International Journal of Research in Engineering and Innovation (IJREI)
Journal home page: https://ijrei.com/

REVIEW PAPER

Understanding the Role of Digital Literacy in Shaping Career Awareness and Employability Among Rural and Urban Youth: A Systematic Literature Review

Madhu Bala Sharma[1, 2], Shashank Goel[3, 4]

[1]*Professor, Department of MBA, Meerut Institute of Engineering and Technology, Meerut*
2Project Investigator, ICSSR Longitudinal Study Project
[3]*Associate Professor, Department of MBA, Meerut Institute of Engineering and Technology, Meerut*
[4]*Project Director, ICSSR Longitudinal Study Project*

Article Information

Received: 21 August 2026
Revised: 29 October 2026
Accepted: 01 November 2026
Available online: 03 November 2026

Keywords:

Digital Literacy
Career Awareness
Employability
Rural Youth
Urban Youth
Digital Divide
Youth Employment
Digital Competencies
Workforce Development

Abstract

The rapid digitalization of economies and societies has transformed the skills required for education, training, and employability. Digital literacy is now essential for accessing, evaluating, creating, and communicating information through digital technologies, thereby enhancing career awareness and employability. This systematic literature review synthesizes published research from 2000 to 2025 on the influence of digital literacy on career guidance and employment readiness among youth in rural and urban settings. The review follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines to ensure transparency and reproducibility. Relevant studies were identified through comprehensive searches of Scopus, Web of Science, Google Scholar, and ERIC using predefined search strings and inclusion and exclusion criteria. The selected studies were analyzed through thematic synthesis to identify major themes, theoretical frameworks, methodological approaches, determinants of digital literacy, and relationships among digital literacy, career awareness, and employability. Findings indicate that digital literacy improves access to career information, supports informed decision-making, strengthens employability skills, and enhances employment opportunities. However, persistent rural–urban disparities in digital infrastructure, connectivity, education, and socioeconomic conditions disproportionately constrain rural youths' career prospects. The review also identifies limited integration of career awareness into digital literacy research and a lack of comparative rural–urban studies, highlighting priorities for future research and inclusive policy development.

2026 ijrei.com. All rights reserved

1. Introduction

In today's fast-changing digital age, technology has revolutionized education, jobs, and job training across the globe. The Fourth Industrial Revolution (Industry 4.0) and the digital economy have created a growing need for digitally competent people to function in education, work, and lifelong learning. Digital literacy is thus no longer merely a technical skill but a basic competency needed to achieve academic success, enter the job market, and develop a career [1, 2]. With the growing trend of organizations embracing digital technologies, employers now require graduates and young professionals to have digital skills alongside critical thinking, communication, collaboration, and problem-solving [3].

Digital literacy is more than just knowing how to use a computer or the Internet. It includes the knowledge, skills, and attitudes needed to access, assess, develop, and share information safely and ethically using digital technologies [1].

Corresponding author: Madhu Bala Sharma
Email Address: madhu.sharma@miet.ac.in
https://doi.org/10.36037/IJREI.2026.10606

The European Commission's Digital Competence Framework (DigComp 2.2) defines digital literacy as comprising information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving [2]. These skills are becoming even more relevant for employability, career decision-making, and youth negotiating the changing labor markets [3].

An important factor that affects successful school-to-work transitions is career awareness. It is a person's awareness of available career opportunities, educational routes, labor market needs, and the skills required for career success. There has been an increase in web-based career information platforms, online learning resources, and professional networking sites, providing better access to career-related information. The use of these resources, however, is largely based on an individual's digital competency, which is one of the facilitators of career awareness and career planning [4].

However, many inequalities in access to digital resources and opportunities remain, even as the World becomes increasingly digital. While the rural–urban digital divide is a formidable issue, its impact on education and employment persists, especially in developing nations, where gaps in internet access, technological infrastructure, education, and digital skills remain. Urban youth are more likely than their rural peers to have the resources needed to learn digital skills and access information on career options, which restricts their ability to pursue employment and improve their socioeconomic status [5]. The inequalities were also brought to light during the COVID-19 pandemic, when the critical need for digital access to education, skills development, and employment became apparent [6].

While numerous studies have examined digital literacy and employability separately, few have examined the linkages between digital literacy and career awareness and/or employability, as well as the rural–urban divide. The current reviews mostly focus on higher education or the workplace, with little evidence regarding youth and regional differences. Thus, a thorough review of the literature is required to grasp the interrelatedness of digital literacy, career awareness, and employability among rural and urban youth.

2. Literature Review

The systematic literature review aims to synthesize studies published from 2000 to 2025 and explore the impact of digital literacy on career awareness and employability among rural and urban youth. The review highlights key research trends, theories, and gaps, and outlines a research agenda to inform inclusive digital education, equitable workforce development, and evidence-based policies.

Table 1 synthesizes the reviewed literature on digital literacy, employability, digital skills, and related workforce development themes. It compares authors, study objectives, methods, sample characteristics, demographic contexts, principal findings, and proposed research directions, providing a structured overview of existing evidence and highlighting areas requiring further empirical investigation and contextual variation.

Table 1: Synthesis of literature on digital literacy, employability, and workforce development.

S. N	Author (Year)	Study Title	Objective	Research Tool/ Method	Sample Size	Demography	Major Findings	Future Scope
1	Gilster, Paul (1997) [7]	Digital Literacy	To define the concept of digital literacy and explain its importance in the information age.	Conceptual book	Not applicable	General digital users	Introduced digital literacy as the ability to understand and use information through digital technologies rather than merely operating computers.	Develop multidimensional digital literacy frameworks incorporating emerging technologies.
2	Ng, Wan (2012) [8]	Can We Teach Digital Natives Digital Literacy?	To examine the dimensions of digital literacy among students.	Survey questionnaire	229 University students	Undergraduate students, Australia	Proposed technical, cognitive, and social-emotional dimensions of digital literacy and emphasized formal instruction.	Compare digital literacy across educational levels and countries.
3	Van Laar, Ester et al. (2017) [3]	The Relation Between 21st Century Skills and Digital Skills	To identify digital competencies influencing employability.	Systematic Literature Review	75 reviewed studies	International literature	Digital literacy significantly enhances critical thinking, collaboration, communication, and employability skills.	Develop standardized digital competency assessment models.
4	Suarta, I. Made et al. (2017) [4]	Employability Skills Required by the 21st Century Workplace	To identify the employability competencies required by employers.	Employer survey	412 employers	Indonesian industries	Communication, teamwork, ICT competence, and problem-solving emerged as essential employability skills.	Longitudinal studies linking employability skills with graduate success.

5	Lent, Robert W. et al. (1994) [9]	Toward a Unifying Social Cognitive Theory of Career and Academic Interest	To develop the Social Cognitive Career Theory (SCCT).	Theoretical framework	Not applicable	Career development literature	Career choice depends upon self-efficacy, outcome expectations, and personal goals.	Validate SCCT across digital learning and employment contexts.
6	Yorke, Mantz (2006) [10]	Employability in Higher Education	To conceptualize employability in higher education.	Conceptual analysis	Not applicable	Higher education sector	Employability encompasses knowledge, skills, personal qualities, and attributes of lifelong learning.	Integrate digital competencies within employability frameworks.
7	van Dijk, Jan (2020) [5]	The Digital Divide	To explain digital inequalities affecting society.	Conceptual synthesis	Not applicable	Global digital users	Digital inequality extends beyond internet access to digital skills, motivation, and effective usage.	Examine rural–urban digital inequality in developing economies.
8	United Nations Educational, Scientific and Cultural Organization (2018) [1]	A Global Framework of Reference on Digital Literacy Skills	To establish a global digital literacy framework.	Framework development	International policy framework	Global education systems	Identified internationally accepted digital literacy competencies supporting SDG 4.	Develop national digital literacy assessment frameworks.
9	Caroline, A. et al. (2025) [11]	A Systematic Literature Review on Digital Literacy, Employability, and Innovative Work Behavior	To synthesize research on digital literacy and employability.	PRISMA-based Systematic Literature Review	37 empirical studies	International	Digital literacy significantly improves employability and innovative work behavior, but standardized measures remain lacking.	Develop context-specific digital literacy measures and longitudinal research.
10	Vuorikari, Riina et al. (2022) [2]	DigComp 2.2: The Digital Competence Framework for Citizens	To update the European digital competence framework.	Framework revision	Not applicable	European citizens	Defined five competency areas and more than 250 examples of digital competence for citizens.	Adapt DigComp for developing countries and rural populations.
11	van Dijk & van Deursen (2014) [12]	Digital Skills: Unlocking the Information Society	To examine how digital skills influence effective technology use.	Mixed methods (survey and conceptual analysis)	1,100+ internet users	Netherlands; adults	Digital skills, rather than mere internet access, determine meaningful participation in the digital society and labor market.	Cross-country comparisons and youth-focused studies.
12	Martin (2006) [13]	A European Framework for Digital Literacy	To develop a comprehensive framework for digital literacy.	Conceptual framework	Not applicable	European education context	Proposed digital literacy as a combination of technical, cognitive, and social competencies.	Empirical validation in developing countries.
13	Tomlinson (2017) [14]	Forms of Graduate Capital and Their Relationship to Graduate Employability	To examine different factors influencing graduate employability.	Survey	1,030 graduates	UK universities	Human, social, cultural, and digital capital collectively improve employability.	Explore digital capital in emerging economies.
14	Helsper (2021) [15]	The Digital Disconnect	To investigate social causes and consequences of digital inequality.	Longitudinal secondary data analysis	National datasets	UK population	Digital inequality is driven by socioeconomic status, education, age, and geographic location rather than access alone.	Study digital inequality among rural youth in developing countries.
15	World Economic Forum (2023) [16]	The Future of Jobs Report 2023	To identify future workforce skills.	Global employer survey	803 organizations	45 countries	Digital literacy, analytical thinking, AI, and lifelong learning are among the fastest-growing skills.	Evaluate curriculum alignment with future labor-market needs.

16	OECD (2021) [17]	The State of Higher Education 2021	To assess higher education readiness.	Comparative policy analysis	OECD member countries	International	Universities must integrate digital literacy and career guidance to improve graduate employability.	Assess policy implementation in developing economies.

3. Research Questions

The following research questions guided the review:

- What are the key themes of research in digital literacy, career awareness, and employability of rural and urban youth?
- What is the role of digital literacy in the career awareness of young people?
- How is digital literacy linked with the employability of the youth?
- What have been the findings of rural–urban disparities in the literature?
- Based on the published studies, what are the research gaps and future research directions?

4. Thematic Analysis

4.1 Digital Literacy

Digital literacy is a twenty-first-century learning skill that is becoming increasingly important for education, work, and everyday life. At first, digital literacy was defined as the skills needed to use computers and to use digital information [7]. The concept has, however, become a poly-dimensional construct that integrates information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving [2]. Digital literacy has been widely recognized as a core competency and essential requirement for academic success, innovation, adaptability, and workforce readiness [3]. In the school context, digitally literate students are more motivated to learn online, have more developed information-processing skills, and have enhanced critical thinking skills [8]. Moreover, digital literacy enables people to function effectively in digital economies, where technological literacy has become a condition of most jobs [17]. Recent research has shown that digital literacy has not only a technical aspect but also cognitive, social, and ethical components [18]. The dimensions affect an individual's capacity to assess information available online, communicate effectively using digital technologies, safeguard personal information, and resolve technology-related problems. The literature also shows that digital literacy is influenced by various contextual factors, such as education, socioeconomic status, access to the Internet, institutional support, and technological infrastructure [5]. Teens who have regular access to digital devices and organized digital learning experiences are more competent in digital skills than those with less exposure to technology [1].

4.2 Career Awareness

Career awareness is the knowledge a person has about career opportunities, career requirements, the educational pathways, labor market expectations, and employment prospects [19]. It is a critical point in the career development process that helps young people make educational and occupational decisions. The process of career awareness starts in adolescence and continues throughout the learning and working lives as career aspirations change in response to changing labor market conditions.

The literature indicates that career awareness has a significant effect on career decision-making, educational decisions, and job outcomes [9]. Pupils at higher levels of career awareness are also more likely to be confident in making choices about their learning programs, in identifying work opportunities, and making career plans that meet the needs of the labor market. On the other hand, low career awareness can lead to poor career choices in education, skill mismatches, and lower employment rates [4].

Career exploration processes have changed with the increasing availability of digital technologies. Access to information on the labor market, professional networks, online career guidance platforms, virtual career fairs, digital mentorship programs, and career information has been expanded [17]. Digital literacy is therefore emerging as an enabling tool for young people to access, analyze, and use career information to make informed decisions efficiently.

Despite these technological developments, reports of significant differences between socioeconomic and geographical groups in career awareness persist. Youth in rural areas often lack access to career counseling sessions, industry contacts, and role models, which are more common in urban areas [6]. These inequalities can also lead to differing educational ambitions and job prospects, thereby highlighting the importance of providing integrated career guidance programs that use digital tools.

4.3 Employability

The concept of employability has emerged as a key one in higher education, employment, and human resource management. Employability is defined by Yorke [10] as the set of achievements, skills, knowledge, and personal attributes that aid an individual's ability to secure and maintain meaningful employment. Similarly, Fugate et al. [20] define employability as a social-psychosocial construct comprising career identity, adaptability, and human capital.

Employability is consistently identified in the literature as a multidimensional construct comprising technical, communication, teamwork, leadership, problem-solving, adaptability, digital, and lifelong learning skills [3], [10]. The skills in demand in today's workplaces are transferable skills that help workers cope with technological changes and organizational innovation.

The competencies required in labor markets have changed significantly due to the digital transformation. In almost every sector, employer demand for digital skills has risen due to the

use of artificial intelligence, automation, cloud computing, and digital communication technologies [17]. Digital literacy has been identified as one of the most significant factors affecting employability, especially for young graduates facing the highly competitive job market.

Several empirical studies show positive correlations between digital competence and employment outcomes, such as increased employment rates, improved job readiness, improved career adaptability, and improved workplace performance [3]. People with high levels of digital competence are more likely to learn continuously, engage in online learning, and meet evolving job demands.

However, there are also reports of persistent employability problems among young people, especially in developing countries, where unequal access to education, technological constraints, and socioeconomic factors limit their ability to access skill development opportunities [21]. This challenges the need for integrated interventions that incorporate employability skills through technology literacy, career guidance, and work-readiness training.

4.4 Rural–Urban Digital Divide

One of the biggest hurdles to a fair society in education and employment is the rural-urban digital divide. The digital divide is not limited to access to the Internet but also encompasses variations in digital infrastructure, digital costs, and skills, technological confidence, and effective use of technology [5]. Because with the shift of education, recruitment, and career development to the digital World, these inequalities have become even more relevant.

It is consistently reported in the literature that urban youth have greater access to broadband connectivity, digital devices, educational technologies, and structured digital learning environments than rural youth [17]. Higher digital competence and career readiness in urban educational institutions may be achieved through enhanced technological infrastructure, increased institutional investment, and broader industry collaborations.

Rural youth, on the other hand, often face multiple challenges, such as poor internet connectivity, limited availability of digital devices, weak technological infrastructure, and limited availability of digital skills training opportunities [6]. These structural disadvantages narrow opportunities to access online education, digital career guidance, professional networking platforms, and employment information, thereby exacerbating inequalities in the education and labor markets.

This COVID-19 pandemic further emphasized the impact of the rural–urban digital divide. Students in rural areas faced significant disruptions to their education and engagement with digital learning environments in both remote learning and online recruitment settings due to limited access to technology [6]. These gaps have persisted as factors determining educational attainment, awareness of career paths, and employment.

Increasingly, scholars have suggested that coordinated policy action by governments, educational institutions, industry, and local communities is needed to tackle the rural–urban digital divide [5]. Infrastructure investment, internet connection pricing, teacher training, development of digital skills, and career guidance programs are seen as key elements in enabling inclusive digital transformation. Addressing these disparities will not only enhance rural youth's digital literacy and skills but also boost their awareness of opportunities in digital technology, engage them in the workforce, and foster their socioeconomic growth.

4.5 Digital Literacy and Career Awareness

With the increasing digitalization of education systems and workplaces, digital literacy and career awareness have become a growing focus of research. Career awareness is a person's understanding of career opportunities, occupational needs, required education, and labor market expectations that inform career decision-making [19]. To increase this awareness, digital literacy empowers youth to conduct and assess the search, interpretation, and use of information related to career options through digital communication platforms [1].

These studies all suggest that digitally literate youth are more likely to engage in career exploration activities, attend online career guidance programs, access online internships, and use online career networking tools such as LinkedIn and online job portals [17]. Digital technologies have given students access to a wider range of career counseling services that are no longer confined to schools, providing immediate access to the labor market and occupational information, as well as knowledge and understanding of industry sectors, regardless of location. As such, digital literacy helps to make informed decisions about education, enhances career planning, and enables self-assured career management.

There are also a couple of studies indicating that digital literacy contributes to career self-efficacy by enhancing people's confidence in digital employment ecosystems [9]. Young people with high-level digital skills can create digital resumes, take online tests, hold virtual interviews, and communicate effectively online, better prepared to meet those requirements. These skills are essential in making them more competitive in today's tech-driven job search environment.

However, the literature indicates that having digital access to career resources does not necessarily translate into effective career awareness. Socioeconomic status, institutional support, parents' education, and parents' digital competence play important roles in shaping the impact of digital career guidance for young people [5]. Even with improved Internet connectivity, disparities in the availability of structured career counseling programs for young people in rural communities persist. It means that digital literacy needs to be supported by well-designed career education programs and institutional support systems to maximize its role in career awareness.

In conclusion, the literature reviewed indicates that digital literacy is an enabling tool that helps youth access knowledge and information related to their occupational future, establish their occupational aspirations, and successfully transition from education to employment. However, further investigation of contextual influences on this relationship across a variety of educational and socioeconomic contexts is warranted.

4.6 Digital Literacy and Employability

One of the themes that emerged from the literature reviewed is the association between digital literacy and employability, a topic that has been widely researched. Employers' demand for digitally competent graduates who can embrace new technology in the workplace has grown rapidly due to developments in Industry 4.0 and digital transformation [3]. As a result, digital literacy is now a key employability skill in almost every field of employment. The reviewed studies all find a positive correlation between digital literacy and employment outcomes. People with greater digital skills have better problem-solving, communication, adaptability, and lifelong learning capacity [10]. In the employment context, and especially in career continuity, these skills can help people respond to technological innovations and organizational change, thereby enhancing their working lives. Multiple empirical studies suggest that digital literacy is a skill that contributes to employability in several ways. First, digital competence is a key driver of access to online learning opportunities, enabling the development of skills and the continuous upskilling of professionals [17]. Second, digital literacy opens opportunities for employment on online job boards and professional networking platforms, as well as in digital entrepreneurship programs. Third, digital competence enhances workplace productivity by enabling staff to use digital communication tools, collaborative software, and data-driven decision-making processes effectively.

Additionally, the increasing use of artificial intelligence, automation, cloud computing, and digital platforms in organizational processes is emphasized. As a result, the World Economic Forum [16] has identified digital competence as one of the four key employability skills (along with communication, teamwork, and creativity) that are becoming more relevant for the current job market. The lack of digital competencies among graduates can hinder their ability to succeed in the workplace today, as the World increasingly relies on technology. Individuals who have not acquired digital competencies are at risk of not making the grade for job opportunities in the modern working World.

Although there is a positive correlation between digital literacy and employability, some of the studies examined highlight that digital competence alone is not sufficient to guarantee successful employment outcomes. While many factors impact the construct of employability, these can be further subdivided into four components: education, career awareness, work experience, and interpersonal skills, as well as the labor market [20]. Hence, many researchers have recommended integrated approaches to employability that combine digital literacy, career counseling, experiential learning, industry engagement, and entrepreneurship education. The learning analyzed and reviewed shows that digital literacy is now an essential skill for work, not just a technological skill. As labor markets become increasingly digital, the incorporation of digital competence development into curricula should be encouraged in educational institutions, and the career readiness program should be reinforced to enhance the employability of graduates.

5. Policy Perspectives

The results of this systematic literature review can have major implications for educational institutions, policymakers, governments, and industry stakeholders seeking to enhance youth employability and reduce digital inequalities. The literature reviewed overwhelmingly argues that digital literacy should be seen as a strategic national capability that impacts academic outcomes, economic competitiveness, labor market productivity, and sustainable development [1].

Investment in digital infrastructure, particularly in rural and underserved communities, is one of the key policy recommendations emerging from the literature. While the number of countries with broadband networks has grown over the last 10 years, access to the Internet, its cost, and its technological accessibility remain unequal and disadvantage rural youth [5]. Public funding and public-private partnerships are crucial to improving digital infrastructure as a key step towards equitable access to digital education and employment opportunities. Digital literacy should also be incorporated into all levels of formal education as part of educational policies. Digital competence is not a subject in its own right but rather a set of skills that should be integrated into the teaching of other subjects in the curriculum, encouraging critical thinking, creativity, collaboration, the ethical use of technology, and problem-solving [2]. This would allow students to acquire transferable skills that will be in demand in the labor market in the future. The other important policy implication is career guidance services. The literature shows that a digital literacy program is most effective when based on a structured career counseling program, labor market information systems, mentorship programs, and engaging with industry engagement programs. Therefore, educational institutions should create online career centers with virtual internships, career assessment tools, professional networking, and online counseling services to help students make informed career decisions. The studies also highlight the need for greater cooperation among governments, universities, industries, and civil society organizations to create inclusive programs for digital skill development. Internships, apprenticeships, project-based learning, and programs for professional certification are other ways to make the curriculum more relevant to industry, provided they are adapted to the changing needs of the workforce [16]. The initiatives are especially vital for rural educational institutions, which may lack direct access to industry networks.

Lastly, policy measures need to address, in particular, rural youth, women, economically disadvantaged communities, and marginalized groups that are strongly impacted by digital exclusion. These digital literacy initiatives, which can be tailored to the needs of rural communities and include user-friendly internet access, community-based digital learning facilities, and locally based career counseling, can help close the rural/urban divide and encourage workers to participate in the labor market. In total, these policy views point to the need for a multidimensional approach to digital literacy development that requires investment in technological infrastructure, educational reform, career development services, and a multisectoral approach.

6. Critical observations

- The studies summarized in Table 1 collectively trace the evolution of digital literacy from a foundational concept to a strategic employability competence. Digital literacy was first introduced by Gilster [7] and later expanded by Ng [8], while UNESCO [1] defines it as the ability to engage confidently, critically, and responsibly with digital technologies. Building on this foundation, Van Laar et al. [3], Suarta et al. [4], and Vuorikari et al. [2] developed multidimensional competency frameworks spanning information literacy, communication, content creation, safety, and problem-solving, while Martin [13] proposed an earlier European framework along similar lines. Across these studies, digital literacy is consistently framed as a multidimensional phenomenon extending beyond mere internet access to encompass differences in skills, usage, and institutional support, as shown by van Dijk [5], van Dijk and van Deursen [12], and Helsper [15].
- The literature also establishes clear theoretical and practical links between digital competence and career outcomes. Lent et al. [9] and Yorke [10] provide the theoretical grounding connecting digital and employability skills to career development, while Tomlinson [14] demonstrates the positive contribution of digital capital to graduates' employability alongside human and social capital. Policy-oriented reports from the OECD [17] and the World Economic Forum [16] reinforce that digital literacy is a prerequisite skill across professions, calling on educational institutions to embed digital and career-oriented skills into curricula. Most recently, Caroline et al. [11] confirm a positive relationship between digital literacy, employability, and innovative work behavior, while noting the continued absence of a consistent, generic measure of digital literacy in business and HRM contexts.
- Taken together, this body of literature supports the central conclusion of the review: digital literacy is a strategic competence that strengthens career awareness and employability, though its conceptualization and measurement remain inconsistent. Rural–urban disparities emerge as a recurring theme, with van Dijk [5] and van Dijk and van Deursen [12] showing that the digital divide extends well beyond internet access to differences in skills, usage, and institutional support. Further research using longitudinal, comparative, and policy evaluation methods is needed to deepen understanding of how digital inclusion programs can help create equitable employment opportunities for youth.

7. Research Gaps

The review results indicate that, despite the significant increase in research on digital literacy, career awareness, and employability over the last two decades, there are still a few conceptual, methodological, and contextual gaps that need to be addressed.

- Limited research examines career awareness as a mediator or moderator between digital literacy and employability, since it is typically treated as a standalone learning goal rather than part of the digital-competencies continuum [4].
- Few studies explicitly compare digital literacy, career awareness, and employability across rural and urban youth; most focus on urban or technologically advanced institutions, limiting generalizability to marginalized and rural populations [5].
- Digital literacy is conceptualized and measured inconsistently across frameworks such as DigComp 2.2 (2022) [2] and UNESCO's Digital Literacy Global Framework (2018) [1], with no uniform method for comparing or synthesizing findings.
- Most studies rely on cross-sectional survey designs, with few longitudinal or qualitative/mixed-method studies exploring how digital competence shapes career development over time and context.
- Emerging technologies such as AI, virtual reality, learning analytics, blockchain credentials, and online career platforms remain underexplored in relation to youth career decision-making and employability.
- Policy-oriented research is limited, with few studies examining national digital inclusion programs, public–private partnerships, or government skill-development initiatives, underscoring the need for integrated, evidence-based policy across education, technology, and labor markets.

8. Future Research Agenda

From the identified research gap, some prospective directions for future investigations emerge.

- Integrated theoretical models are needed that link digital literacy, career awareness, and employability with factors such as socioeconomic status, geographical location, institutional support, and technological accessibility, for a more holistic view of youth career development.
- Comparative studies across rural and urban areas, countries, and educational systems would clarify the contextual factors shaping digital competence and workforce readiness, and inform policy relevant to a global context.
- Longitudinal studies are needed to track the long-term career effects of digital literacy developed in school and higher education, including its impact on employment stability, lifelong learning, and workforce advancement, providing stronger evidence of causality than current cross-sectional designs.
- Future research should examine how emerging technologies, such as AI, machine learning, virtual reality, digital badges, micro-credentials, and intelligent career guidance systems, reinforce career awareness and employability as education and labor markets digitalize further.
- Greater use of qualitative, mixed-methods, and participatory approaches, such as interviews, focus groups, ethnography, and case studies, would offer deeper insight into rural youth's lived experiences and

institutional barriers to digital inclusion than quantitative methods alone.

- Policymakers and researchers should evaluate national and regional digital-inclusion, career-guidance, and employability initiatives, such as digital literacy campaigns, community technology centers, skill-development missions, and school-to-work transition programs, to generate practical evidence for policy.

9. Proposed Conceptual Framework

Based on the synthesis of the reviewed literature, a conceptual framework for developing digital literacy and its relationship with career awareness, employability, and rural–urban contextual factors is proposed shown in Fig. 1.

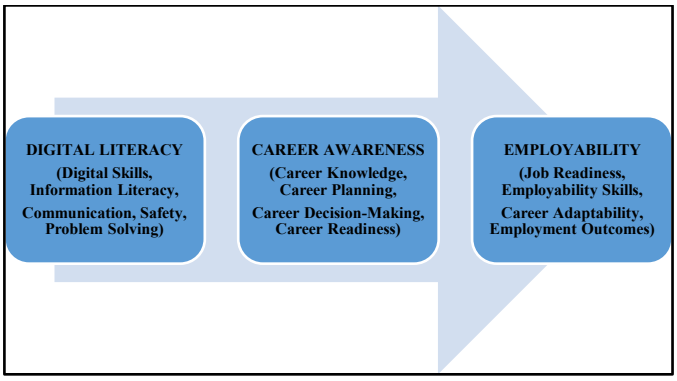


Figure 1: Conceptual framework for developing digital literacy and its relationship

The moderating effects of Internet Accessibility, Digital Infrastructure, Socioeconomic Status, Educational Opportunities, Institutional Support, and Government Policies on the relationships among the three core constructs, examining how these contextual and structural factors influence, strengthen, or weaken the interactions and overall outcomes among the constructs.

The framework proposed here posits that digital literacy is the primary enabling factor affecting career awareness, which in turn affects employability. The concept of career awareness is viewed as a mediating process between digital competencies and career planning and employment readiness. At the same time, the relationships are framed by rural–urban contextual factors and shape access to digital resources, educational opportunities, institutional support, and labor market information. The framework combines ideas, theories, and concepts from Human Capital Theory, Digital Divide Theory, and Social Cognitive Career Theory, providing a solid foundation for future empirical research.

10. Conclusion

This systematic literature review aimed to compile literature published from 2000 to 2025 to understand the impact of digital literacy on career exploration and employability of both rural and urban youth. The review shows that digital literacy is no longer merely a technology skill but a core skill that can enhance learning, job and career exploration, employment, and lifelong learning. The results are generally positive and show a strong correlation among digital skills, career awareness, and employability, positioning digital skills as a key factor in the success of youth in the labor market in today's digital society.

While there have been notable advances, significant gaps in equitable access to digital infrastructure, education, career information, and employment opportunities persist between rural and urban areas. Digital exclusion disproportionately impacts rural youth, limiting their access to digital skills and capacity to contribute to today's labor markets. Therefore, holistic approaches are necessary to enhance the employability of youth, which must address and support digital literacy, career orientation, education and training, technological infrastructure, and institutional capacity.

The review also identifies significant theoretical and methodological gaps in the current literature, such as a lack of consistency in conceptualizing digital literacy, a lack of comparative studies, inadequate longitudinal studies, and the absence of a proper evaluation of policy interventions. Solving these challenges is an important opportunity for future scholarship.

In conclusion, the overall findings and implications of this review enhance the existing literature by synthesizing findings from various disciplines related to education, management, information systems, and workforce development, to provide a comprehensive perspective on digital literacy, career awareness, and employability. The proposed conceptual framework and research agenda provide useful guidance for researchers, educational institutions, policymakers, and industry on addressing digital inequalities and enhancing youth workforce readiness. Inclusive digital education and equitable access to career development through digital channels can help societies prepare rural and urban youth for a digital, knowledge-based economy.

References

[1] N. W. Y. Law, D. J. Woo, J. de la Torre, and K. W. G. Wong, "A global framework of reference on digital literacy skills for indicator 4.4.2," UNESCO Institute for Statistics, Montreal, QC, Canada, Information Paper No. 51 (UIS/2018/ICT/IP/51), 2018.

[2] R. Vuorikari, S. Kluzer, and Y. Punie, *DigComp 2.2: The Digital Competence Framework for Citizens – With New Examples of Knowledge, Skills and Attitudes*, EUR 31006 EN. Luxembourg: Publications Office of the European Union, 2022, doi: 10.2760/115376.

[3] E. van Laar, A. J. A. M. van Deursen, J. A. G. M. van Dijk, and J. de Haan, "The relation between 21st-century skills and digital skills: A systematic literature review," *Computers in Human Behavior*, vol. 72, pp. 577–588, 2017, doi: 10.1016/j.chb.2017.03.010.

[4] I. M. Suarta, I. K. Suwintana, I. G. P. F. P. Sudhana, and N. K. D. Hariyanti, "Employability skills required by the 21st century workplace: A literature review of labor market demand," in *Proc. Int. Conf. Technology and Vocational Teachers (ICTVT 2017)*, Yogyakarta, Indonesia, 2017, pp. 337–342, doi: 10.2991/ictvt-17.2017.58.

[5] J. van Dijk, *The Digital Divide*. Cambridge, U.K.: Polity Press, 2020.

[6] International Commission on the Futures of Education, *Reimagining Our Futures Together: A New Social Contract for Education*. Paris, France: UNESCO, 2021. [Online]. Available: https://unesdoc.unesco.org/ark:/48223/pf0000379707

[7] P. Gilster, *Digital Literacy*. New York, NY, USA: John Wiley & Sons, 1997.

[8] W. Ng, "Can we teach digital natives digital literacy?," *Computers & Education*, vol. 59, no. 3, pp. 1065–1078, 2012, doi: 10.1016/j.compedu.2012.04.016.

[9] R. W. Lent, S. D. Brown, and G. Hackett, "Toward a unifying social cognitive theory of career and academic interest, choice, and performance," *Journal of Vocational Behavior*, vol. 45, no. 1, pp. 79–122, 1994, doi: 10.1006/jvbe.1994.1027.

[10] M. Yorke, *Employability in Higher Education: What It Is – What It Is Not* (Learning and Employability Series One). York, U.K.: Higher Education Academy, 2006.

[11] A. Caroline, M. J. H. Coun, A. Gunawan, and J. Stoffers, "A systematic literature review on digital literacy, employability, and innovative work behavior: Emphasizing the contextual approaches in HRM research," *Frontiers in Psychology*, vol. 15, Art. no. 1448555, 2025, doi: 10.3389/fpsyg.2024.1448555.

[12] J. A. G. M. van Dijk and A. J. A. M. van Deursen, *Digital Skills: Unlocking the Information Society*. New York, NY, USA: Palgrave Macmillan, 2014, doi: 10.1057/9781137437037.

[13] A. Martin, "A European framework for digital literacy," *Digital Kompetanse: Nordic Journal of Digital Literacy*, vol. 1, no. 2, pp. 151–161, 2006, doi: 10.18261/ISSN1891-943X-2006-02-06.

[14] M. Tomlinson, "Forms of graduate capital and their relationship to graduate employability," *Education + Training*, vol. 59, no. 4, pp. 338–352, 2017, doi: 10.1108/ET-05-2016-0090.

[15] E. J. Helsper, *The Digital Disconnect: The Social Causes and Consequences of Digital Inequalities*. London, U.K.: SAGE Publications, 2021.

[16] World Economic Forum, "The future of jobs report 2023," World Economic Forum, Geneva, Switzerland, 2023. [Online]. Available: https://www.weforum.org/publications/the-future-of-jobs-report-2023/

[17] OECD, *Education at a Glance 2021: OECD Indicators*. Paris, France: OECD Publishing, 2021, doi: 10.1787/b35a14e5-en.

[18] Y. Eshet, "Thinking in the digital era: A revised model for digital literacy," *Issues in Informing Science and Information Technology*, vol. 9, pp. 267–276, 2012, doi: 10.28945/1621.

[19] D. E. Super, "A life-span, life-space approach to career development," in *Career Choice and Development: Applying Contemporary Theories to Practice*, 2nd ed., D. Brown and L. Brooks, Eds. San Francisco, CA, USA: Jossey-Bass, 1990, pp. 197–261.

[20] M. Fugate, A. J. Kinicki, and B. E. Ashforth, "Employability: A psycho-social construct, its dimensions, and applications," *Journal of Vocational Behavior*, vol. 65, no. 1, pp. 14–38, 2004, doi: 10.1016/j.jvb.2003.10.005.

[21] International Labour Organization, *Global Employment Trends for Youth 2022: Investing in Transforming Futures for Young People*. Geneva, Switzerland: ILO, 2022, doi: 10.54394/QSMU1809.

Cite this article as: Madhu Bala Sharma, Shashank Goel, Understanding the Role of Digital Literacy in Shaping Career Awareness and Employability Among Rural and Urban Youth: A Systematic Literature Review, International Journal of Research in Engineering and Innovation, 10 (6), (2026), 318-326. https://doi.org/10.36037/IJREI.2026.10606.