



Research on the Information Literacy Evaluation System of College Students under the Background of Smart Campus

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Abstract. In the context of smart campus construction, the enhancement of college students' information literacy has become a focus of attention in the education field. This study aims to explore the evaluation system of college students' information literacy in order to better understand and assess their abilities and levels in information technology applications. Through a review and analysis of relevant literature, combined with data collection through field investigations and questionnaires, we will systematically construct an evaluation system for college students' information literacy based on the backdrop of a smart campus.

The purpose of this study is to provide schools with a scientific, objective, and effective evaluation system to help students develop and enhance their information literacy. At the same time, this evaluation system can serve as a reference for teachers to cultivate students' information technology abilities and literacy levels in a targeted manner during the teaching process.

Keywords: smart campus, information literacy, evaluation system.

1 Introduction

The current technological revolution has had a tremendous impact on various aspects of human life, work, and learning. In the face of massive amounts of data, enhancing information literacy among vocational college students is crucial. It not only promotes personal growth and improves overall quality but also helps raise the level of informatization in vocational colleges, advance the construction of smart campuses, and support high-quality education.

In response to the needs of talent development in the context of smart campuses, it is necessary to propose ideas and methods for evaluating college students' information literacy. This evaluation system will contribute to students' comprehensive development.

In 2020, the Ministry of Education revised the "Statistical Index System for Education Monitoring and Evaluation in China," which was initially published in 2015. The revised index system aligned with the United Nations' 2030 Agenda for Sustainable Development education goals. For the first time, the "rate of students meeting the information literacy standards" was included as an indicator of the national status of education. As an indicator of educational quality, this index monitors and evaluates the level of students' information literacy nationwide and in different regions. A high value of this index indicates a high level of students' information literacy, with more students meeting the national requirements for information literacy [1].

2 Concepts in this field and related research status

"Information Literacy" is a fundamental ability and an adaptability to the information society. In the fourth quarter report of the CEO Forum on Education and Technology in the United States in 2001, the essential skills for the 21st century were proposed, including basic learning skills (reading, writing, and arithmetic), information literacy, innovative thinking ability, interpersonal communication and collaboration, and practical ability. Information literacy is one aspect of these skills, and it involves awareness of information, abilities related to information, and the application of information. It is a comprehensive ability that covers various knowledge domains and has close connections with many disciplines including humanities, technology, economics, and law.

Information technology supports information literacy, emphasizing understanding, recognition, and skills for using technology. However, the focus of information literacy is on content, communication, analysis, information retrieval, and evaluation, encompassing broader aspects. It is a knowledge structure that involves understanding, collecting, evaluating, and utilizing information. It requires both proficiency in information technology and the use of sound research methods, discernment, and reasoning. Information literacy is an ability related to information, and information technology serves as a tool in this regard.

2.1 Current status of domestic research

Taking Guangdong Technician Normal University as an example, the university has been devoted to the research on establishing an information literacy evaluation system. Researchers explore the concept, connotation, and constituent elements of information literacy. They draw upon relevant theoretical models, such as the "Attainment Model" proposed by Bruce, Paris, and Miller (2006). These studies contribute to the theoretical foundation of the information literacy evaluation system.

The construction of the information literacy evaluation system at Guangdong Technician Normal University emphasizes students' abilities and qualities in information acquisition, evaluation, processing, and sharing. It also considers practical application and comprehensive quality assessment, adopting diversified evaluation

methods and continuous improvement and feedback. The goal is to cultivate students' comprehensive literacy abilities required in the era of information technology¹.

2.2 Current status of foreign research

In terms of the current research status abroad, let's take American university libraries as an example. Information literacy education in American university libraries has gained widespread attention and importance. Scholars and library professionals are dedicated to exploring the definition and connotation of information literacy, as well as how to cultivate students' information literacy skills. Researchers focus on various aspects of information literacy education, including curriculum design, teaching methods, and assessment systems.

Regarding the definition and connotation of information literacy, scholars have put forward various viewpoints and models. Some researchers view information literacy as a set of abilities, referring to individuals' skills in accessing, evaluating, utilizing, creating, and communicating information within an information environment. Other scholars have proposed multidimensional models of information literacy, covering aspects such as information searching, information evaluation, information creation, and information ethics.

The establishment of an assessment system is also a top priority in current research. Researchers strive to construct effective assessment methods to evaluate students' levels of information literacy and the effectiveness of educational programs. These assessment methods include standardized tests, assessment of student work, and self-assessment by students. Through the establishment of an assessment system, researchers can understand students' growth and development in terms of information literacy and provide guidance for improving educational programs².

2.3 Brief summary

Through the review and analysis of relevant literature both domestically and internationally, it has been found that there are significant differences between China and foreign countries in terms of research objectives, evaluation indicators, evaluation methods, and application areas. In China, the evaluation of college students' information literacy is mainly based on quantitative methods such as questionnaire surveys and examination scores. On the other hand, foreign research often utilizes more inspiring and practical methods such as project work evaluation and case analysis. Chinese scholars tend to rely more on traditional skill dimensions, such as information retrieval and information discernment, when selecting evaluation indicators. In contrast, foreign studies place greater emphasis on cultivating students' creative thinking, critical thinking, and social cooperation abilities. Overall, there is a gap between domestic and foreign research, and the importance of college students' information literacy is increasingly prominent. The establishment and improvement of an information literacy evaluation system are crucial for enhancing the information literacy level of college students.²

3 Key points in the construction of information literacy evaluation system for college students

The construction of an evaluation system for college students' information literacy is an important aspect of educational reform in the context of smart campuses. Its goal is to assess students' ability to acquire, process, and utilize information in the information age. With the advent of the intelligent era, higher requirements have been placed on information literacy. Advanced literacies such as information security, human-computer interaction and collaboration, information innovation, information thinking, and lifelong learning have gradually become key indicators for evaluating whether individuals are adapting to the development of intelligent societies. These literacies have begun to receive attention and are being incorporated into people's perspectives [4]. The following are the key points for constructing an evaluation system for college students' information literacy, as shown in Figure 1.

Firstly, the information literacy evaluation system needs to focus on students' abilities in information acquisition and understanding. This includes how to use various channels to obtain information, discern the authenticity and reliability of information, and interpret and analyze information content in a rational manner [5]. The evaluation system can focus on the following points: 1. Breadth of information sources: Assessing whether students can obtain information from multiple channels, including libraries, academic journals, the Internet, etc., and determine the reliability and accuracy of information. 2. Information searching and filtering ability: Assessing whether students have the ability to effectively utilize search engines and databases to efficiently filter out relevant and valid information. 3. Information analysis and evaluation ability: Evaluating whether students have the ability to analyze, synthesize, and evaluate collected information, and judge the authenticity, objectivity, and reliability of information.

Secondly, the information literacy evaluation system needs to focus on students' abilities in information management and organization. This includes how to systematically categorize and organize information, and how to utilize technological tools for information storage, management, and sharing [6]. The key points for the construction of information management and organization abilities are as follows: 1. Information classification and organization ability: Assessing whether students can categorize, organize, and systematize the obtained information, creating a systematic and searchable information database. 2. Information storage and management ability: Evaluating whether students can use appropriate tools and technologies for information storage and management, including folders, cloud storage, etc. 3. Information confidentiality and security ability: Assessing whether students can effectively protect the security of personal and confidential information, including password management, access control, etc.

Thirdly, the information literacy evaluation system needs to focus on students' abilities in information innovation and application. This includes how to utilize information to solve problems, conduct innovative research, and apply information technology [7]. For example, a research project at a domestic university requires students to apply information technology in team cooperation, conduct innovative

research, and disseminate and promote research results. The key points for the construction of information innovation and application abilities are as follows: 1. Information understanding and interpretation ability: Evaluate whether students can understand and interpret various complex information and extract valuable information to support their learning and research. 2. Information communication and expression ability: Assess whether students can effectively communicate and express acquired information using appropriate methods and tools, including oral and written communication skills. 3. Information innovation and creation ability: Evaluate whether students can innovate and create based on existing information, propose new perspectives, ideas, and solutions.

Lastly, the information literacy evaluation system needs to focus on students' ethical and responsible use of information. This includes the rationality and morality of students' information acquisition and utilization processes, as well as their awareness and maintenance of information security and privacy protection [8]. The key points for this aspect of construction are: 1. Information ethical awareness: Evaluate whether students possess ethical and moral awareness in the lawful, honest, and responsible use of information. 2. Awareness of information rights protection: Assess whether students understand and respect others' information rights and can protect their own personal information security. 3. Knowledge of information laws: Evaluate whether students are aware of information-related laws and regulations, such as copyright laws and network security laws, and whether they understand the legality and norms of information use and dissemination.

In summary, when constructing an evaluation system for college students' information literacy, it is necessary to focus on their abilities in information acquisition and comprehension, information management and organization, information innovation and application, as well as information ethics and responsibility awareness. Domestic and international universities can continuously enhance students' information literacy through offering relevant courses, projects, and training, while evaluating their information literacy comprehensively through the evaluation system. The construction of an evaluation system for college students' information literacy is of significant importance in the context of a smart campus, as it can help students adapt to the demands of the information age and improve their information literacy.

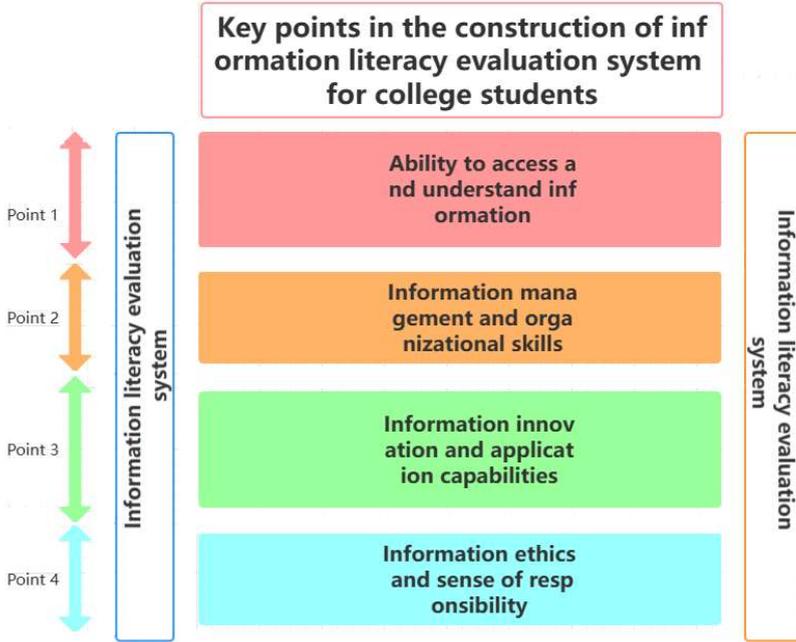


Fig. 1. Key map of the construction of college students' information literacy evaluation system

4 The practice path of information literacy evaluation system for college students

Information literacy refers to the ability of individuals to utilize information technology to solve problems, access information, and create new knowledge. The construction of an evaluation system for college students' information literacy is of significant importance in improving their information literacy level and promoting their comprehensive development. College students' information literacy level can be divided into four aspects, as shown in Figure 2. Based on the level of college students' information literacy and the aforementioned construction focuses, this article will provide a detailed introduction to the relevant ideas and specific steps of building an evaluation system for college students' information literacy.

4.1 Identify evaluation objectives and indicators

First of all, it is necessary to clarify the goals of the evaluation system, such as cultivating students' information search ability, information analysis and integration ability, information application ability, etc. Then, according to the goal, the corresponding evaluation indicators are determined, such as testing the accuracy of students' finding information, the depth and breadth of analyzing information, and the

ability to apply information to solve problems [9]. The specific evaluation indicators are shown in Table 1.



Fig. 2. Construction of information literacy level in universities

Table 1. Evaluation index of college students' information literacy assessment system

Evaluation index of college students' information literacy assessment system			
Metric classification	Point 1	Ability to access and understand information	1.Breadth of information sources: Assessing whether students can obtain information from multiple channels, including libraries, academic journals, the Internet, etc., and determine the reliability and accuracy of information.
			2.Information searching and filtering ability: Assessing whether students have the ability to effectively utilize search engines and databases to efficiently filter out relevant and valid information.
			3.Information analysis and evaluation ability: Evaluating whether students have the ability to analyze, synthesize, and evaluate collected information, and judge the authenticity, objectivity, and reliability of information.
	Point 2	Information management and organizational skills	1.Information classification and organization ability: Assessing whether students can categorize, organize, and systematize the obtained information, creating a systematic and searchable information database.
			2.Information storage and management ability: Evaluating whether students can use appropriate tools and technologies for information storage and management, including folders, cloud storage, etc.
			3.Information confidentiality and security ability: Assessing whether students can effectively protect the security of personal and confidential information, including password management, access control, etc.
Point 3	Information innovation and	1.Information understanding and interpretation ability: Evaluate whether students can understand and interpret various complex information and extract valuable	

		application capabilities	information to support their learning and research.
			2.Information communication and expression ability: Assess whether students can effectively communicate and express acquired information using appropriate methods and tools, including oral and written communication skills.
			3.Information innovation and creation ability: Evaluate whether students can innovate and create based on existing information, propose new perspectives, ideas, and solutions.
	Point 4	Information ethics and sense of responsibility	1.Information ethical awareness: Evaluate whether students possess ethical and moral awareness in the lawful, honest, and responsible use of information.
			2.Awareness of information rights protection: Assess whether students understand and respect others' information rights and can protect their own personal information security.
			3.Knowledge of information laws: Evaluate whether students are aware of information-related laws and regulations, such as copyright laws and network security laws, and whether they understand the legality and norms of information use and dissemination.

4.2 Design evaluation methods and tools

Design appropriate evaluation methods and tools based on evaluation objectives and indicators. It can include questionnaires, actual case studies, individual reports, group discussions, and other forms to comprehensively assess students' level of information literacy.

4.3 Develop evaluation processes and timelines

In the evaluation system, it is important to define the evaluation process and schedule. For example, conducting a comprehensive evaluation at the end of each semester, which includes multiple tests and practical activities to comprehensively assess students' information literacy [10].

4.4 Establish an evaluation team and expert pool

Establish an evaluation team composed of relevant teachers and experts, and establish an expert database. The evaluation team is responsible for developing evaluation standards, conducting statistical analysis of results, and proposing improvement suggestions, while the expert database provides professional guidance and feedback [11].

4.5 Conduct training and mentoring

During the process of building the evaluation system, it is necessary to provide training and guidance to relevant teachers. The training content includes the

interpretation of evaluation criteria and methods of use, among others. Teachers need to keep pace with the information age, learning about digital teaching design, digital teaching implementation, digital academic assessment, and digital collaborative education [12]. Only by doing so, will they be able to accurately and effectively use evaluation tools and conduct evaluations [13].

4.6 Conduct pilot studies and corrections

After the initial establishment of the evaluation system, pilot research should be conducted to carry out practical operations and testing of the evaluation process. Based on the results of the pilot study, timely adjustments and improvements should be made to the evaluation system to ensure its scientific validity and operability. A pilot research has been conducted in the writer's college which demonstrated that the evaluation system had helped the students to know the weakness of their information literacy and make them put more effort to improve their weakness.

4.7 Promote application and supervise management

Once the construction of the evaluation system is basically completed, it is necessary to promote its application and strengthen supervision and management. Relevant education departments can incorporate it into the comprehensive quality evaluation system for college students and enhance the supervision and management of evaluation results to ensure the effectiveness and fairness of the evaluation system. Only by implementing the above steps effectively can we achieve comprehensive improvement in college students' information literacy, and the four aspects of information literacy construction can develop comprehensively. The overall practice path process diagram is shown in Figure 3.

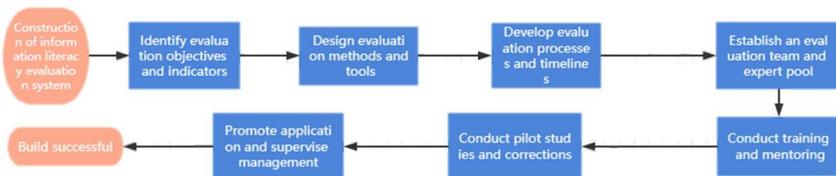


Fig. 3. Flow chart of evaluation system construction

5 Conclusion

The construction of a evaluation system for college students' information literacy is an important measure to improve their information literacy level. By determining evaluation goals and indicators, designing evaluation methods and tools, and establishing evaluation processes and schedules, a scientific, accurate, and comprehensive evaluation system can be built to provide strong support for the cultivation of college students. Additionally, continuous revision and improvement, as

well as enhanced promotion, application, and oversight, are necessary to ensure the effectiveness and fairness of the evaluation system. The evaluation system establishes an expert system. The expert system enhances the evaluation capacity of the evaluation system.

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