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UNPACKING SELF-DIRECTED LEARNING READINESS: A MAPPING AND ANALYSIS OF MEASUREMENT SCALES

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ABSTRACT

This study aims to map and analyse the measurement scales used to assess Self-Directed Learning Readiness (SDLR). With self-directed learning (SDL) emerging as a critical competency for personal and professional development, a comprehensive evaluation of the scales designed to measure SDLR is essential. The Web of Science database was selected as the source for this systematic literature review, spanning 35 years from 1989 to 2023, with 97 articles identified. After applying seven exclusion criteria, 59 articles were selected for final analysis. The study catalogues and evaluates 13 instruments used to assess SDLR, focusing on their dimensions, attributes, and historical development. The findings reveal that the Self-Directed Learning Readiness Scale for Nursing Education and the Self-Rating Scale of Self-Directed Learning are the most frequently utilized and cited tools. A continental analysis shows that SDLR research is primarily concentrated in North America and Asia, with significant contributions from the USA (16.67%) and Taiwan (10%). In contrast, the research from developing regions remains limited. The study also identifies 64 SDLR dimensions across the 13 tools, resulting in 52 distinct dimensions. Further, the research classifies these dimensions into eight categorical dimensions: Motivation, Collaborative Learning Activities, Knowledge construction, Self-Efficacy, Self-Management, Self-Reflection and Evaluation, Autonomy, and Planning, offering a structured framework for assessing SDLR. The limited exploration of SDLR measurement in non-medical fields, especially at the school level, highlights the need for contextually and developmentally appropriate tools for younger learners. This study provides valuable insights for future research and developing comprehensive SDLR assessment tools in diverse educational settings.

Keywords: Self-Directed Learning Readiness, Self-directed Learning Competency, Learning Autonomy, Lifelong learning, Self-directed Learner

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Introduction

Self-directed learning (SDL) has deep roots in educational theory and practice. The term SDL was first introduced in adult education by Houle in 1961 and later developed by Tough, and the term was formalised by Knowles in 1975(Merriam et al., 2007; Popovic, 2011). SDL involves learners taking active control of their educational process by identifying their learning needs, setting objectives, sourcing resources, selecting learning strategies, and evaluating progress with or without external assistance (Knowles, 1975). SDL encompasses essential skills such as self-discipline, autonomy, effective organization, effective communication, constructive feedback acceptance, engagement in self-reflection, and self-evaluation (Merriam, 2001). There are five ways to look at learning in a psychological framework (Merriam & Bierema, 2014). These include behaviourism, humanism, cognitivism, constructivism, and social learning. Two of these groups, cognitivists and constructivists, are associated with SDL.

This approach transcends traditional instructional paradigms by empowering individuals to take ownership of their learning, fostering lifelong learning habits, and enhancing adaptability in today's dynamic environments. As society becomes increasingly knowledge-based and information-centric, SDL has become an essential competency for personal and professional development, encouraging educational institutions globally to cultivate self-directed professionals (Guiter, 2014).

Self-directed learning readiness (SDLR) is the foundational preparedness of individuals to engage in SDL, representing an individual's attitudes, abilities, and personal traits that foster independent learning (Dačiulytė & Pinchuk, 2010.; Wiley, 1983). Fisher & King (2010) define SDLR as the degree to which learners possess the necessary dispositions for SDL, while (El-Gilany & Abusaad (2013) expand this definition, emphasizing it as the acquired level of ability to engage effectively in SDL. As a precursor to effective engagement in SDL, SDLR encompasses learners' readiness and capacity to take control of their own learning. Therefore, assessing SDLR

is essential for educators, researchers, and practitioners, as it allows them to gauge learners' SDL competencies, tailor instructional approaches, and design targeted interventions that support the cultivation of SDL skills.

Despite the recognized importance of assessing SDLR, the availability of robust assessment tools for SDL remains essential. Existing scales offer systematic frameworks to evaluate essential SDL attributes, such as autonomy, motivation, metacognitive strategies, and learning preferences (Tekkol & Demirel, 2018). However, the variety and scope of these scales are not yet fully mapped. In a systematic review, Cadorin et al. (2017) identified four primary scales: Self-directed Learning Readiness Scale (SDLRS), Self-directed Learning Readiness Scale for Nursing Education (SDLRNSE), Self-Rating Scale of Self-Directed Learning Readiness (SRSSDL), and Self-Directed Learning Instrument (SDLI), used to measure SDLR. However, whether additional scales exist or alternative tools for assessing SDLR have been developed for different educational contexts and regions remains unclear. Moreover, there is limited information on the specific SDL dimensions these tools address, such as motivation, self-monitoring, learning strategies, and engagement, and how comprehensively these dimensions are represented across different scales.

To address these gaps, this study aims to map the existing scales validated in the literature for assessing SDLR. This research seeks to identify the scales used to measure SDLR, understand which aspects of SDLR each scale emphasizes, and analyze trends in SDLR assessment research over time. Answering these questions will provide valuable insights into the comprehensiveness, applicability, and evolution of SDLR measurement tools, ultimately guiding future research and practical applications across diverse educational settings.

Assessment of SDLR

The development of assessment tools for SDLR has played a pivotal role in advancing research and practice in SDL. The first significant instrument to assess SDLR was developed by Guglielmino in 1977, marking a milestone in SDL research by providing a systematic approach to measure learners' readiness for independent learning (Cadorin et al., 2017; Merriam, 2001).

This instrument not only expanded the conceptualization of SDL but also opened new pathways for empirical studies in educational settings.

Research on SDL in Sri Lanka remains limited, with only a handful of studies addressing this area (Bandara, 2017, 2022; Dharmasena et al., 2022; Galdolage, 2020; Munasinghe et al., 2020; Piratheeban, 2023; Piratheeban & Bandara, 2024; Samarasooriya et al., 2019). Among these studies, Galdolage (2020) developed a self-generated questionnaire to assess SDL in self-service technologies. This questionnaire comprised three dimensions: motivation, self-management, and self-monitoring, and included 31 items. Similarly, Piratheeban (2023) designed a self-generated questionnaire to measure SDLR among student-teachers in Sri Lanka. This instrument consisted of 30 items categorized into six dimensions: self-motivation, goal orientation, time management, information seeking, self-regulation, and collaboration and communication. In contrast, Samarasooriya et al. (2019) and Dharmasena et al. (2022) employed Fisher's SDL scale (Fisher et al., 2001) to measure SDLR among nursing learners in Sri Lanka.

In 1986, Oddi developed a tool to measure the personal characteristics of self-directed learners (Merriam, 2001). In 2001, Fisher et al. further contributed to the field by developing a tool specifically for nursing students, underscoring the importance of SDLR assessment in professional contexts where SDL is vital (Fisher et al., 2001). Williamson then introduced the SRSSDL in 2007(Williamson, 2007), followed by Cheng et al.'s SDLI in 2010 (Cheng et al., 2010). Most recently, Dulloo et al. (2023) developed the DSVS-SDLRS, an addition that highlights the ongoing evolution and relevance of SDLR tools in diverse educational landscapes.

These tools have significantly enhanced SDL-related studies, allowing researchers to measure how well students are prepared for SDL across various contexts. Numerous studies have utilized these tools to explore SDLR among different learner groups, including librarians (Lai & Wang, 2012), publics (Galdolage, 2020), student-teachers (Grengia et al., 2022; Hussain et al., 2019; Piratheeban, 2023); teachers (Torabi et al., 2013), engineering undergraduates(Litzinger et al., 2005) , medical students

(Abraham et al., 2011; De La Barrera-Cantoni et al., 2021; Fung et al., 2000; Harvey et al., 2006; Hendry & Ginns, 2009; Hoban et al., 2005; Kim & Yang, 2020; Klunklin et al., 2010; Kumar et al., 2021; Leatemia et al., 2016; Lestari & Widjajakusumah, 2009; Mahmud et al., 2014; Monroe, 2016; Shokar et al., 2002; Soliman & Al-Shaikh, 1969; Tsou et al., 2009), nursing students (Alharbi, 2018; Cadorin et al., 2013, 2015; Chakkaravarthy et al., 2020; Chen & Fan, 2023; Dharmasena et al., 2022; El-Gilany & Abusaad, 2013; Fan et al., 2020; Harvey et al., 2003; Kaulback, 2020; Ke et al., 2023; Khodaei et al., 2022; Klunklin et al., 2010; Lee et al., 2020; Millanzi et al., 2021; Örs, 2018; Park & Kim, 2023; Roberts et al., 2019; Samarasooriya et al., 2019; Visiers-Jiménez et al., 2022; Williams, 2004; Zhang et al., 2022), Pharmaceutical students(Behar-Horenstein et al., 2018; Deyo et al., 2011; Huynh et al., 2009), Other or multidisciplinary undergraduates (Alotaibi & Alanazi, 2021; Jiusto & DiBiasio, 2006; Lee & Mori, 2021; Rascón-Hernán et al., 2019; Rashid & Asghar, 2016; Slater et al., 2017; Tekkol & Demirel, 2018), secondary school students (Chen et al., 2022; Gooria et al., 2021; Hafizah Adnan & Sayadi, 2021; Jaleel & O.M., 2017) and primary Students (Timothy et al., 2010).

Additionally, these tools have facilitated research into the relationship between SDLR and various constructs such as academic achievement (Grengia et al., 2022; Hussain et al., 2019; Jaleel & O.M., 2017; Khalid et al., 2020; Litzinger et al., 2005; Piratheeban, 2023) self-efficacy (Karataş et al., 2023; Prihastiwi et al., 2024; Saeid & Eslaminejad, 2016; Shohoudi et al., 2015), and assessment methods (Monroe, 2016). Furthermore, several studies have focused on identifying factors influencing SDLR, highlighting its multi-faceted nature (Kim & Park, 2011; Koirala et al., 2021; Monkaresi et al., 2015; Munasinghe et al., 2020; Piratheeban, 2023; Ramli et al., 2018; Slater et al., 2017; Wong et al., 2021; Yang et al., 2021).

These studies' contributions underscore the importance of mapping the available tools for assessing SDLR. Without such tools, these investigations would not have been possible. Mapping these assessment instruments is essential for guiding future researchers in selecting tools that best align with their specific research contexts.

Objectives

1. To catalogue and evaluate the existing instruments used to assess SDLR, focusing on their dimensions, attributes, and historical development.
2. To analyze the geographical distribution of SDLR research, identifying countries and regions contributing significantly to the field.
3. To examine the trends in SDLR research publications over time, highlighting shifts in focus and emerging topics.
4. To explore the major academic disciplines utilizing SDLR scales, identifying key areas of application in educational and professional contexts.
5. To classify the SDLR dimensions across various measurement tools, comparing the instruments used in high-impact studies.

Methodology

This study employs a systematic literature review (SLR) methodology to identify and map instruments used to assess SDLR. The primary aim is to enhance understanding of SDLR by cataloguing relevant studies in this area. Rather than a broad overview, this research specifically focuses on identifying the key scales that have been applied in educational research over time.

The Web of Science (WoS) database was selected as the source for articles for this SLR, spanning 35 years from 1989 to 2023. This database is among the largest and most reputable sources for academic literature, widely regarded as a dominant reference in scholarly research due to its extensive coverage of foundational publications across numerous scientific disciplines (Falagas et al., 2008). The chosen timeframe ensures a comprehensive view of SDLR assessment tools, capturing both the evolution of early instruments and recent advancements in this area of research.

We employed the model proposed by Tranfield et al. (2003) to structure this SLR, which organizes the process into three key stages. According to the

authors, a SLR should progress through the following stages:

Stage 1: Planning the SLR

- *Phase 0*: Recognizing the need for a review
- *Phase 1*: Preparing the review proposal
- *Phase 2*: Developing a review protocol

Stage 2: Conducting the Review

- *Phase 3*: Identifying relevant research
- *Phase 4*: Selecting studies for inclusion
- *Phase 5*: Assessing the quality of studies
- *Phase 6*: Extracting data and monitoring the process
- *Phase 7*: Synthesizing data

Stage 3: Reporting and Disseminating Findings

- *Phase 8*: Writing the report and making recommendations
- *Phase 9*: Applying evidence to practice

This structured approach ensures methodological rigour by systematically identifying, assessing, and synthesizing relevant studies. Each phase creates a transparent, replicable process, providing a robust foundation for reviewing SDLR instruments. Given its well-established framework for comprehensive evidence synthesis, this method is ideally suited to fulfil the research objectives of mapping and assessing SDLR tools in educational contexts.

To develop the review protocol, a search string was crafted using carefully selected keywords to identify articles focused on primary SDLR assessment instruments effectively. This search string was applied to both the titles and abstracts of articles in the WoS database. During the search, filters included only entries categorized as scientific articles. This approach ensures a focused and relevant selection of studies, optimizing the quality and specificity of the data gathered for the review.

The outcomes of the search are summarized in Table 1.

Table 1

Information of Search String and the Number of Articles Obtained

Category	Search String	WoS
SDLR Assessment Tools	"self-directed learn* readiness scale" or ("self-directed learn*" and (scale" or instrument" or inventory or "skills scale" or "competency scale" or "ability inventory")) or "self-directed learning with technology scale" or "self-rating scale of self-directed learning" or "Oddi's continuing learning inventory" or "Bartlett-Kotrlik inventory of self-learning"	97

The search string was developed by drawing from existing literature on the concept of SDL and referencing the terminology of historically significant assessment tools in the field, including instruments such as the Oddi Continuing Learning Inventory (OCLI); SDLRS; SDLRNSE, SRSSDL; Self-Directed Learning with Technology Scale (SDLTS); Self-Directed Learning Skills Scale (SDLSS); Self-Directed Learning Competency Scale (SDLCS); SDLI; Self-directed Learning Inventory; Self-Directed Learning Ability Inventory (SDLAI); Self-Directed Learning with Technology for Young Students (SDLTYS); Self-Directed Learning Readiness Scale for Online Learning Environments (SDLRSOLE); Learning Orientation Questionnaire (LOQ); Bartlett-Kotrlik Inventory of Self-Learning (BISL); Learning Preference Assessment (LPA); Traditional Chinese Version of Self-directed learning Readiness Scale (TC-SDLRS); SRSSDL-Italian Version (SRSSDLIta); SRSSDL in Older People (SRSSDLO). This careful selection of keywords aimed to capture the breadth of research in SDL assessment tools. The resulting search string enhances the likelihood of identifying relevant studies that contribute valuable insights into the development and application of these instruments over time.

The search yielded 97 articles, identified according to the keyword strategy outlined in Table 1. Subsequently, filters were applied to refine the selection, ensuring only the most relevant articles were included in the SLR sample, as specified in Table 2.

Table 2

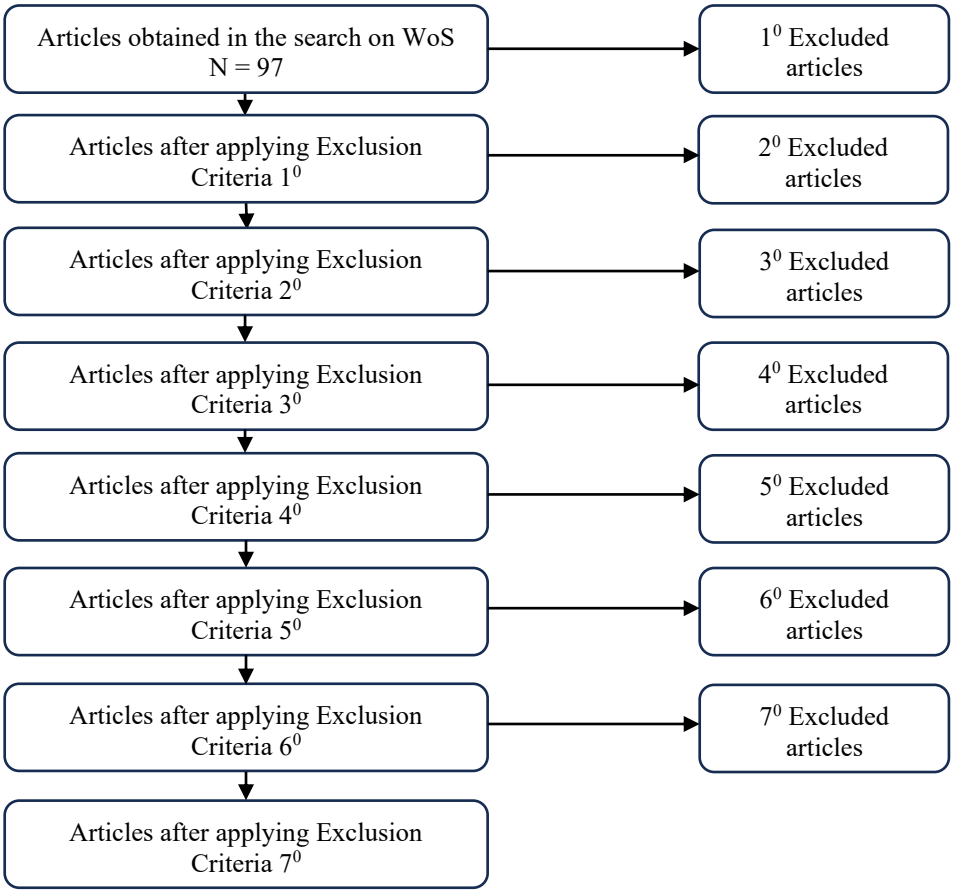
Criteria Used to Exclude Articles from the SLR

Order	Exclusion Criteria	Number of Excluded Articles
1^0	Articles published in the year 2024	07
2^0	Articles in languages other than English	04
3^0	Editorials	02
4^0	Missing field (Abstract)	01
5^0	Articles unsuitable for the study	02
6^0	No SDLR scale used	16
7^0	Scale type not specified	06
	Total number of articles excluded	38

After applying the specified exclusion criteria to the initial pool of 97 articles, a total of 38 articles were excluded based on the seven exclusion criteria outlined in Table 2. Consequently, 59 articles were selected for inclusion in the SLR. The detailed operational process, including the steps involved in identifying and refining the final sample, is illustrated in Figure 1. This rigorous methodology ensured the selection of a focused and high-quality sample, aligning with the study's objectives and providing a strong foundation for meaningful insights.

Figure 1

Operational Process of Selecting Articles in the SLR



Results

The articles that comprise the sample involve studies carried out in the educational context, so that the studies could assess the readiness for engaging in SDL, specifically in the educational institutions, where the formal learning process takes place. Furthermore, it was identified that the studies involved in six educational contexts: Medical students, Para-medical students, Teachers, other undergraduate students, College students, and school students.

Prominent Contributors to Global SDLR Research Using Measurement Scales

In the SLR, an analysis of the 59 selected articles and their respective countries revealed that four articles did not provide relevant details regarding the location of the study. Additionally, one study was conducted across six different countries, which were accounted for individually. Consequently, 60 occurrences were identified as part of the review. Among these, seven countries emerged as having conducted many studies utilizing the SDLR scale, demonstrating their active engagement and contribution to SDL research. These countries are highlighted in Table 3 below, providing insights into the geographical distribution of SDLR research. This categorization emphasizes the global scope of SDLR studies while showcasing regional trends and focus areas.

Table 3

Countries with Significant Contributions to SDLR Research Using the SDLR Scale

Ranking	Country	Occurrences	Percentage
1	USA	10	16.67
2	Taiwan	6	10.00
3	Canada	5	8.33
3	Saudi Arabia	5	8.33

5	Australia	4	6.67
5	Italy	4	6.67
5	South Korea	4	6.67

In terms of occurrences, the USA ranks first with 16.67%, followed by Taiwan at 10.00%. Canada and Saudi Arabia share the third position with 8.33% each, while Australia, Italy, and South Korea rank fifth with 6.67% each. It is noteworthy that all these countries are developed nations, reflecting their advanced educational systems and prioritization of research in SDLR. This prevalence highlights a potential research gap in developing countries, where studies on SDLR remain limited, underscoring the need to extend such research to diverse educational and cultural contexts.

Continental Analysis of SDLR Research Distribution

The results obtained by analyzing these countries based on the continents they are located in are shown in Table 4 below. This analysis provides a geographical perspective on the distribution of studies, highlighting the representation of different continents in research on SDLR. It offers insights into regional trends and the focus of academic inquiry in various parts of the world, which can inform the identification of research gaps and opportunities for cross-continental comparisons in future studies.

Table 4

Geographical Distribution of SDLR Studies by Continent

Continent	Number of Countries	Number of Occurrences	Ranking Based on Number of Occurrences	Number of Occurrences/ Country	Ranking Based on Number of Occurrences/ Country
Asia	10	24	1	2.4	3
Australia	1	4	4	4	2
Europe	8	13	3	1.63	4
North America	2	15	2	7.5	1
South America	2	2	5	1	5

Africa	2	2	5	1	5
Total	25	60			

The table 4 provides a summary of the geographical distribution of countries where studies on SDLR have been conducted, categorized by continent. Asia accounts for the highest number of countries (10), reflecting significant research interest in this region. This high representation of countries in Asia is also evident in the number of occurrences, with Asia having 24 occurrences, which corresponds to an average of 2.4 occurrences per country. Europe follows with eight countries, highlighting its strong contribution to SDLR studies, with 13 occurrences and an average of 1.63 occurrences per country. North America, with 2 countries, ranks second in the number of occurrences, with 15 occurrences and an average of 7.5 occurrences per country, indicating a concentrated research focus in this region. South America and Africa each have 2 countries represented, both with 2 occurrences, demonstrating a relatively balanced presence across these continents in terms of SDLR research. Australia is represented by a single country, reflecting limited but noteworthy engagement in SDLR research, with 4 occurrences. In total, studies from 25 countries across six continents were analyzed, providing a comprehensive global perspective on SDLR research trends. This distribution underscores the global interest in SDLR, with notable concentrations in certain regions, particularly Asia and North America.

Trends in SDLR Research Publications Over Time

An analysis of the publication timeline reveals a steady increase in the number of articles published on the topic of SDLR. This trend reflects the growing academic interest and recognition of its importance in recent years. Notably, 52.54% of the selected articles were published within the past eight years, emphasizing the heightened focus on this research area during this period. To provide a clearer understanding of this progression, the publication timeline has been divided into four distinct segments. Table 5 presents the number and percentage of articles published within each segment, illustrating the gradual expansion of research on SDLR over time.

Table 5

Publication Distribution of Selected Articles Across Time Segments

Time segment	Number of years Covered	Number of articles published	Percentage of articles published
1992-1999	8	2	3.39
2000-2007	8	8	13.56
2008-2015	8	18	30.51
2016-2023	8	31	52.54
1992-2023	32	59	100

The categorization in Table 5 underscores the progressive development and intensification of interest in SDLR research across the years. The substantial proportion of articles published in the most recent period highlights an accelerating momentum, suggesting that SDLR has become a focal point for researchers worldwide. This growth may be attributed to the increasing emphasis on learner autonomy, self-regulated learning, and educational strategies that align with 21st-century skills. The division of the publication timeline into segments provides a valuable perspective on the evolution of this field, revealing not only the steady rise in research output but also the sustained relevance of SDLR in academic discourse.

Leading Journals in Publishing SDLR Research

The 59 articles selected for the SLR were published across 34 different journals. Table 6 displays the top six journals in the WoS database that have published studies in the field, specifically those utilizing instruments to assess SDLR. This ranking highlights the primary sources contributing to research on SDLR, underscoring the role of these journals in advancing knowledge in the area.

Table 6

Top Six Journals Publishing Articles Using Self-Directed Learning Readiness Scales

Ranking	Journals	Frequency
1	Nurse Education Today	8
2	BMC Medical Education	4

2	Nurse Education in Practice	4
4	BMC Nursing	3
4	Medical Education	3
4	American Journal of Pharmaceutical Education	3
	Total	25

The journal *Nurse Education Today* ranks first, publishing the highest number of articles using SDLR scales among the 59 reviewed journals. The top six journals account for 25 publications, representing 42.37% of all articles selected for this review process. This concentration of publications within a few key journals underscores these outlets' significant role in disseminating research on SDLR.

An important observation is that all the top-ranked journals are related to the health-related field, specifically in medicine, nursing, and pharmaceuticals. Notably, four journals focus on nursing education: *Nurse Education Today*, *Nurse Education in Practice*, *Journal of Nursing Education*, and *BMC Nursing*. This strong representation within medical and nursing education highlights the critical role of SDLR research in health-related fields, where SDL is essential for ongoing professional development and competency.

Disciplinary Trends in SDLR Research

The research on SDLR spans multiple disciplines, reflecting its wide-ranging relevance across various fields. To better understand the focus areas and trends in SDLR studies, the selected articles have been categorized by discipline. This distribution highlights the prominent fields contributing to SDLR research and illustrates the cross-disciplinary recognition of SDLR's importance in promoting lifelong learning and adaptability. The table 7 summarizes the number of articles published within each major discipline, underscoring the breadth and impact of SDLR studies across educational and professional contexts.

Table 7

Distribution of SDLR Research Across Major Disciplines

Research Area	Frequency
Education and Educational Research	29
Nursing	14
Psychology	04
General and Internal Medicine	03
Science & Technology and other topics	03

The most prominent research area in the study of SDLR using a scale to measure it is *Education and Educational Research*, which encompasses several sub-areas, including healthcare sciences and services, nursing, pharmacology and pharmacy, physiology, engineering, and computer science. This broad educational focus underscores the importance placed on understanding SDLR's role in various fields where fostering independence and lifelong learning is essential for academic and professional success.

Nursing is particularly notable within the educational domain, as eighteen journals dedicated to nursing education were among the top sources of SDLR publications. This concentration highlights a significant interest in exploring how SDLR impacts nursing students, recognizing the need for nurses to develop SDL skills to stay current in an evolving healthcare environment. In nursing, SDLR is vital for promoting continuous professional development, patient-centred care, and adaptive expertise, thus justifying the focus on this field.

Psychology also emerged as a critical field, with studies exploring SDLR's influence on learning styles, motivation to learn, problem-solving and critical thinking ability, and academic self-efficacy. This focus reflects the psychological underpinnings of SDLR, which involve motivation, self-regulation, and self-efficacy - factors that directly influence a learner's ability to engage in and benefit from SSL. Understanding these influences is particularly relevant in educational psychology, where insights into these factors can inform effective teaching strategies and support the development of autonomous learners.

Another significant area is *Medicine*, reflecting SDLR's critical role in

medical education and practice. In the medical field, SDLR is essential for students and practitioners, as they must constantly update their knowledge and skills to provide high-quality patient care. The rigorous and ever-evolving nature of medical knowledge necessitates those medical professionals be adept at SDL to stay current with medical advancements, research, and evidence-based practices. This focus on SDLR in medicine underscores its significance in fostering a culture of lifelong learning and adaptability within healthcare, where ongoing professional development directly impacts patient outcomes.

In addition to education, nursing, psychology, and medicine; Science and Technology has also emerged as a relevant area in SDLR research, though to a lesser extent, with three articles available in this field. This focus on science and technology highlights the importance of SDLR in disciplines that require a strong foundation in SDL skills to keep pace with rapid advancements and innovation. In engineering and computer science fields, the ability to independently acquire new knowledge and skills is crucial for adapting to evolving technologies and methodologies. Research in this area supports the development of SDL competencies essential for professionals to remain competitive and competent in high-tech and STEM fields.

Overall, the prominence of SDLR research across education, nursing, psychology, medicine, and science and technology, indicates a strong cross-disciplinary recognition of SDLR's role in fostering effective, lifelong learning habits. This trend reflects the increasing value placed on SDL skills across diverse professional and educational settings, where adaptability, self-motivation, and continuous learning are essential for success and growth in dynamic fields.

Overview and Key Features of SDLR Assessment Tools

The analysis of articles included in this study identified 13 distinct instruments utilized to assess SDLR. Table 8 summarises these SDLR scales, detailing the author and year, dimensions covered by each scale, and the total number of items. This overview serves as a valuable resource for

understanding how each instrument is structured and the aspects of SDLR it addresses, offering insights for future researchers in selecting suitable tools for their specific needs.

Table 8

Overview of SDLR Assessment Instruments

Instrument	Author and Year	Number of dimensions	Dimensions	Number of Items
SDLRS	(Guglielmino,1977, as cited in Hoban et al., 2005)	08	Openness to learning opportunities, Effective learner, Initiative and independence in learning, Informed acceptance of responsibility for their learning, Love of learning, Creativity, Positive orientation to the future, and Ability to use basic study skills and problem-solving skills	58
SDLRNSE	(Fisher et al., 2001)	03	Self-management, Desire for learning, and Self-control	40
OCLI	(Oddi, 1986)	04	Learning With Others, Learner Motivation/ Self-Efficacy/ Autonomy, Ability to be Self-Regulating, and Reading Avidity	24
SRSSDL	(Williamson, 2007)	05	Awareness, Learning Strategies, Learning activities, Evaluation,	60

			and Interpersonal skills	
TC-SDLRS	(Deng, 1995)	06	Effective learning, Love of learning, Learning motivation, Active learning, Independent learning, and Creative learning	55
SDLI	(Cheng et al., 2010)	04	Learning motivation, Planning and implementing, Self-monitoring, and Interpersonal communication	20
Korean Self-directed Learning Ability Inventory (Korean SDLAI)	(Eul kyoo bae & Minyoung Lee, 2010)	07	Management of learning process, Evaluation of learning outcome, Motivation for learning, Self-concepts, Continuity of learning activity, Management of learning resources, and Making a learning environment	21
SDLSS	(Askin, 2015, as cited in Tekkol & Demirel, 2018)	04	Motivation, Self-control, self-monitoring, and self-confidence	21
SDLCS	(Lee & Mori, 2021)	00		9
Korean Self-directed learning Inventory (Korean SDLI)	(Suh et al., 2015)	08	Learning needs, Utilizing skills, Enduring Challenges, Self-efficacy in learning, Planning skills, Evaluating skills, Completing tasks, and Internal attribution	28
SRSSDLO	(Cadorin et al., 2020)	04	Awareness, Attitudes, Availability, Motivation	13

$SRSSDL_{ITA}$	(Cadorin et al., 2013)	08	Awareness, Attitudes, Motivation, Learning Strategies, Learning Methods, Learning Activities, Interpersonal Skills, and Constructing Knowledge	40
SDLTS	(Timothy et al., 2010)	02	Self-Management, and Intentional Learning	6

The diverse range of instruments outlined in Table 8 highlights the multifaceted nature of SDLR and underscores the evolution of measurement tools in this field. Each scale incorporates unique dimensions and item structures, reflecting varied conceptualizations of SDLR across different contexts and populations. This diversity provides researchers with flexibility in selecting an instrument that aligns with their study objectives and target groups. Additionally, analyzing these instruments offers valuable insights into the key competencies and attributes associated with SDLR, contributing to the advancement of research and practice in fostering SDL among learners.

Frequently Utilized Instruments for Assessing SDLR

Due to the inclusion of two scales in a single article, the scales used to measure SDLR across the 59 articles selected for review have been applied 60 times. Table 9 below presents the top five scales identified as the most frequently used. For each of these scales, the table includes both the frequency of use and the corresponding percentage of the total 60 instances, providing insight into the relative popularity and application of each scale in SDLR assessment.

Table 9

Top Five Most Frequently Used Scales for Measuring SDLR

Scale	Author and Year	Frequency	Percentage
SDLRSNE	(Fisher et al., 2001)	19	31.67
SDLRS	(Guglielmino,1977, as cited in Hoban et al., 2005)	15	25.00
SRSSDL	(Williamson, 2007)	8	13.33
TC-SDLRS	(Cheng et al., 2010)	3	5.00
OCLI	(Oddi, 1986)	3	5.00

Among these scales, the SDLRSNE, developed by Fisher, has been used 19 times, accounting for 31.67% of the total 60 uses. However, the SDLRS by Guglielmino has been used slightly less frequently, with 15 instances (25%). Additionally, the Self-Rating Scale of Self-Directed Learning (SRSSDL) by Williamson appears 8 times (13.33%), while the Cheng and Oddi scales - namely, the Cheng's TC-SDLRS and Oddi's Continuing Learning Inventory (OCLI) - are each used 3 times (5%). This distribution is detailed in Table 9, offering insights into the prevalence of each scale in the selected studies.

Prominent Tools for Measuring SDLR in High-Impact Studies

Following this analysis, the four most-cited papers were selected, and the SDLR measurement tools utilized within each were closely examined to identify patterns in tool usage among highly referenced studies. All-database citation counting was used to ensure comprehensive citation tracking. Observations from this analysis are summarized in Table 10 below.

Table 10

SDLR Measurement Tools in the Top-Cited Studies

Ranking	Scale	Developer	Article Author	Number of citations
1	SRSSDL	(Williamson, 2007)	(Rashid & Asghar, 2016)	368
2	SDLRSNE	(Fisher et al., 2001)	(MFisher & King, 2010)	139
3	SDLSS	(Askin, 2015, as cited in Tekkol & Demirel, 2018)	(Tekkol & Demirel, 2018)	113
4	SDLRS	(Guglielmino,1977, as cited in Hoban et al., 2005)	(Hoban et al., 2005)	96

Table 10 provides an overview of the SDLR measurement tools used in the four most-cited studies, along with details on the developers of each tool, the authors of the articles, and the respective citation counts. The Self-Rating Scale of Self-Directed Learning (SRSSDL), developed by Williamson and cited by Rashid & Asghar (2016), ranks highest with 368 citations, indicating its strong influence and frequent application in SDLR research. Following this, the SDLRSNE, developed (2001) and cited (2010) by Fisher, holds the second-highest citation count with 139 references. The Self-Directed Learning Skills Scale (SDLSS), created by Askin (2015) and utilized in Tekkol & Demirel's study (2008), ranks third with 113 citations. Lastly, the SDLRS by Guglielmino (1977), cited in Hoban et al.'s work (2005), has received 96 citations. This ranking highlights the prominence and impact of these scales within SDLR research.

Contexts of SDLR Measurement in Educational and Professional Domains

Table 11 below presents the findings regarding the various educational and professional contexts in which SDLR has been extensively measured. These contexts span a range of disciplines and settings, reflecting the adaptability and relevance of SDLR assessment across diverse environments. This table

aims to provide a comprehensive overview of the contexts studied, shedding light on the areas where SDLR measurement has been prioritized in the literature.

Table 11

Educational and Professional Contexts for SDLR Measurement Across Studies

Context	Frequency	Percentage
Nursing	24	40.68
Medical	15	25.42
Other Medical Related field	8	13.56
Others	12	20.34

Table 11 illustrates the frequency and percentage distribution of studies measuring SDLR across various educational and professional contexts. Notably, 79.66% of the articles focus on medical-related fields, including nursing, medical, dental, pharmacy, physiotherapy, midwifery, health science undergraduates, veterinary studies, and similar areas. In contrast, only 20.34% of the studies pertain to non-medical fields such as engineering, general undergraduate studies, teachers, librarians, school students, and older adults. This trend suggests that SDLR measurement has been predominantly concentrated in medical and health sciences.

Only one study focused on younger students, employing the SDLTS scale developed by (Timothy et al., 2010)). For high school and college students, just two studies were conducted, using Guglielmino's SDLR scale and the Korean SDLI scale (Suh et al., 2015) respectively. Similarly, only two studies measured SDLR specifically among teaching students, utilizing the SDLRSNE (Fisher et al., 2001) and the SRSSDL (Williamson, 2007). This pattern highlights a notable gap in SDLR measurement within school education settings.

Given that the concept of SDL is relevant even at the school level, increased attention should be directed toward measuring and fostering SDLR among

school students. Strengthening SDLR in early education can lay a strong foundation for cultivating greater autonomy in learning, ultimately enhancing SDLR among university-level students and professionals. It is important to acknowledge that self-direction is not limited to adult learning but is equally applicable and valuable in earlier stages of education (Brockett & Hiemstra, 1991).

At the same time, a specific tool designed for nursing students, the SDLRNSE, has been developed and validated by Fisher et al. (2001, 2010) to measure SDLR within the nursing context. Similarly, several tools have been created to assess the SDLR levels of adult populations, including undergraduate students and professionals. However, a gap exists in measuring SDLR specifically at the school level, as current tools are generally tailored to adults and may not account for the developmental differences in younger students.

Thus, a specific SDLR measurement tool for school-level students is needed, recognizing that they are in a distinct stage of cognitive and social development compared to adults. An age-appropriate tool for school students would facilitate accurate SDLR assessment and provide a basis for interventions to foster SDL habits early, ultimately preparing students for greater autonomy in learning as they progress through their educational journey.

Classification of SDLR Dimensions Across Various Measurement Tools

Table 8 shows that there are a total of 64 dimensions in the 13 SDLR tools identified in this literature. Among these, *Awareness* and *Motivation* appear three times, while *Self-Control*, *Self-Monitoring*, *Self-Management*, *Learning Activities*, *Learning Strategies*, *Learning Motivation*, *Attitudes*, and *Interpersonal Skills* appear twice, resulting in the identification of 52 distinct dimensions. To create a comprehensive and systematic framework, these 52 SDLR dimensions were grouped into eight categorized dimensions, taking into account their respective comparisons and thematic

similarities. This categorization process relied on identifying the core concepts associated with each dimension, grouping them under broad, representative categories.

While examining the questions or components within each of these categorized dimensions, minor thematic variations may arise, reflecting differences in emphasis or perspective across the original tools. Nevertheless, this categorization offers a cohesive and holistic overview of the SDLR dimensions, synthesizing them to provide clarity and accessibility. By offering a consolidated structure, this categorization lays a significant foundation for the development of a new SDLR measurement tool, facilitating a more standardized and comprehensive approach to assessing individuals' readiness for SDL. This refined categorization is presented in Table 12 below, serving as an essential framework in this field of study.

Table 12

Categorization of SDLR Dimensions Across Identified SDLR Scales

Number	Dimension Category	Related Dimensions Grouped Together
1	Motivation	Learner motivation, Learning motivation, Motivation for learning, Motivation, love of learning, Reading Avidity, Desire for learning, Attitudes, Positive orientation to the future, Openness to learning opportunities
2	Collaborative Learning Activities	Learning activities, Active learning, Intentional learning, Continuity of learning activity, Enduring challenges, Learning strategies, Learning methods, learning with others, Effective learner, Effective learning, Availability, Interpersonal skills, Interpersonal communication
3	Knowledge	Ability to use basic study skills and problem-

	construction	solving skills, Utilizing skills, Creativity, Creative learning
4	Self-efficacy	Self-efficacy, Self-efficacy in learning, Self-confidence, Self-concepts
5	Self-Management	Self-management, Self-monitoring, Management of learning process, Ability to be Self-Regulating, Management of learning resources, Making a learning environment, Self-control, Internal attribution, Completing tasks
6	Self-Reflection and Evaluation	Awareness, Learning needs, Evaluating skills, Evaluation, Evaluation of learning outcome
7	Autonomy	Autonomy, Initiative and independence in learning, Independent learning, Informed acceptance of responsibility for their learning
8	Planning	Planning skills, Planning and implementing

The dimensions Learner motivation, Learning motivation, Motivation for learning, Motivation, Love of learning, Reading avidity, Desire for learning, Attitudes, Positive orientation to the future, and Openness to learning opportunities are grouped under "Motivation" due to their shared focus on driving enthusiasm and engagement in learning. These terms reflect various facets of motivation, including intrinsic and extrinsic drives (Motivation for learning, and Learning motivation), affective components (Desire for learning, and Love of learning), and behavioural traits (Reading avidity, and Openness to learning opportunities). Additionally, Attitudes, and Positive orientation to the future highlight beliefs shaping motivational behaviours. Together, they represent a cohesive framework for understanding the role of motivation in SDLR.

The dimensions Learning activities, Active learning, Intentional learning, Continuity of learning activity, Enduring challenges, Learning strategies,

Learning methods, Learning with others, Effective learner, Effective learning, Availability, Interpersonal skills, and Interpersonal communication are categorized under “Collaborative Learning Activities” due to their shared focus on engagement, interaction, and cooperation. These terms highlight purposeful and sustained learning efforts, where collaboration enhances individual and group outcomes. Key aspects include active engagement (Active learning, and Learning strategies), teamwork and interaction (Learning with others, and Interpersonal skills), and perseverance in challenges (Continuity of learning activity, and Enduring challenges). Dimensions such as Effective learning and Interpersonal communication emphasize the role of collaboration in achieving better outcomes, while the dimension, Availability reflects the supportive environment necessary for collaborative efforts. This grouping provides a cohesive framework for understanding the critical role of collaboration in SDLR.

The “Knowledge Construction” dimension captures the skills and approaches essential for actively developing and synthesizing knowledge in SDL. It includes study skills, problem-solving abilities, and creativity, which enable learners to critically engage with content and generate innovative ideas. This dimension emphasizes active processes like synthesizing, organizing, and applying knowledge meaningfully, moving beyond passive learning. As a key aspect of SDL, knowledge construction empowers learners to transform information into actionable understanding, providing a strong framework for assessing readiness to learn independently.

The “Self-Efficacy” dimension encompasses self-efficacy, self-efficacy in learning, self-confidence, and self-concept, all of which contribute to a learner's belief in their ability to achieve academic and personal goals. Self-efficacy refers to the belief in one's ability to succeed in specific tasks, essential for SDLR. High self-efficacy fosters confidence and persistence, key traits for overcoming challenges in independent learning. Self-efficacy in learning focuses on confidence in academic contexts, promoting resilience and adaptability. Self-confidence strengthens the learner’s

capacity for independent study, while self-concept influences their willingness to take on challenges. Together, these elements highlight the psychological resources that empower learners to take responsibility for their learning, fostering autonomy, resilience, and sustained motivation.

The "Self-Management" dimension includes key elements such as self-management, self-monitoring, self-regulation, managing the learning process, and controlling resources. These components form a framework that supports learners in independently planning, organizing, and monitoring their learning activities, essential traits for successful SDL. Self-management involves structuring learning experiences, setting goals, and adjusting strategies to meet objectives. Self-monitoring and self-regulation ensure learners assess and adjust their progress, staying accountable. Managing learning resources and creating a conducive learning environment enhance the conditions for effective learning. Self-control, internal attribution, and task completion further emphasize resilience, discipline, and responsibility in learning. Together, these elements enable learners to take control of their educational journey and succeed in SDL contexts.

The "Self-Reflection and Evaluation" dimension includes key elements such as awareness, identifying learning needs, evaluating skills, evaluation practices, and assessing learning outcomes. These components are vital for learners to assess their understanding, skills, and progress, essential for SDLR. Awareness involves recognizing strengths, weaknesses, and knowledge gaps, encouraging proactive goal-setting and resource-seeking. Evaluating skills and practices enable learners to assess their performance and refine their approaches, promoting critical thinking and reflective practice. Assessing learning outcomes adds a results-oriented element, helping learners evaluate their goals and strategies. This dimension highlights the introspective and analytical skills that allow learners to self-regulate, improve, and enhance their readiness for SDL.

The "Autonomy" dimension encompasses key elements like independence, initiative, and responsibility in learning. It highlights the learner's ability to manage their educational journey, make decisions about their learning path,

and set and achieve goals without heavy reliance on external guidance. Autonomy reflects the capacity to operate independently, take initiative, and engage proactively with learning. Independent learning encourages critical thinking and problem-solving outside traditional instruction, while informed responsibility fosters accountability, goal-setting, and resilience. Together, these elements emphasize SDL, promoting independence, responsibility, and a proactive approach to lifelong education.

The "Planning" dimension focuses on the skills needed to set, organize, and achieve learning goals, which are crucial for SDLR. It involves setting SMART goals, managing time, and anticipating challenges to ensure steady progress. Planning skills enable learners to create clear learning pathways, prioritize tasks, and develop actionable steps. Planning and implementing go hand-in-hand, as effective plans require commitment and action, with continuous progress monitoring and adjustments. This dimension emphasizes accountability, discipline, and adaptability. Overall, "Planning" captures the essential process of setting goals, developing strategies, and following through, empowering learners to manage their educational journey and achieve long-term goals.

The categorized dimensions of SDLR collectively form a comprehensive framework that reflects the multifaceted nature of SDL. "Motivation" fosters intrinsic drive and resilience. "Collaborative Learning Activities" emphasize teamwork and interpersonal skills. "Knowledge Construction" focuses on problem-solving and creativity. "Self-Efficacy" highlights confidence and persistence. "Self-Management" involves organization, resource management, and personal regulation. "Self-Reflection and Evaluation" ensures continuous self-assessment and improvement. "Autonomy" emphasizes independence and responsibility. "Planning" combines goal-setting and execution. Together, these dimensions provide a solid foundation for SDL and future measurement tools.

Conclusion

This SLR offers an in-depth analysis of the measurement scales used to assess SDLR, highlighting these tools' diverse dimensions, attributes, and

historical development. As SDLR becomes increasingly recognized as an essential competency for lifelong learning and professional success, the findings emphasize its growing relevance across various educational and professional contexts.

The study reveals that while developed countries have made substantial contributions to SDLR research, a significant gap exists in studies from developing regions. This geographical imbalance highlights the need for further research in underrepresented areas, as SDLR plays a vital role in diverse educational systems globally. The study also notes an increasing interest in SDLR over the past decade, reflecting its rising importance in fostering adaptive learning skills essential in today's rapidly evolving knowledge economy.

A key aspect of this review is the identification and analysis of prominent SDLR measurement tools, such as the SDLRSNE and the Self-Rating Scale of Self-Directed Learning (SRSSDL), which are widely used across disciplines. However, the study highlights a lack of consensus on a universal SDLR measurement tool, underscoring the need for further refinement and standardization of these instruments to ensure their validity and applicability across various contexts.

Additionally, the review shows a trend toward integrating SDLR measurement tools in disciplines like health education and nursing, where SDLR is particularly critical. However, there is significant potential to extend SDLR research to other fields, such as technology and social sciences, where SDL is equally essential.

Finally, the study identifies 64 SDLR dimensions across 13 measurement tools and classifies them into eight categorized dimensions. This multidimensional framework offers valuable insights for future research to develop more robust, reliable, and context-sensitive SDLR measurement instruments.

In conclusion, this review significantly contributes to the understanding of SDLR measurement tools, offering a comprehensive framework for evaluating SDLR readiness. It sets the stage for future research aimed at standardizing SDLR assessments and expanding their application across

different educational disciplines and global regions, ultimately advancing the field of SDL.

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