

Learning Sciences for Higher Education

Chao-Chen Chen · Mei-Ling Wang ·
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Information Literacy Education of Higher Education in Asian Countries

 Springer

Learning Sciences for Higher Education

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Chapter 1

Information Literacy in the Digital Age



Chao-Chen Chen

1.1 Introduction

Information literacy is a fundamental literacy of contemporary people. Information literacy is more critical today than ever in the digital age, where everyone can publish information and share their views through social media. The COVID-19 pandemic started in the year 2020. As the infectious disease came on strong, the entire population lapsed in anxiety with much false information, profoundly impacting library services, librarians, and users. The 2021 State of America's Libraries Report explicitly focused on the challenges and opportunities presented by COVID-19. The report highlighted that librarians combat disinformation by creating resources to address misinformation about vaccines, the census, and elections in 2020. In 2020, the American Library Association (ALA) also partnered with libraries and the media literacy field to publish *Media Literacy in the Library: A Guide for Library Practitioners* to help familiarize librarians with relevant practices. From June to July 2021, the International Federation of Library Associations and Institutions (IFLA) surveyed library leaders worldwide and asked them to identify the trends that would significantly impact the library industry in the next decade. IFLA then compiled 20 critical trends from these surveys and published the *IFLA Trend Report 2021 Update* in January 2022. Some of these 20 trends involve changes in the political and social landscape, while others are more focused on the library sector. Among them, the 18th trend says, "information literacy recognized." Governments and other agencies fully recognized the importance of information literacy and considered it a long-term measure to combat misinformation (International Federation of Library Associations and Institutions [IFLA], 2022).

Since information literacy was introduced in 1974, messages and information have exploded with fast Internet and digital technology changes. Learning trends

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have also changed as we need to solve more complex problems. In the past, we rely on publishers and librarians to filter available information, which no longer exists. Nowadays, learners must access and evaluate information. Hence, information literacy has been emphasized. However, the connotation, conceptual orientation, and teaching methods for information literacy have also changed in response to the needs of the times. Moreover, new literacy terms have been introduced. This article focuses on information literacy in the digital age from four perspectives: 1. learning trends in the digital age; 2. the rise of related literacy; 3. changes in the philosophy of information literacy education; and 4. the changes in information literacy standards and teaching.

1.2 Learning Trends in the Digital Age

Information literacy education is closely related to learning trends; social development affects learning trends, and learning trends affect information literacy education. In the digital age, our world is changing rapidly. The half-life of skills is quickly reduced; hence, the days of career-long employment are gone. In the face of a rapidly changing society, students shall be equipped with open-minded, self-adjusting, continuous learning traits. Under such fast-paced momentum, we've seen the following significant changes in the learning trends.

1. Hybrid and online learning. Influenced by COVID-19, distance learning is now the norm. More people are discovering the benefits of doing and learning “anywhere.” The consumers’ desire for online and remote options continues. As university leaders plan to enhance resources and infrastructure to support new hybrid and online programs and courses, they must also develop robust hybrid and online teaching methods and invest in instructional design and faculty professional development. In addition, universities must be prepared to train and support students to effectively engage and take full advantage of the new learning environment (EDUCAUSE, 2022).
2. Changed roles in teaching and learning. Under the trend of literacy-oriented and student-centered learning, teachers are learning facilitators in addition to being content deliverers. Learning modes change from “teachers imparting knowledge to students” to “teachers guiding students to learn actively.”
3. The key to talent cultivation is competencies. Competencies are essential to the future and a trend in the world. Education in advanced countries was reformed in this direction, focusing more on cultivating students’ abilities rather than limiting them to little classroom knowledge. In response to the trends, the Organisation for Economic Co-operation and Development (OECD) outlined an education framework for 2030, covering three main domains, knowledge, skills, and attitudes & values, which appeared to be independent. However, they are intertwined into “competencies” and then translated into actions (OECD, 2018).

4. Lifelong learning systems. Learners enter various fields that may or may not be related to their educational background after leaving school. Hence, learning should be a continuous process throughout our lives. Open learning resources, MOOCs, and distance learning have become popular. Adding Stanford's vision of an Open Loop University, all of which suggest that future university will be a highly flexible lifelong learning environment where students can return to campus at any time to meet the needs of their careers, with no limits on where they can begin or end their studies.
5. Humanology and techquity: The International Society for Technology in Education (ISTE) presented two new concepts, humanology, and techquity, at its 2022 annual conference. While technology will shape the future, it is humanology that will determine how technology will change how we learn, work, and live. In addition to learning technology, we must also study and strengthen "human capacity" in education to bring out the unique skills of human beings. That is, we enable the next generation with judgment, vision, wisdom, resilience, and fortitude to make the world a better place for people, now and in the future. When discussing equality in education, we often mention the inequality of educational opportunities in urban and rural areas, among ethnicities, new immigrants, and the gap between the rich and the poor. But the distance learning brought up by COVID-19 has made people recognize the impact of the digital divide. Techquity is more of an issue that will affect the equity of educational opportunities in the future.

Education in Asian countries has always been examination-based. The Education Commission in Hong Kong described education in Asian countries in 2020 as "School life is often extremely monotonous. Students are not provided with a comprehensive learning experience or opportunities to think, explore, and create." The Chinese National Education Commission lamented in 1997 that examination-oriented education had undermined students' (learning) motivation and enthusiasm, inhibited their creativity, and hindered their overall development. Therefore many countries have undertaken large-scale educational reforms (Zhao, 2018). These efforts have met with varying degrees of success, demonstrating that Asian countries actively try to change traditional education modes. In Taiwan, for example, the general guideline in the Curriculum Guidelines of 12-Year Basic Education takes on "achieving nurture by nature and continuous learning" as its vision, emphasizing the concept of spontaneous, interactive, and seeking the common good to cultivate core competencies, "independent action," "communicating and interacting," and "social participation." There are basic presumptions for education, such as the learner is a subject who actively constructs knowledge; the contextualization of knowledge facilitates learning; implementation, experience, and integration can go deeper in understanding. (Ministry of Education, 2014). To allow students' independent learning, Taiwan has lowered the credits for graduation at the high school level, reduced the required credits, and increased the elective credits. Students shall be learning "core competencies" and not be confined to a narrow range of dead knowledge.

Future education focuses on competencies and student-centered learning and emphasizes independent development, problem-solving, and responsibility. Teachers mainly guide students on “how to read,” “how to learn,” and problem-solving-oriented 4C skills, namely critical thinking and problem-solving, effective communication, collaboration & building, and creativity & innovation.

1.3 The Rise of Related Literacy

Information literacy was coined by Paul G. Zurkowski (1974) when he was president of the Information Industry Association. He presented a report, “The Information Service Environment Relationships and Priorities,” to the National Commission on Libraries and Information Science. In his statement, he referred to information literacy as new terminology, which creates a new method of understanding the demands in the Information Age. He also mentioned, “Information is not knowledge; it is a concept or idea that enters an individual’s perception and an ability to evaluate, assimilate, enhance, or change an individual’s reality and/or actions. Just as beauty is in the eye of the beholder, so is information in the user’s mind.”

In 1989, the ALA defined information literacy as “being able to recognize when information is needed and locate, evaluate, and use the needed information effectively” (ALA, 1989). In 1994, McClure considered dividing information literacy into four competencies due to the diversity of information and the different ways of application and emphasis: 1. traditional literacy, the ability to read, write, and calculate; 2. media literacy, the ability to understand non-print media; 3. computer literacy, the ability to use computer hardware and software; and 4. network literacy, the ability to apply and evaluate Internet resources. In response to the changing times, the 2015 Framework for Information Literacy for Higher Education from the Association of College and Research Libraries (ACRL) redefined information literacy as “Information literacy is the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in learning communities” (ACRL, 2015).

The Framework for Information Literacy for Higher Education makes metaliteracy its core concept. In addition, other literacies have been proposed in different contexts, such as academic literacy, new literacy, digital literacy, media literacy, multiliteracy, metaliteracy, and media and information literacy (MIL). Secker and Coonan (2013) from the University of Cambridge, UK, explained the relationship between information literacy and other literacies by information literacy landscape where the literacies relevant to information literacy include information literacy, academic literacy, new literacy, digital literacy, and media literacy. In addition to the five relevant literacies mentioned by Secker and Coonan, the New London Group proposed multiliteracy in 2009, and United Nations Educational, Scientific and Cultural Organization (UNESCO) proposed MIL in 2015. Though related to information literacy, each of these terms has its characteristics. The following is

a detailed explanation of the meaning of these literacies and their relationship to information literacy.

1.3.1 Academic Literacy

Academic literacy is the ability to handle academic language required at the higher education level. The reading and writing skills needed for academic literacy often vary according to context, culture, and genre. Lea and Street (2006) argued that academic literacy was initially developed for reading and writing skills in college. But the concept of academic literacy applies to K-12 education as well. Language for dealing with academics begins at an early age. Australian scientist Bill Green (1988) thought of academic literacy in three dimensions: 1. operational skills, the ability to speak (especially write); 2. cultural literacy, the understanding of discourse or culture (the ability to communicate in the specific language of the professionals); and 3. critical literacy, the understanding of how knowledge is created and interpreted (e.g., the ability to understand the meaning of a newspaper or scientific article). Daminova et al. (2017) identified more specific academic skills corresponding to the above three dimensions of academic literacy: academic reading, the ability to search, evaluate, and analyze information; academic listening, the ability to understand lectures and oral presentations and summarize the main ideas; academic speaking, the ability to give a structured and effective representation; and academic writing, the ability to promote hypotheses, draw conclusions, and organize and structure texts. These four competencies are interrelated and indispensable to academic literacy.

1.3.2 New Literacy

New literacy is a new field of study that differs from traditional literacies to address the needs of the Internet and other information and communication technology developments. The emergence of new media and multimedia, such as text messaging, wikis, blogs, social networks, video sites, audio sites, and email, has expanded and changed our ability to communicate through the Internet, where people combine text, sound, and images. Thus, reading and learning online requires the ability to read, navigate, find, criticize, evaluate, synthesize, and communicate (Miners & Pascopella, 2007). The National Council of Teachers of English (NCTE) defines new literacy for the twenty-first century as (National Council of Teachers of English [NCTE], 2013)

1. Use technology tools proficiently and fluently.
2. Create meaningful cross-cultural connections to collaborate on problem proposing and solving and strengthen independent thinking.
3. Design and share global community information for a variety of purposes.
4. Manage, analyze, and integrate multiple simultaneous information flows.

5. Create, criticize, analyze, and evaluate multimedia texts.
6. Be aware of the ethical responsibilities required by these complex environments.

Since many of the skills in the new literacy are related to the proper use of information technology, it is essential to provide regular instruction and practice on how to use the technology platform. As for the ability to identify and construct questions, it is required to guide the following competencies, how to read online information, how to determine the knowledge necessary for the information, how to evaluate online information critically, how to read and integrate various sources of information and multimedia, and how to share information and communicate with others in a group (Nicholson & Galguera, 2013).

1.3.3 Digital Literacy

Digital literacy refers to the knowledge and skills needed to live, learn, and work in a society where digital technologies such as online platforms, social media, and mobile devices are used to communicate and access more information. The ALA Digital Literacy Taskforce defined digital literacy as the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring cognitive and technological skills (ALA Digital Literacy Taskforce, 2011). Specifically, the context of digital literacy is the Internet, and the main competencies required for digital literacy are

1. Critical thinking skills. Developing critical thinking skills is essential when facing different forms of information. Searching, filtering, evaluating, applying, and producing information require critical thinking.
2. Ability to communicate in the virtual world. Another critical aspect of digital communication literacy is communicating in a virtual environment, expressing yourself clearly, asking relevant questions, maintaining respect, and building trust, which is just as important as speaking in person in the physical world.
3. Practical skills in using technology include accessing, managing, manipulating, and creating information ethically and sustainably. As new applications emerge and are updated, digital literacy becomes a continuous learning process.

1.3.4 Media Literacy and MIL

Although McClure (1994) considered media literacy as one of the information literacy competencies, with all kinds of information flooding the Internet, false information has become a new problem. Hence, modern people must equip with media literacy. Media literacy emphasizes the understanding and use of audiovisual media, how images, text, and sound media are produced, and the ability to use media messages to convey and communicate, which are essential components

of civic literacy and civic education in modern society. A media literacy-equipped citizen can use print and electronic media to interpret, evaluate, analyze, and produce information (McClure, 1994).

In their book, *Culture and Environment: the Training of Critical Awareness*, the concept of “media literacy” was first introduced in the 1930s by British scholars F. R. Leavis and Denys Thompson. The most commonly cited definition in the English literature is the one proposed by the Aspen Media Literacy Leadership Institute (AML) in 1992: “Media literacy is the ability to access, analyze, evaluate and create media in various forms.” In addition, the Center for Media Literacy (CML) also defined “media literacy” in 1992, referring to people’s ability to select, understand, question, evaluate, create and produce, and respond thoughtfully when confronted with various media information (Nkana, 2010). Canada was the first country in North America to teach media literacy in the required curriculum. According to the Ontario Ministry of Education, media literacy is defined as helping students understand the nature of mass media, the technologies used in media, and how media technologies influence and shape the informed and critical understanding of the public (Ministry of Education, 2006; Wilson & Duncan, 2009).

Due to the proliferation of false information, UNESCO has introduced the term MIL to recognize the importance of choosing and evaluating media and news. MIL is an overarching concept that includes three competencies: information literacy, media literacy, and ICT/digital literacy. MIL is often confused with digital citizenship, which requires the ability to critically evaluate media, digital technology, tools, and information. MIL is how we think (critically) about all the media around us, while digital citizenship is how we live and interact with all the technology around us. Media, like technology, has many different forms and can be integrated into one form. Information literacy is understanding the need for information and finding, evaluating, and using it effectively to solve problems. In contrast, media literacy is the ability to access, evaluate, process, and produce media in all forms. Digital literacy refers to the skills needed to live, learn, and work in a society where digital technologies such as online platforms, social media, and mobile devices are used to communicate and access more information.

Addressing disinformation and misinformation requires critical information, media, and digital competencies. UNESCO (2021) and partners have launched a new resource, “Media and Information Literate Citizens: Think critically, Click Wisely,” as a MIL demonstration course for educators and learners. In addition, UNESCO (2013) published the Global MIL Assessment Framework to assess whether countries have created an environment for MIL so that member countries can conduct comprehensive assessments of their information and media environments and test the level of MIL of their citizens, particularly in-service teachers and teacher trainees, at regional and national levels.

1.3.5 Multiliteracy

The term, Multiliteracy, refers to two aspects of language use. The first refers to the disparity of language meanings in different cultural, social, or domain-specific contexts (Cope & Kalantzis, 2020). This means that it is no longer sufficient to focus on linguistic rules alone in literacy education; nowadays, communication and expression of meaning increasingly require learners to understand the differences in the meaning of words in different contexts. These differences result from culture, gender, life experience, social or subject area, etc. There are cross-cultural attributes in every meaningful exchange. The second aspect originated from emerging information and communication technologies and the nature of media, which has led to increasing diversity in the way meaning is generated, and information is presented, namely the interaction of written language modes with verbal, visual, auditory, gestural, tactile, and spatial modes (Cope & Kalantzis, 2020). This means that we need to expand the scope of literacy education by introducing multimodal representations, especially digital media representations, into the classroom. Information technology changes the way people communicate. In addition to reading and writing skills, people must learn to use various information communication tools and online social media to perform their daily tasks. Such diverse information processing and communication skills include critical literacy, media literacy, internet literacy, visual literacy, digital literacy, and learning literacy.

1.3.6 Metaliteracy

Metaliteracy is a new model of literacy proposed by Thomas P. Mackey and Trudi E. Jacobson (2011). Metaliteracy refers to students' reflections on their competencies. Metaliteracy, as defined by Mackey and Jacobson, is a term developed to understand the need for digital citizens to reflect on their literacy through the four domains of affective, behavioral, cognitive, and metacognitive in global network culture, providing a comprehensive framework for effective participation in social media and online communities (Mackey & Jacobson, 2014).

Metaliteracy requires students to participate in the information ecosystem in terms of behavioral, affective, cognitive, and metacognitive. It opens up a new vision of information literacy by providing a comprehensive set of competencies that students need to participate successfully in a collaborative field as information consumers and creators. Based on the core concept of metaliteracy, ACRL's Information Literacy Framework emphasizes metacognitive or critical self-reflection, as it is essential for greater autonomy in a rapidly changing ecosystem (ACRL, 2015). Metaliteracy is also empowerment because it encourages individuals to reflect on and take responsibility for their learning. As a metaliteracy learner, one needs to be able to use information in multiple formats, including print, audio, digital, virtual, or augmented resources, to think critically about the processes, concepts, production, and reception

of information, to successfully adapt to new forms of technology, and to produce and share information in creative and ethical ways.

The definitions and connotations of the literacies mentioned above are summarized in Table 1.1 to compare their relationship with information literacy.

Table 1.1 Definition of related literacy and its relationship with information literacy

Terminology	Definition	Relationship with information literacy
Information literacy	Information literacy is a comprehensive set of competencies that include finding information, understanding its value and how it is generated, having critical self-reflection, creating new knowledge, and applying the information to participate and learn in communities ethically	With the development of the times, the connotation and concept of information literacy are constantly expanding and deepening
Academic literacy	Academic literacy is considered to be the ability required to handle academic language	Academic literacy emphasizes the listening, speaking, reading, and writing skills required in an educational environment and is a foundational skill of information literacy
New literacy	The ability required for reading and learning online, read, navigate, find, criticize, evaluate, synthesize, and communicate	New literacy is mainly for the online environment, while information literacy is for both the physical and online environments
Digital literacy	Digital literacy refers to the skills needed to live, learn, and work in a society where digital technologies such as online platforms, social media, and mobile devices are used to communicate and access more information	Digital literacy focuses on the online environment with an emphasis on the use of technology
Media literacy MIL	Media literacy refers to people’s ability to select, understand, question, evaluate, create, produce, and speculate when faced with various media information MIL, developed by UNESCO, refers to how we think critically about all the media around us. The three main areas of competence are information literacy, media literacy, and ICT/ digital literacy	While information literacy focuses on the peer-reviewed academic environment, media literacy focuses on the general information of mass communication. But there is an overlap in the competencies required MIL covers a broader range of topics, especially the ability to think critically about and evaluate online digital media messages and disinformation

(continued)