

Digital Literacy Education Practices and Implications of the White Rose University Consortium Libraries in the UK: Postprint

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Abstract

[目的/意义] To investigate and analyze the core components, training frameworks, and pedagogical approaches of digital literacy cultivation in the libraries of the UK's White Rose University Consortium, with the aim of providing references for information literacy and digital literacy education in domestic university libraries. [方法/过程] An online survey was conducted on digital literacy training programs at the libraries of the University of York, University of Leeds, and University of Sheffield—constituent members of the White Rose University Consortium. Combined with collected first-hand materials, this study summarizes and synthesizes the core components, training frameworks, and pedagogical approaches of their digital literacy initiatives targeted at student populations. [结果/结论] The training frameworks of the White Rose University Consortium libraries exhibit a spiral progression characteristic; they provide hierarchical and personalized training modalities for users. All three libraries have elevated digital literacy cultivation to a strategic priority, delineating pathways for users to integrate into digital environments and enhance digital literacy competencies, while providing guiding frameworks for libraries to implement and advance digital literacy initiatives.

Full Text

Digital Literacy Training Practices and Insights from the White Rose University Consortium Libraries in the UK

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Abstract

[Purpose/Significance] This paper investigates and analyzes the core components, training systems, and instructional methods for digital literacy development in the libraries of the UK White Rose University Consortium, aiming to provide reference for domestic university libraries in their information and digital literacy education initiatives. **[Method/Process]** Through online surveys of the digital literacy programs at the University of York Library, University of Leeds Library, and University of Sheffield Library—members of the White Rose University Consortium—and supplemented with firsthand materials, this study summarizes the core components, training systems, and delivery methods employed for student digital literacy development. **[Result/Conclusion]** The training systems in these libraries exhibit a spiral progression characteristic, offering hierarchical and personalized instructional approaches. All three libraries have elevated digital literacy education to a strategic priority, providing clear direction for users to integrate into the digital environment and enhance their digital skills, while also establishing guidance for libraries to implement and advance digital literacy initiatives.

Keywords: information literacy; digital literacy; university library; White Rose University Consortium

1. Introduction

Information literacy was first proposed in 1974 by P. Zurkowski, then chairman of the US Information Industry Association, who defined it as “the ability to use a variety of information tools and primary information sources to solve problems.” This concept gained widespread dissemination and adoption upon its introduction. The American Library Association (ALA) further developed the concept in 1989, explicitly stating that “to be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information” [1]. C.S. Doyle argued that an information literate person recognizes that accurate and complete information is the foundation for sound decision-making, can identify information needs, formulate questions based on those needs, identify potential information sources, develop successful search strategies, retrieve information from computer-based and other sources, evaluate information, organize it for practical application, integrate new information into existing knowledge systems, and use information in critical thinking and problem-solving processes [2].

In the 1990s, with the popularization of personal computers and the global spread of the internet, humanity entered the internet age, witnessing the rise of the “Google generation” and “digital natives.” Information DNA became embedded in the living environment of the general public, making digital lifestyles an inseparable part of everyday life. However, this digital environment also created “digital divides” and information disorientation due to lack of necessary

competencies. In response, P. Gilster proposed the concept of “digital literacy” in 1997, defining it as “the ability to understand and use various digital resources and information displayed through computers” and as “the literacy of the digital age.”

The IFLA Information Literacy Satellite Meeting noted that information literacy and lifelong learning are undergoing a transformation, with digital information from Web 2.0, mobile technologies, and new media posing new requirements for information literacy. In 2012, ALA defined digital literacy as the ability to use information and communication technologies to retrieve, understand, evaluate, create, and communicate digital information, a process requiring both cognitive and technical skills [3]. The UK’s Joint Information Systems Committee (JISC) views digital literacy as the capacity individuals need to survive, learn, and work in a digital society, including the ability to use digital tools for academic research, report writing, and critical thinking [4]. Wikipedia defines digital literacy as the ability to effectively and critically use various digital technologies to navigate, evaluate, and create information. From these various definitions, we can identify core keywords: digital technology, retrieval, evaluation, and creation. In essence, digital literacy extends beyond information literacy, not limited to information retrieval and usage skills but emphasizing essential attributes for digital citizens in the information age. It focuses on developing users’ abilities to communicate, produce, share, and disseminate information using digital technologies, with particular emphasis on cultivating innovation and critical thinking skills.

As important institutions for digital literacy development, universities and their libraries have actively engaged in research and educational practice. In 2011, twelve UK universities including Cardiff University, University of Reading, and University of Bath, funded by JISC, launched a series of digital literacy projects in British higher education [5]. The Open University Library established a digital literacy development framework and created the “Being Digital” digital literacy service [6]. Cornell University Library clarified the definition and components of digital literacy, providing online resources such as student research guides, academic integrity guidelines, technology trends, and digital literacy FAQs [7]. While foreign university libraries have made significant progress in digital literacy practice, domestic university libraries remain in an exploratory stage. Most have not clearly distinguished between information literacy and digital literacy, lack dedicated digital literacy curricula, and continue to follow traditional information literacy frameworks that no longer meet contemporary demands.

The White Rose University Consortium, established in 1997, comprises the University of York, University of Leeds, and University of Sheffield—all world-class research universities ranked among the top 100 globally, renowned for their teaching quality and research excellence. As Fu Ping noted, the quality of a university library reflects the overall quality of the university, from resource development and librarian competencies to partnerships in teaching and research

and various innovative services [8]. These three university libraries have long been committed to digital literacy education and training, developing distinctive models and approaches that advance their institutions' progress toward world-class university status and represent the development direction of digital literacy education in UK research university libraries.

Drawing from firsthand materials gathered during a visiting scholarship at the University of York Library, including interviews and participation in the annual "York and Its Friends" conference, this paper examines the digital literacy frameworks, content systems, and training methods of the consortium libraries. The authors reviewed online resources from the three libraries, communicated with subject librarians via email to clarify uncertainties, and summarize the core components, training systems, and delivery methods for student digital literacy development to provide reference for domestic university libraries.

2. Digital Literacy Training Practices in the White Rose University Consortium Libraries

2.1 Strategic Priority for Digital Literacy Development The University of Leeds Library places great emphasis on digital literacy development. In its 2017 Academic Skills Development Strategy, the library defines the content, vision, principles, scope, implementation steps, and work priorities for academic skills training. It proposes providing customized face-to-face instruction, online support, and blended learning through collaboration with academic departments; offering specialized support for specific student groups and research programs; and further promoting digital literacy development by establishing a comprehensive digital service system. This strategic approach provides clear direction for users to integrate into the digital environment and enhance their digital skills, while also establishing guidance for library implementation and advancement of digital literacy initiatives.

Similarly, the University of York Library's 2015-2018 development strategy emphasizes continuously improving students' digital literacy for their future learning, teaching, and research; reviewing and summarizing online digital resources; examining online learning resource production; and supporting remote learning initiatives. The University of Sheffield's Library strategic plan [9] also aims to develop students' essential research skills and digital literacy to keep them at the forefront of their disciplines and become influential digital citizens. All three libraries have elevated digital literacy training to a strategic priority, establishing clear goals, work priorities, and implementation steps.

2.2 Core Components of Digital Literacy Training Based on their respective university development strategies, the three libraries have established their own digital literacy training systems. The University of Leeds Library proposes a six-competency digital literacy framework for students, illustrated

in Figure 1 [Figure 1: see original paper].

The University of York Library cultivates digital literacy across five dimensions, shown in Figure 2 [Figure 2: see original paper].

The University of Sheffield Library views digital literacy as empowering users to learn, survive, and work in the digital world, and has identified six key elements for student digital literacy development, presented in Figure 3 [Figure 3: see original paper].

As these three figures demonstrate, the libraries share essentially consistent training objectives for digital literacy core components. Analysis, questioning, collaboration, and creation are common key terms across all frameworks. They emphasize the demands of technology, information, knowledge, and communication on students' comprehensive abilities in the digital context, focusing on developing users' abilities to acquire, evaluate, and reorganize digital information, as well as their communication, collaboration, and creative capacities. The frameworks prioritize learning and critical thinking skills alongside creative reproduction competencies.

2.3 Hierarchical Digital Literacy Content System Based on their core components and institutional strategies, the three libraries have developed hierarchical digital literacy content systems. By examining relevant web pages and literature, we have compiled a summary of these systems, presented in Table 1

This hierarchical approach effectively addresses the reality of fully digitalized learning environments. In an age of information explosion, the ability to effectively identify, evaluate, and integrate information from various media using technology has become exceptionally important [10]. Fragmented reading, education, thinking, "multitasking" information processing, collaborative learning, and information creation have become the norm. While complex information environments offer users unlimited possibilities, they can also cause disorientation and conformity. Strong retrieval and reflective skills enable users to maintain clarity and creative momentum amid vast information resources. The University of Leeds Library's emphasis on planning and time management skills within independent learning competencies helps students understand self-discipline, future planning, and how to maintain focus and efficiency on research questions. Through these hierarchical systems, the libraries facilitate a spiral progression of students' capabilities, practices, and thinking habits, transforming them from information consumers to producers who can critically inquire and think, objectively discover, evaluate, and manage information, and create new knowledge within the information ecosystem [11].

2.4 Personalized and Customizable Digital Literacy Training Methods The White Rose University Consortium libraries provide personalized and customizable training methods for digital literacy development.

The University of Leeds Library offers targeted, personalized foundational resource support for first-year students, second-year students, final-year projects, and master's students. Students can develop their digital literacy through digital skills workshops, one-to-one academic support, online resources, and library websites. Additionally, the library has begun utilizing MOOCs for digital literacy instruction and training.

The University of York Library has established a digital literacy training system combining generic and embedded curricula for users at different levels [12]. It leverages online platforms to provide video tutorials, interactive online tutorials, exercises, tests, and relevant links, helping students access resources and develop their digital literacy. The library also launched the “Digital Wednesdays” specialized training program with different themes each semester. In 2017, the themes were: “Become a Ninja,” “Manage Your Project,” and “Find Your Direction.” Students can learn about digital tools and their applications through various formats including 30-minute mini-workshops, one-hour lectures, two-hour seminars, and hands-on workshops.

The University of Sheffield Library provides detailed digital literacy online tutorials accessible remotely. Students can also seek digital literacy support through one-to-one user support via email or appointment, receiving customized assistance and consultation from subject librarians. The library has integrated a “Library Discovery Journey” application into its homepage, allowing users to gain initial understanding of library usage.

Comprehensive analysis of these training methods reveals that online and customized digital literacy training has become the trend. Through virtual learning environments, online tutorials, videos, and MOOCs, libraries provide online resources that integrate interactivity and active learning into digital literacy training, making it truly responsive to user needs and convenient for students.

3. Summary and Insights

3.1 Summary 3.1.1 Digital Literacy Development Plans Align with Contemporary Requirements and Evolve Continuously

The Society of College, National and University Libraries (SCONUL) proposed seven elements of information literacy in 2004 and updated its standards in 2011, refining the models and indicators. The seven elements—identify, scope, plan, gather, evaluate, manage, and present—form a continuous cycle that integrates digital literacy throughout the research and lifelong learning process. Building upon SCONUL's framework, the three libraries have deconstructed and integrated these elements to develop their own digital literacy frameworks, strategically designing goals, content, and implementation steps for digital literacy education and practice.

The University of Leeds Library recognizes that information literacy education

must broaden its scope and actively incorporate additional academic skills to address the challenges of the digital age [13]. When accessing the library's website in January 2018, the authors found newly added digital capabilities content covering online identity management, content creation, and information management online—aligning perfectly with the “manage” and “present” elements of the seven-element framework and demonstrating continuous improvement of the original digital literacy system. In December 2017, the University of York Library updated its digital literacy content by adding research data management under the organization and analysis competency, enabling students to manage research data scientifically. The writing component also added employability skills modules, teaching students various digital skills to enhance their competitiveness in the job market. These evolving digital literacy development plans provide direction for users to integrate into the digital environment while offering guidance for library implementation.

3.1.2 Training Systems Embedded Throughout the Academic Research Process Facilitate Spiral Progression

The White Rose University Consortium libraries emphasize embedding digital literacy training throughout the entire academic research process, covering the complete knowledge innovation chain from identifying information needs, examining information sources, and planning search strategies to collecting information and data, evaluating and reflecting on research processes and data, effectively organizing and managing information, and creating new knowledge and disseminating results. Through multiple projects within this chain, students' digital literacy awareness and skills are enhanced imperceptibly.

For example, the University of Leeds Library sets different digital literacy requirements for different year levels. First-year students need to develop planning skills, independent work capabilities, personal motivation, note-taking, reading, and assignment decomposition abilities. Second-year students focus on reflection and evaluation, time management, information retrieval, academic reading skills, understanding writing processes, improving writing abilities, and enhancing employability. The third year integrates and advances competencies from previous years, emphasizing research-based learning, project planning, literature application and management, critical thinking, and academic writing. Through this goal decomposition, digital literacy becomes embedded throughout students' entire learning and research journey, making it an organic component of their academic lives and enabling a spiral progression from lower-order cognition (retrieval, understanding, application) to higher-order cognition (analysis, evaluation, creation), transforming students from information consumers to producers and active participants in the academic ecosystem.

3.1.3 Training Methods Aligned with User Characteristics Ensure Positive User Experience

The internet offers numerous pathways for digital literacy development, such as the UK Digital Literacy Learning Portal, U.S. Digital Literacy.gov, Australia's

GoDigi, and UK's FutureLearn. While the internet provides convenience for users, it also presents challenges for libraries, which are no longer the sole or primary source for digital literacy development. Top-down, didactic, and monolithic training methods cannot meet the needs of internet-era students. Recognizing this, the White Rose University Consortium libraries have adjusted their delivery methods to emphasize online, project-based, gamified, and customizable approaches to ensure positive user experiences.

Acknowledging students' preference for interactive online learning, all three libraries have made digital literacy materials and tutorials available online, including static resources and interactive tutorials. The University of Leeds and University of York libraries have also launched digital literacy MOOCs, providing users with more options. The libraries' practices predominantly involve project-based, problem-oriented learning that allows students to develop digital literacy skills through concrete practice while enhancing their awareness.

A notable example is the GFAFFWISK project, a collaboration between the University of York Library and the university's Human Resources Department [12]. This project, focused on developing students' online collaboration abilities, uses a project-based format that directly engages students in practice to develop specific digital literacy skills. To increase engagement and enthusiasm, libraries have incorporated gamification elements into digital literacy education. The GFAFFWISK project published a leaderboard during the activity to boost student motivation [12]. The University of York Library uses interactive teaching software such as Padlet and Kahoot! to gamify instruction. In one co-taught session by a subject librarian and faculty member, the librarian designed quiz games aligned with course content. Students accessed Kahoot! via mobile devices, participating through competitive answering, scoring, and ranking, creating a gamified blended learning environment. This approach fostered a relaxed atmosphere, significantly improving student engagement and enabling learning through play.

3.2 Insights 3.2.1 Establish Institution-Specific Digital Literacy Frameworks

In recent years, some Chinese university libraries have experimented with digital literacy education, achieving certain results. Shanghai Jiao Tong University, Fudan University, Shanghai Normal University, and Nanjing Normal University have offered media literacy elective courses [14]. However, surveys show that overall, domestic information literacy courses still emphasize literature retrieval skills, focusing on basic information retrieval knowledge and search methods for common databases and online resources, with relatively little content on information management, evaluation, and utilization [15]. These programs neglect the development of digital skills, information innovation, and emotional ethics, rarely addressing the critical and reflective abilities, collaboration, and innovation essential for the digital age. In other words, domestic university library information literacy training remains at a resource- and skill-oriented 初级阶段

(primary stage), not yet addressing deeper digital literacy requirements—critical thinking, innovation, and integration into digital society.

The root cause lies in insufficient understanding of the “digital literacy” concept and the lack of guiding frameworks, making systematic digital literacy education difficult. Digital literacy and information literacy have overlapping yet distinct content. Digital literacy encompasses more than just information technology skills; it targets users in digital environments, emphasizing not only the abilities to find, understand, evaluate, communicate, and use information highlighted by information literacy, but also the capacity to use social media for information exchange, create and use digital devices, applications, and services in Web 2.0 environments [16]; to engage in creative inquiry and critical thinking in academic activities [17]; to develop transferable skills [18]; and to adhere to information ethics and personal privacy principles.

Based on a clear understanding of digital literacy connotations, libraries should conduct surveys to understand their students’ specific digital literacy needs, recognizing that different types of students have different requirements. J. Heinström identified three types of information behaviors among students: fast surfing, broad exploration, and deep judgment [19]. Therefore, we recommend that university libraries develop institution-specific digital literacy education frameworks by referencing domestic and international frameworks such as JISC’s Digital Literacy Development Framework, ACRL’s Information Literacy Competency Standards for Higher Education, and the Beijing Regional University Information Literacy Indicator System.

3.2.2 Enhance Integration Between Digital Literacy Education and Teaching/Research

Digital literacy and teaching/research are like two oars that must support each other. Digital literacy support expands the forms and options for teaching and research, as remote teaching, interactive instruction, and gamified learning all relate to digital technologies and literacy. Conversely, digital literacy must be integrated into teaching and research to maximize its effectiveness.

Domestic information literacy courses, whether electives or required courses, typically require students to complete all content within one semester. This one-time approach means many students forget the material after earning their credits, which explains why many still struggle to locate resources despite extensive library promotion efforts. Drawing from UK practices, domestic university libraries should break away from the traditional self-contained information literacy course model. Instead, they should decompose digital literacy tasks and objectives into multiple steps, shifting from a one-time approach to a multi-stage process. By adopting problem-oriented, project-based teaching models, digital literacy instruction can be embedded throughout teaching and research, becoming an organic component of students’ academic lives.

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Author Contributions

Zhang Yuhan: Designed the overall research framework and wrote the paper;
Liu Jing: Provided revision suggestions.

Practice and Revelation of Digital Literacy Training in the Libraries of White Rose University Consortium

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Abstract: [Purpose/significance] The paper investigates and discusses the core elements, training systems, and training methods of digital literacy training in Libraries of White Rose University Consortium and accordingly puts forward some suggestions for domestic university libraries. [Method/process] Firstly, by the method of online survey, this paper investigated the digital literacy training in the libraries of White Rose University Consortium members, which include the library of York university, Leeds university, and Sheffield university. Then, combined with the first-hand information, we summarized the core elements, training system, and training mode of digital literacy training for students. [Result/conclusion] The training systems in the libraries of White Rose University Consortium are characterized by spiral, and these libraries provide hierarchical and individualized training methods for users. Besides, three libraries all have clear and definite strategic plans for digital literacy training, providing direction for users to integrate into the digital environment and guidance for the implementation and promotion of digital literacy.

Keywords: information literacy; digital literacy; university library; White Rose University Consortium

Note: Figure translations are in progress. See original paper for figures.

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