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Artificial Intelligence and Information Literacy in Turkey: A Content and Bibliometric Analysis from 2005 to 2025

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Abstract

Information and artificial intelligence literacy has emerged as a fundamental skill essential for individuals across all age levels in society. The purpose of this study is to promote awareness of information literacy and artificial intelligence literacy, as well as to examine how artificial and information literacy has changed over the last two decades. For this reason, the Turkish Council of Higher Education National Thesis Centre was searched for information literacy and artificial intelligence literacy concepts. This study employed bibliometric and content analytic methodologies to investigate developments in information literacy and artificial intelligence within higher education research from 2005 to 2025. Analysis is done on the 20-year evolution of artificial intelligence and information literacy. Research indicates that the demand for and interest in data, information, and artificial intelligence literacy have grown dramatically over time. The research's findings from the bibliometric and content analysis give an overview of the literature on information, data, and artificial intelligence literacy, highlighting the most pertinent theses, departments, research methodologies, and popular keywords. This paper advocates for a holistic methodology for investigating literacy, information, artificial intelligence, and data literacy. This study articulates essential support and a guiding framework for research on information, data, and artificial intelligence literacy.

Keywords: information literacy, artificial intelligence, artificial intelligence literacy, communication studies, new communication technologies, Türkiye.

1. Introduction

Information literacy is requisite for continuous learning in the contemporary digital environment. It is applicable to all academic fields, disciplines, learning environments, and educational levels (Pinto et al., 2019). Information literacy has evolved as a vital skill necessary for persons across all age levels in society. The idea of digital information literacy has gained prominence along with the advancement of communication technology and the sharp rise in the quantity of digital communication instruments. Information literacy is the main dimension of artificial intelligence literacy. The idea of information literacy (IL) has generated a great deal of debate about its meaning and consequences for students and librarians in a constantly evolving information environment since it first entered the professional conversation in the 1970s (Tewell, 2015: 25). Bothma and Fourie (Bothma and Fourie, 2025), clarified that requests for information literacy to be addressed at all societal levels and settings have been made for many years. Paul Zurkowski coined the term "information literacy" in his 1974 report to the National Commission on Libraries and Information Science (Chen et al., 2021: 48). Paul Zurkowski (Zurkowski, 1974), emphasize that information is not knowledge; rather, it is thoughts or ideas that enter a person's

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field of perception, are assessed, and are internalized, so altering that person's perception of reality and their capacity for action. Zurkowski has revealed information literacy is the ability or perception of people. According to the 1989 Final Report of the American Library Association Presidential Committee on Information Literacy, which defined IL as follows, information literacy necessitates the ability to identify when information is needed and to effectively use, set out, and evaluate the necessary information (Chen et al., 2021: 48).

Information literacy is a crucial dimension of societal development and transformation. It helps people find, comprehend, and employ information in a world that is always changing (Hanif and Hassan, 2025: 1). Information literacy is the skills to use, manage, evaluate, and communicate information of individuals. Both the skill to conduct effective information searches and the capacity to assess information using suitable standards are components of information literacy (Chura-Quispe et al., 2025: 4). Information literacy encompass understanding the need for information in order to locate, assess, and effectively utilize it (Perez et al., 2025: 8). Information literacy classified into four different dimensions as information search, information management, information evaluation and information communication (Chura-Quispe et al., 2025: 4). IL assists students, educators, medical professionals, engineers, attorneys, jurists, lawmakers, researchers, administrative personnel, schoolchildren, entrepreneurs, industrial laborers, and individuals in achieving excellence in their respective domains (Kolle, 2017: 283).

1. Information search: An essential component of information literacy pertains to the methods individuals employ to search for, access, and pick the most pertinent information (Chura-Quispe et al., 2025: 4).

2. Information management: Understanding and using technologies like software, academic text processing systems, spreadsheets, databases, and information storage are all part of information management (Chura-Quispe et al., 2025: 4).

3. Information evaluation: Information literacy means for the ability to assess information, including digital communication. The process of information analysis requires the verification of its authenticity and originality (Adams, 2025: 123).

4. Information communication: Information communication defines appropriate involvement in virtual environments, using Internet tools to communicate and spread knowledge while participating in networks or groups related to academics and extracurricular activities (Chura-Quispe et al., 2025: 4).

Artificial intelligence literacy is one of the ideas that has emerged with the advancement of artificial intelligence. The term "AI literacy" was first established by Burgsteiner et al. (Burgsteiner et al., 2016), , who outline the competencies required to understand essential knowledge and concepts related to AI (Su et al., 2023: 2). According to Burgsteiner et al. (Burgsteiner et al., 2016), literacy in AI/computer science will become a significant problem in the future, much like traditional literacy, which covers writing, reading, and math. Additionally, they stress that students who possess AI literacy are also well-prepared for their future careers and further university coursework. The importance of artificial intelligence (AI) literacy is growing in a world where algorithms frequently determine what we see, hear, and learn. Children utilize AI recommendations to choose what to watch, ask Siri or Alexa for help with their arithmetic assignments, and use online path planning algorithms to find their way to friends' homes (Van Brummelen et al., 2021: 15655). AI literacy encompasses elucidating the operational mechanisms of AI technologies, their societal impact, employing them ethically and responsibly, and effectively collaborating and communicating in many contexts. It focuses on knowledge and abilities (Chiu et al., 2024: 4). Long and Magerko (Long, Magerko, 2020) define AI literacy is a set of abilities that enable people to evaluate AI technology judicially interact and work with AI effectively and use AI as a tool in home, professional and online contexts. AI literacy comprises a set of guidelines for developing educational interventions that enhance users' understanding of generative AI, enabling them to engage effectively, responsibly, and critically (Zhang, Magerko, 2025: 3).

2. Materials and methods

This study aims to explain and examine how we can use and develop information literacy and artificial intelligence literacy concepts and skills in Türkiye by investigating graduate theses. In accordance with this main purpose, this study looks into the following research questions:

Research Question 1: Which literacy concepts were subjected to the research?

Research Question 2: What are the used keywords in graduate theses?

Research Question 3: What is the distribution of graduate theses according to years?

Research Question 4: What are the type of thesis in graduate theses?

Research Question 5: What are applied research methods in graduate theses?

Research Question 6: What is the distribution of graduate theses according to universities?

Research Question 7: How are graduate theses distributed in terms of public or foundation university rates?

Research Question 8: What is the distribution of graduate theses according to the department?

This study is carried out on information and artificial intelligence literacy graduate theses and dissertations in the Turkish Council of Higher Education National Thesis Center between January 1, 2005, and June 1, 2025, in Türkiye. In this study, the patterns of graduate theses, types of theses, used methods, areas of research, types of respondents, university preferences, and sampling are presented. It is applied as a content analysis method by analyzing graduate theses. A detailed and developed search at the Turkish Council of Higher Education National Thesis Center is conducted for the digital literacy keyword (Turkish Council of Higher Education National Thesis Center, 2025). This study has two stages: information literacy and artificial intelligence literature review and an analysis of information literacy-based graduate theses in the Turkish Council of Higher Education National Thesis Center. This study is limited to the topic of information and artificial intelligence literacy and examines graduate information and artificial intelligence literacy theses and dissertations.

Using keywords associated with "information literacy, artificial intelligence literacy, digital information literacy, data literacy, and social media information literacy," this study gathered data from the Turkish Council of Higher Education National Thesis Center database between January 1, 2005, and June 1, 2025. This produced a total of 96 theses. After an exhaustive analysis between 2005-2025 year, 96 theses were selected to work with, based on the following inclusion and exclusion criteria:

The following are the criteria for inclusion:

- English and Turkish language;
- Only information, digital information, data, media and information, social media information and artificial intelligence literacy theses;
- Allowed theses;
- Studies published from 2005 to 2025 (June).

Concerning the criteria for exclusion:

- Other literacy theses were not considered.

This study employed bibliometric and content analytic methodologies to investigate developments in information literacy and artificial intelligence within higher education research from 2005 to 2025. Content analysis define as a research method drawing reproducible and accurate conclusions and implications from texts to their contexts of use (Krippendorff, 2018). Bibliometric analysis is a systematic examination of scientific literature aimed at identifying patterns, trends, and impact within a specific topic. Bibliometric methodology employs quantitative techniques, including author analysis, citation analysis, and keyword analysis, to examine bibliometric data (Passas, 2024). Ali et al. (Ali et al., 2023) contend that the bibliometric study facilitated researchers in acquiring deeper insights into the chosen issue and aided in identifying the factors employed in research support services within academic libraries.

3. Discussion

The consequences, significance, and outcomes of information literacy, as well as its use and the relationship between information literacy and artificial intelligence literacy, are assessed in this section based on a review of the research and its applicability to various cultures, institutions, individuals, and age groups. In order to stay relevant in the digital age and life-long learning in society, information literacy is critical value. Asif and Naveed (Asif, Naveed, 2025) explained the importance of information literacy in terms of life-long learning and creativity in the digital information society. According to the study's findings, creativity and lifelong learning are positively impacted by information literacy. In that vein, it is thought that information literacy and especially recently artificial intelligence literacy are crucial for digital citizenship and digital attendance. Trixa and Kaspar (Trixa, Kaspar, 2024) articulated that the transition switching from conventional media to online resources to find information was one noteworthy discovery.

Ng et al. (Ng et al., 2021) assert that artificial intelligence is evolving into an essential competency for all individuals, not solely for computer scientists. We should incorporate artificial intelligence (AI) into all students' twenty-first-century technology literacy in the workplace and in daily life, in addition to reading, writing, math, and digital skills. Bloom's taxonomy states that AI literacy encompasses core competencies for understanding, applying, evaluating, and creating AI. A complementary domain known as productive AI literacy arises along with AI literacy. Zhang and Magerko (Zhang, Magerko, 2025) argue that the current literature on "generative AI literacy" is sparse but expanding. Examples of generative AI literacy include four dimensions: knowledge, application, evaluation, and ethics. Pinto and Segura (Pinto, Segura, 2025) discuss mobile information literacy and divide it into three categories: connectivity, mobile devices, and mobile technology. In contrast to traditional media, social media necessitates new information management abilities, such as accessing and locating pertinent material as well as creating customized social media newsfeeds, according to Heiss et al. (Heiss et al., 2023). Thus, they claim that social media information literacy is necessary.

According to Guerola-Navarro's (Guerola-Navarro, 2023) study, the data generally indicate that there is more interest in information literacy than media literacy as a factor for citizen participation. Kavut (Kavut, 2024) asserts that in the contemporary digital world, digital literacy is an essential ability for all, and the significance of this issue is escalating in Türkiye. Merga and Roni (Merga, Roni, 2025) assert that the increasing volume of digital information in online environments necessitates a redefinition of information literacy, characterizing an information literate student as one who acknowledges the importance of information and can efficiently and ethically seek, access, process, and utilize it. Stieglitz et al. (Stieglitz, 2024: 15) assert that swiftly advancing AI technologies are revolutionizing the communication habits of societies, companies, and people. They highlight that AI literacy is a crucial pillar for managing these changes, for those speaking on behalf of companies as well as their stakeholders. Shiri (Shiri, 2024) suggested a taxonomy of AI literacy following a comprehensive evaluation of AI taxonomies, literature on AI literacy, previous research on data, information, and digital literacy, and an examination of metadata records from AI literacy publications.

Whitfield and Yang (Whitfield, Yang, 2025) examine four GENAI chatbots: the two types of ChatGPT, Microsoft Copilot, and Google Gemini. They declared that, based on research from Rider University, Google's Gemini is the most effective GENAI chatbot. Chaudhuri and Terrones (Chaudhuri, Terrones, 2025) state that as California State University students' use of AI tools advances, the current information literacy program will need to be substantially redesigned. They point out that when it comes to established norms and regulations governing students' usage of this new technology, artificial intelligence in higher education has not yet found equilibrium. Using the Web of Science, IEEE Xplore, SCOPUS and ERIC databases, Biagini (Biagini, 2025) investigates AI literacy and the revolutionary effects of AI in various sectors. The study emphasizes the necessity of interdisciplinary cooperation in the creation of AI literacy initiatives. To learn how to encourage AI competency and literacy in K–12 education, Zhou et al. (Zhou et al., 2025) examines 47 publications from Scopus, ProQuest, and Web of Science. The analysis made clear that self-reflection and emotional components should be included in the current concept of AI literacy. Media and information literacy require the ability to judiciously evaluate information, as Haider and Sundin (Haider, Sundin, 2022) point out. Agency and trust are two elements that are emphasized in the analysis.

Lao et al. (Lao et al., 2025) investigate how young people interact with deepfakes and provide data on media information literacy practices from two angles: how young people understand "deepfake" and how they interact with deepfake content in their daily lives. Peciuliauskiene (Peciuliauskiene, 2025) investigates the relationship between novice instructors' digital self-efficacy in information literacy education and several facets of information literacy. They found that information assessment and processing skills are major factors that influence digital self-efficacy in information literacy instruction. Zhan and Yan (Zhan, Yan, 2025) examine implications of ChatGPT feedback and student feedback literacy. The findings reveal that GENAI is regarded as a panacea for student feedback literacy. Feedback is considered a crucial component in higher education teaching and learning. Akakpo (Akakpo, 2024) articulates that information literacy teaching must encompass digital topics within university libraries. Thus, information literacy and digital, data, and artificial intelligence literacy are related each other. Before students start writing their dissertations, they should receive information literacy instruction at the beginning of their

university studies. Guidelines for students' use of generative AI tools should be suggested by university libraries. Uribe-Tirado and Machin-Mastromatteo (Akak Uribe-Tirado, Machin-Mastromatteo, 2024) assert that the examination of the Latin America's information literacy history, present, and future culminates in the conclusion that, despite its extensive history both regionally and globally, this conceptualization and practice is increasingly significant, necessitating appropriate updates and integration with other forms of literacy.

4. Results

This part delineates the findings of the content and bibliometric analysis, encompassing the total publication count, temporal distribution, keyword allocation, departmental affiliations, university classifications, research methodologies, subject domains, and graduate theses pertaining to artificial intelligence, data, and information literacy.

Table 1. Distribution of graduate theses according to technology based literacy concepts

Concepts	N	%
Information literacy	84	88
Digital information literacy	0	0
Social media information literacy	0	0
Media and information literacy	0	0
Artificial intelligence literacy	7	7
Data literacy	5	5
Total	96	100

Table 1 shows that a total of 96 graduate theses on technology-based-literacy associated concepts were examined, in Turkish Council of Higher Education National Thesis Center databases. It was found that information literacy made up 88 % of the research, followed by artificial intelligence literacy (7 %) and data literacy (5 %). None of the research terms "digital information literacy," "social media information literacy," or "media and information literacy" were found. In other words, Table 1 indicates that the majority of research focuses on information literacy (88 %), whereas artificial intelligence literacy constitutes 7 %. Additionally, just 5 % of the studies was determined to be about data literacy.

Table 2. Distribution of graduate theses according to years

Thesis Year	N	%
2025	3	3
2024	7	7
2023	7	7
2022	16	17
2021	7	7
2020	6	6
2019	20	21
2018	5	5
2017	6	6
2016	3	3
2015	4	4
2014	2	2
2013	3	3
2012	2	2
2011	2	2
2010	0	0
2009	0	0
2008	2	2
2007	1	6
2006	0	0
2005	0	0
Total	96	100

Postgraduate theses from 2005 to 2025 were scanned using the information literacy, data literacy, artificial intelligence literacy, social media information literacy, and digital information literacy concepts however, no thesis from 2010 or earlier was found excluding few studies in 2007 and 2008 years. We concluded that 2019 saw the majority of these writings.

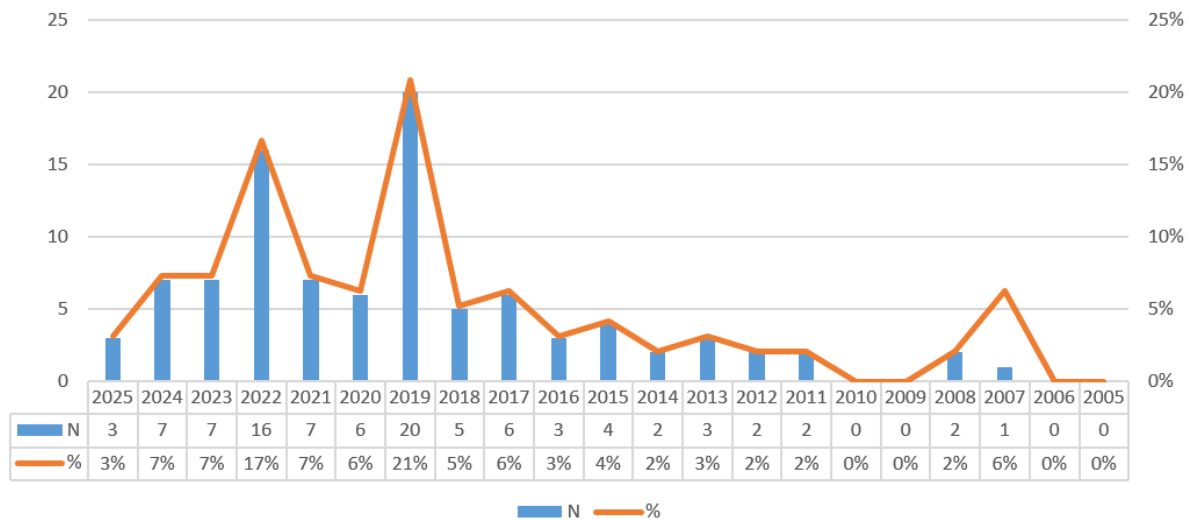


Fig. 1. Distribution of data, information, and AI literacy studies across a 20-year period

Figure 1 illustrates how the notion of literacy gained prominence in Türkiye's higher education after 2011 and spread widely after 2019. Information literacy studies were noticed in 2011, while data and artificial intelligence literacy issues gained prominence in 2023 and the years that followed. Prior to 2010, there were no studies on information, data, or artificial intelligence literacy excluding few studies in 2007 and 2008 years.

Table 3. Distribution of graduate theses according to keywords

Keywords	N	%
Information	7	4
Information literacy	61	35
Science literacy	2	1
Data literacy	2	1
Evaluation literacy	1	1
Information literacy	2	1
Geography literacy	1	1
Artificial intelligence literacy	6	3
Technology literacy	6	3
Digital literacy	4	2
Computer literacy	2	1
Science literacy	6	3
Financial literacy	1	1
Critical literacy	1	1
Media literacy	10	6
Environmental literacy	1	1
Health literacy	2	1
Awareness	3	2
Education	5	3
Information utilization	1	1
Information literacy education	28	16
Critical thinking	3	2
Technology adaptation	1	1
Self-learning	1	1
Life-long learning	4	2
Disinformation	1	1
Skill training	1	1
Technology utilization	6	3

Keywords	N	%
Artificial intelligence	5	3
Virtual literacy	1	1
Life skills	1	1
Total	176	100

Based on the keyword analysis of the graduate theses, the frequently used terms fall into three categories: information literacy, information literacy education, and media literacy. Various forms of literacy, including scientific, geographic, environmental, critical, financial and health literacy, were also examined as a result of the investigation.

Table 4. Distribution of theses according to types

Type of Thesis	N	%
Master's Degree	76	79
PhD	20	21
Total	96	100

When the theses were classified according to their type, 76 master's and 20 doctorate theses were found. In particular, the number of technology-based theses, such as data literacy and artificial intelligence literacy, has increased in the last few years, indicating that the majority of theses are master's theses.

Table 5. Distribution of theses according to department

Department	N	%
Computer and Instructional Technologies	13	14
Education Technology	1	1
Information and Document Management	19	20
Lifelong Learning	1	1
Turkish and Social Sciences Education	4	4
International Relations	1	1
Education Programmes and Teaching	2	2
Mathematics and Science Education	6	6
Education Management and Supervision	2	2
Physical Education and Sports Education	3	3
English Language Education	3	3
Fine Arts Education	1	1
Psychology	1	1
Virtual Communication Design	1	1
Education Science	9	9
Philosophy and Religious Sciences	1	1
International Relations and Political Science	1	1
Education Management	1	1
Strategy Science	2	2
Public Health	1	1
Radio Television and Cinema	2	2
Internet and Information Technologies Management	1	1
Primary education	6	6
Business	1	1
Social Studies and Turkish Education	2	2
Interior Architecture	1	1
Distance Education	1	1
Public Relations and Publicity	2	2
Nursing	2	2
Sociology	1	1
Business Management	1	1
Management Information Systems	1	1
Preschool Education	1	1
Finance	1	1
Total	96	100

Upon departmental analysis of the theses, it was shown that the departments with the highest volume of theses were Information and Document Management, Computer and Instructional Technologies, and Education Sciences.

Table 6. Distribution of theses according to universities

University	Master's Degree N	%	PhD N	%
Abant İzzet Baysal	1	1	1	5
Adnan Menderes			1	5
Afyon Kocatepe	2	3		
Anadolu	1	1	1	1
Ankara	1	1		
Ankara Yıldırım Beyazıt	1	50		
Atatürk	3	4		
Bahçesehir	2	3	1	5
Bartın	1	1		
Baskent	2	3		
Beykent	1	1		
Binali Yıldırım	1	1		
Çankırı Karatekin	8	11		
Dokuz Eylül	1	1		
Ege	1	1		
Eskişehir Osmangazi	1	1		
Fırat	3	4	1	5
Galatasaray	1	1		
Gazi	3	4	6	30
Gebze Teknik	2	3		
Hacettepe	5	7	5	25
Harran	1	1		
Hasan Kalyoncu	1	1	1	5
İğdir	1	1		
İnönü	1	1		
İstanbul			1	5
İstanbul Bilim	1	1		
İstanbul Medeniyet	1	1		
Kafkas	1	1		
Karadeniz Teknik	1	1		
Kastamonu	1	1	1	5
Kırıkkale	1	1		
Koc	1	1		
Maltepe	1	1		
Marmara	8	11	1	5
Muğla Sıtkı Kocman	1	1		
Mus Alparaslan	1	1		
Necmettin Erbakan	4	5		
Niğde Ömer Halisdemir	2	3		
Recep Tayyip Erdoğan	1	1		
Sakarya	1	1		
Selçuk	1	1		
Siirt	1	1		
Süleyman Demirel	1	1		
Uludağ	1	1		
Zonguldak Bülent Ecevit	1	1		
Total	76	100	20	100

Table 6 displays the distribution of master's theses and PhD dissertations throughout Turkish universities. The table indicates that Marmara and Çankırı Karatekin University possesses the most master's theses in information, data, and artificial intelligence literacy, whereas Gazi University has the most doctorate theses. The universities with the highest number of theses produced were Çankırı Karatekin, Gazi, Hacettepe, and Marmara universities.

Table 7. Distribution of theses according to research methods

Research method	N	%
Qualitative	16	17
Quantitative	58	60
Mixed	22	23
Total	96	100

The distribution of the examined theses according to research methodologies is displayed in [Table 7](#). Experimentation and bibliometric analysis are also included; however, 60 % of the studies are quantitative in nature. Twenty-three percent of the studies use mixed methodologies, and 17 percent use qualitative research. The quantity of mixed-method theses, integrating qualitative and quantitative research methodologies, has been consistently increasing.

Table 8. Distribution of theses according to type of university

Type of University	N	%
Public University	85	89
Foundation University	11	11
Total	96	100

The data depicted in [Table 8](#) reveals the distribution of postgraduate theses on information, data, and artificial intelligence literacy in Türkiye by foundation and public university distribution. Eighty-nine percent of the studies are from public universities, and eleven percent are from foundation universities.

5. Conclusion

This study encapsulates the subjects, themes, keywords, and methodologies, along with the dissemination and evolution of issues over time in Turkey regarding information literacy, artificial intelligence literacy, data literacy, and other literacy studies. This study employed bibliometric and content analytic methodologies to investigate developments in information literacy and artificial intelligence within higher education research from 2005 to 2025. Analysis is done on the 20-year evolution of artificial intelligence, and information literacy. Research indicates that the demand for and interest in data, information, and artificial intelligence literacy have grown dramatically over time. Although there were none from 2005 to 2010 excluding few studies in 2007 and 2008 years, it was noted that after 2011, the number of studies progressively rose. Seven pieces of research on artificial intelligence literacy were found to be from 2023–2025. Three methodologies were identified in the selected graduate theses from this systematic evaluation of artificial intelligence and information literacy in higher education: 58 used a quantitative technique, 16 used a qualitative approach, and 22 were combined. Because both contribute to studies on people's digital competences, it is advised that future research on artificial intelligence, data, and information literacy employ both a quantitative and a qualitative approach.

It is examined in national and international literature. According to current studies, information literacy's importance and need for information literacy, data literacy and artificial intelligence literacy have gained momentum. In the twenty-first century, being information literate is essential. The significance of information literacy has long been recognized by the renowned management expert Peter Drucker. "You have to take responsibility for information because it is your primary tool in today's organization," he said ([Karisiddappa et al., 2020: 109](#)). Thorpe's ([Thorpe, 2025](#)) study aimed to assess Australian information literacy research and practice from 1974 to 2024. According to the data from this study, information literacy has never been a static notion; rather, it has changed and is still used in a variety of contexts and circumstances. Fernández-Otoya et al. ([Fernandez-Otoya et al., 2024](#)) assert that a direct correlation exists between digital competency and information literacy. They also underlined that information and digital literacy are ongoing and long-run processes. According to Madunic and Sovulj ([Madunic, Sovulj, 2024](#)), the findings of two potential applications of ChatGPT in higher education information literacy instruction are presented. First, a technique for creating written instructional materials with ChatGPT's help has been described, showing how the model can be applied

successfully. Second, a small-scale custom AI chatbot has been developed and tested to serve as an extra teaching tool.

The research's findings from the bibliometric and content analysis give an overview of the literature on information, data, and artificial intelligence literacy, highlighting the most pertinent theses, departments, research methodologies, and popular keywords. Future research should look into how information literacy and artificial intelligence literacy principles have been applied in fields of study other than higher education, such as high school, primary, and pre-school. This study articulates essential support and a guiding framework for research on information, data, and artificial intelligence literacy. It can also help researchers who want to study information literacy, data literacy, lifelong learning, and artificial intelligence technology for future research. This study is valuable for evaluating and indicating higher education trends in information literacy, data literacy, and artificial intelligence literacy.

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