each of the preceding themes. Learning management systems structure the learning environment through content access, communication, pacing, assessment, and feedback. Analytics and early alert systems link learner activity to advising and support, positioning technology as a bridge between instructional design and institutional response. However, for non-traditional learners, digital

traces often fail to capture the full context of participation. Irregular logins, delayed submissions, or episodic engagement may reflect employment demands, caregiving responsibilities, financial strain, limited study space, or asynchronous participation patterns and do not necessarily indicate disengagement (Burke, 2020; Dumais et al., 2013; Kara et al., 2019; Stephen, 2022). These indicators therefore require contextual interpretation before being classified as risk, particularly when used to trigger advising, outreach, or administrative intervention (Kish, 2025; Walsh et al., 2024).

Empirical evaluation of technology's impact on persistence remained limited. Where discussed, analytics and AI-enabled systems were positioned as extensions of existing advising and support structures, with human interpretation and contextual judgment emphasized as necessary complements (Kish, 2025; Lehan et al., 2018; Walsh et al., 2024). Although references to technology- and AI-mediated practices increased over time, the literature provides limited insight into how these tools reshape responsibility, trust, or learner agency. This gap is consequential because technology-mediated systems may shift how responsibility for persistence is distributed between learners and institutions. When embedded within coordinated systems, analytics may enable earlier identification of barriers and more coherent institutional response. When used primarily for monitoring, they may shift responsibility onto learners by flagging risk without addressing underlying conditions (Stephen, 2022; Walsh et al., 2024). The central issue is not simply whether technology is used, but how it is governed, interpreted, and integrated into institutional practice. Technology and AI-mediated practices raise underexamined questions related to transparency, bias, privacy, surveillance, and student agency. Few studies examined whether learners understood how engagement data were collected or used, whether risk indicators reflected adult learner participation patterns, or whether students had opportunities to contextualize automated alerts. Without such attention, technology-mediated systems risk reproducing deficit interpretations of constrained participation by treating limited or uneven engagement as evidence of insufficient motivation, readiness, or commitment.

Technology appeared most effective when embedded within coherent institutional ecosystems aligning policy, pedagogy, and support practices. When thoughtfully designed and governed, these tools extended the reach of existing advising, instructional communication, and support systems (Ranasinghe et al., 2025; Stephen, 2022). Poor integration may instead amplify fragmentation by detecting risk without altering underlying conditions. Early alerts are actionable only when linked to advising, flexible policy, financial guidance, and relational outreach (Kish, 2025; Lehan et al., 2018; Walsh et al., 2024). Visibility alone does not reduce structural friction.

Accordingly, technology and AI-mediated practices are best understood as institutionally situated practices. Their contribution to persistence depends on whether they enhance institutional responsiveness, strengthen human support, and reduce navigational burden for non-traditional learners. Technology supports persistence only when it is transparent, context-sensitive, human-mediated, and connected to the institutional conditions shaping learners' capacity to continue.

The literature consistently frames persistence and retention among online non-traditional students as outcomes produced through the alignment of instructional environments, institutional structures, coordinated supports, and learner agency. Persistence depends on system coherence,

as course-level relational practices, structural flexibility, and mediating support mechanisms interact with learners' life contexts to shape friction across the student lifecycle. Within this system, psychological resources are activated or constrained by institutional conditions, and technology strengthens persistence only when embedded within human-mediated practices. Yet the evidence remains uneven in explaining how these domains interact over time, particularly as technology and AI-mediated systems become more embedded in institutional practice.

Gaps in Evidence

This scoping review identified several gaps in the evidence base examining persistence and retention among non-traditional students in online higher education. The evidence base is also geographically concentrated, with limited examination of how persistence and retention are conceptualized and supported across differing national policy, funding, and cultural contexts. A central limitation was not simply the absence of evidence, but the limited examination of how instructional, institutional, and support systems interact over time to produce persistence or attrition. Although persistence and retention remain core outcomes, they are conceptualized inconsistently, obscuring how responsibility for continuation is framed within educational systems.

Persistence is most often operationalized as a student-level behavior, such as continued enrollment or course completion, while retention is typically treated as an institution-level metric based on re-enrollment or graduation. The frequent interchangeable use of these constructs, or their use without explicit definition, limits the field's ability to distinguish learner decision-making from instructional design effects, policy constraints, or institutional accountability. This conceptual ambiguity constrained cumulative knowledge building and weakened the interpretability and comparability of findings across studies.

Gaps were also evident in how persistence is temporally and structurally examined. Short-term indicators such as term-to-term enrollment and course completion dominate the literature, while longer-term and non-linear trajectories, including stop-out, re-entry, and delayed completion remain underexamined. This emphasis reflected an implicit assumption of linear enrollment pathways not in alignment with the lived realities of adult online learners, for whom persistence is often episodic and contingent on changing life conditions.

Methodological limitations further restrict understanding of persistence as a system-level phenomenon. Cross-sectional and short-term survey designs predominated, limiting causal inference and obscuring interaction effects across instructional, policy, and support domains. Reliance on single-institution or program-specific studies constrains insight into how different institutional configurations distribute structural friction or support. Longitudinal designs following learners across multiple enrollment decisions, including stop-out and re-entry, remain rare, and intervention studies often lacked sufficient detail on implementation context or resource requirements to support broader application.

Representation gaps were also evident. While studies frequently referenced "non-traditional" learners as a category, few disaggregated findings by subgroup or examined how institutional practices differentially affect learners navigating distinct combinations of work, caregiving, financial precarity, or access constraints. Limited attention to caregivers, first-

generation students, low-income learners, adult literacy learners, and individuals facing language-related access barriers restricts understanding of how persistence mechanisms function across intersecting life circumstances. Peer connection and social presence were infrequently examined as focal persistence mechanisms, despite their relevance in online learning environments.

Although technology and AI-mediated practices appear with increasing frequency, the literature provides limited insight into their systemic effects. Most studies emphasized detection, monitoring, or efficiency gains, with minimal examination of how these tools redistribute responsibility for persistence between learners and institutions or reshape trust, agency, and relational dynamics. Empirical evaluation of technology-enabled interventions remains sparse, particularly with respect to learner experience and governance. These gaps suggest the evidence base is better suited to identifying isolated correlates of persistence than to explaining how persistence is produced through the alignment, or misalignment, of institutional systems across the learner lifecycle.

Implications

Implications for Institutional Practice and Policy

The findings of this scoping review indicate supporting persistence and retention among non-traditional students in online higher education requires sustained attention to institutional coherence. Persistence emerged most reliably when institutional policies, instructional practices, and support structures were intentionally aligned with the lived realities of learners managing work, caregiving, financial precarity, and other external demands.

At the institutional level, leaders should examine how policies governing enrollment, academic progress, course sequencing, and financial aid interact with instructional expectations and support availability. This policy review should also include withdrawal, stop-out, re-entry, transfer credit, prior learning assessment, and satisfactory academic progress policies, particularly where institutional requirements assume linear enrollment or uninterrupted progression. Policies that were administratively coherent but insufficiently responsive to fluctuating life circumstances often intensified structural friction and elevated attrition risk, whereas applying a persistence-oriented lens to policy review can help identify misalignments between institutional requirements and learners' capacity to comply, particularly in online programs serving working adult learners.

At the instructional level, evidence points to the importance of course design practices prioritizing clarity, predictability, and structured flexibility. Consistent communication, transparent assessment criteria, stable pacing, and coherent course organization support sustained participation more reliably than ad hoc accommodations or pedagogical novelty. Embedding these expectations into program-level standards and instructional design guidelines reduces variability in student experience and limits reliance on individual faculty discretion as the primary source of flexibility.

Support strategies are most effective when integrated across the student lifecycle and coordinated across functional units. Shifting from episodic, reactive models toward proactive and

navigational approaches enabled learners to anticipate academic and administrative demands over time rather than respond to crises as they arose. Strengthening coordination among faculty, advising, financial aid, and student services reduces the interpretive burden placed on learners and improves continuity of guidance across enrollment phases. Structured onboarding, early-term check-ins, and coordinated handoffs between instructional and support staff are particularly important during transition points in online learning environments when attrition risk is elevated.

Technology and AI-enabled tools offer potential efficiencies for monitoring engagement and facilitating outreach, but the evidence cautions against treating these systems as substitutes for relational support or structural alignment. Institutional leaders should attend to how analytics and automated tools were embedded within broader advising, instructional, and policy frameworks supporting adult online learners, ensuring transparency, human oversight, and responsiveness to learner context. Policy should also clarify data privacy, bias monitoring, student agency, interpretation of risk indicators, and responsibility for outreach. When aligned with coherent institutional design, technology can extend the reach of support systems; when poorly integrated, it risks reinforcing fragmentation.

Finally, institutional policy should support disaggregated assessment of persistence and retention outcomes by non-traditional learner characteristics, including employment intensity, caregiving status, age, first-generation status, financial independence, and re-entry status. Aggregate retention metrics may otherwise obscure differential barriers among adult online learners.

Persistence for non-traditional online learners was best supported when institutions designed policies, courses, supports, and technologies as interdependent components of a coordinated system. Institutional capacity to support continuation is strengthened not by adding discrete services, but by reducing friction and increasing alignment across the structures shaping learners' daily experience of online learning environments.

Implications for Future Research

Future research on persistence and retention among online non-traditional students should move beyond identifying isolated predictors and instead examine how institutional, instructional, and support systems interact over time to enable or constrain continuation. Advancing the field will require greater conceptual clarity, methodological rigor, and sustained attention to how persistence is produced through system alignment.

Conceptually, researchers should explicitly distinguish between persistence as a student-centered behavior and retention as an institutional metric, specifying levels of responsibility and temporal scope. Clear operationalization of these constructs, including defined time horizons, is essential for cumulative knowledge building and meaningful comparison across studies. Greater consistency in terminology will also help clarify whether observed relationships reflect learner decision-making, instructional design, institutional policy, or measurement artifacts.

Methodologically, longitudinal and lifecycle-oriented designs are needed to capture non-linear enrollment trajectories common among non-traditional learners, including stop-out, re-entry, and delayed completion. Studies following learners across multiple enrollment decisions

can illuminate how alignment, or misalignment, across course, program, and institution-level systems shapes persistence over time. Multi-institutional and comparative designs would further strengthen transferability and support examination of how different institutional configurations distribute structural friction or support.

Equity-centered research remains a priority. Future studies should disaggregate findings by learner subgroup, including caregiving status, employment intensity, socioeconomic position, first-generation status, and language-related access barriers, to examine how institutional designs differentially affect learners navigating intersecting life circumstances. Moving beyond aggregate "non-traditional" categories will allow more precise identification of which strategies supported persistence for whom, and under what conditions.

Expanding use of technology and AI-mediated practices warrants deeper empirical investigation. Future research should examine not only predictive accuracy or efficiency gains, but how these tools are designed, governed, and experienced by learners. Attention to issues of agency, trust, transparency, and surveillance is critical to understanding how technology reshapes responsibility for persistence and interacts with instructional and institutional contexts. These directions point toward a research agenda treating persistence as a system-level outcome—one that can be intentionally designed, rigorously evaluated, and iteratively improved through coordinated, multi-level inquiry spanning institutional structures, instructional and support practices, and learner experiences.

Limitations

This scoping review has several limitations to consider when interpreting the findings. The review was bounded by predefined temporal (2013–2025), language, and contextual criteria, including inclusion of only peer-reviewed English-language studies situated in online higher education. As a result, relevant research published in other languages, prior to 2013, or conducted in adjacent contexts, such as community-based adult education or workplace learning, may not be represented.

Despite a comprehensive search strategy, relevant studies may have been missed due to variability in terminology used to define non-traditional learners, persistence, and retention, as well as inconsistent indexing across databases. Although broad and inclusive terms were used, studies employing alternative terminology or relying on implicit definitions without clear keywords may not have been captured.

Consistent with JBI guidance for scoping reviews, this review did not include formal appraisal of methodological quality or risk of bias. Consequently, the findings map the breadth and characteristics of the evidence base rather than the effectiveness or comparative strength of specific strategies or interventions.

Conclusion

Persistence and retention among non-traditional students in online higher education are not individual problems to be fixed one learner at a time; they are system outcomes emerging when course design, institutional policy, coordinated supports, and learner agency align. This

scoping review synthesizes 47 studies into a usable taxonomy of five core domains and identifies technology and AI-mediated practices as an emergent area.

For institutions serving adult, working, and caregiving students, the map offers practical leverage points. These include prioritizing predictable and transparent course design and sustained instructor presence, auditing policies and financial supports for sources of friction, and integrating advising, coaching, and technology into coordinated, human-centered workflows rather than treating them as add-ons.

Scholarly contributions include reframing persistence as a relational and institutional design challenge, documenting the rise and limited empirical evaluation of technology and AI-mediated supports, and providing a conceptual foundation to guide future research toward system-level explanations and tests of alignment-focused strategies. This review offers an organizing scaffold for institutional improvement efforts and future studies examining which coordinated changes support longer-term continuation and completion among non-traditional students in online higher education.

Declarations

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Appendix

Descriptive Characteristics

Figure A1

Database Distribution of Included Studies

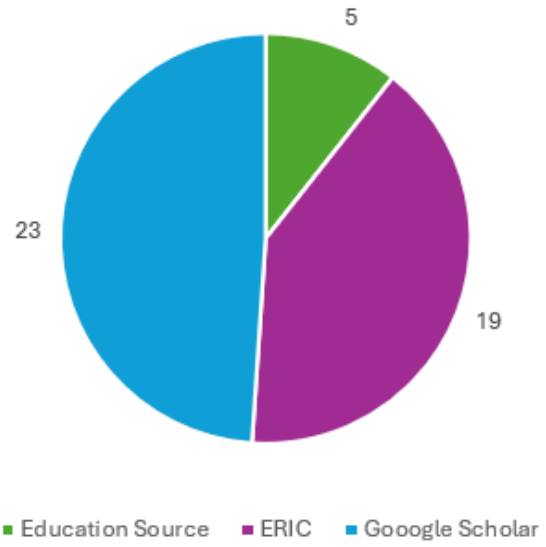


Figure A2

Publication Distribution of Included Studies by Year

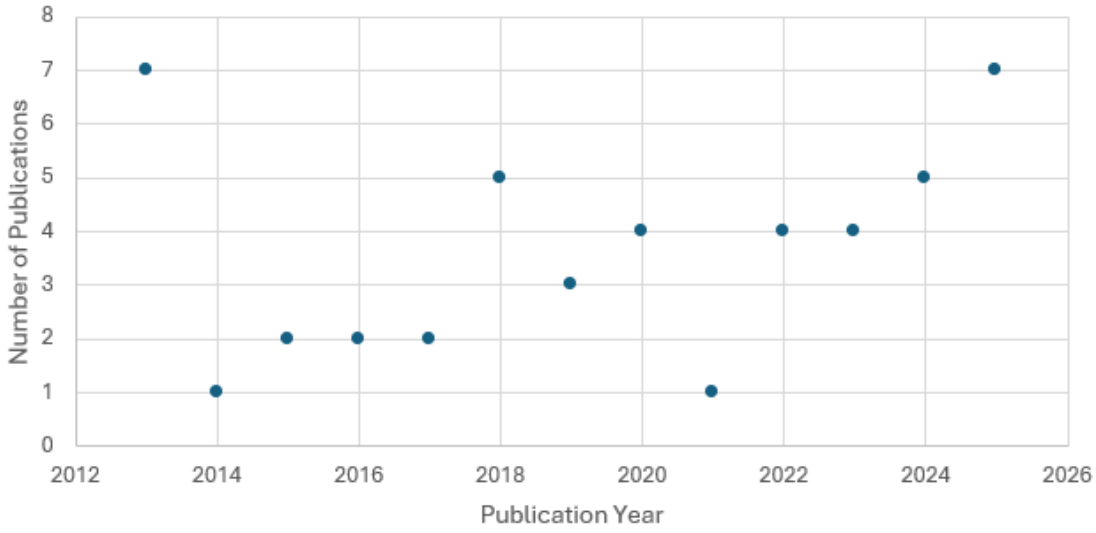


Figure A3

Frequency of Non-Traditional Student Descriptors Across Included Studies

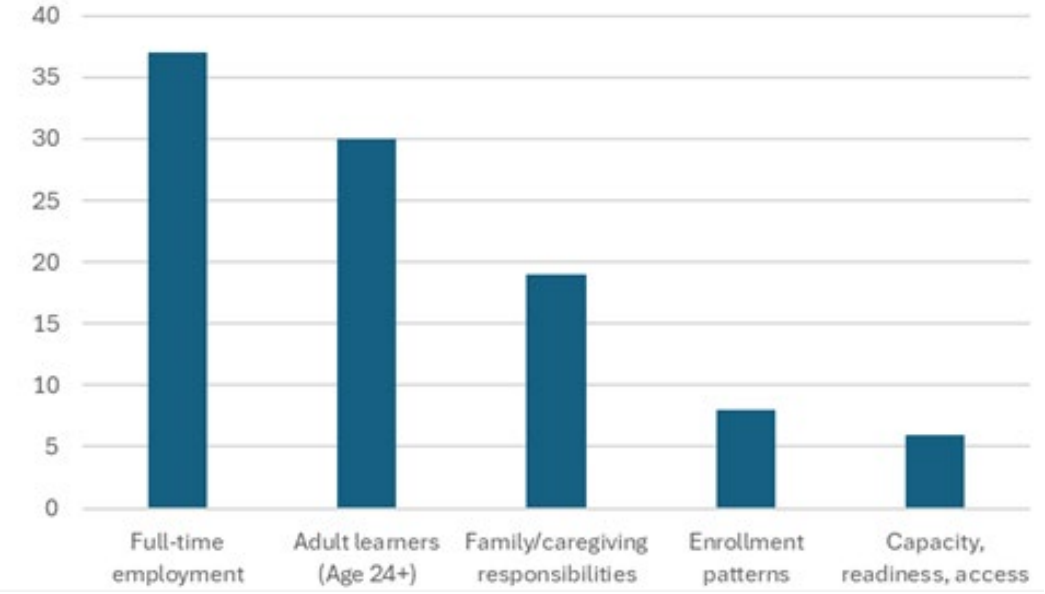


Figure A4

Frequency of Reported Persistence and Retention Outcome Domains

