INFORMATION LITERACY STRATEGY DEVELOPMENT

FOR UNDERGRADUATE UNIVERSITIES IN GUANGXI

OU SHANGYAO

A thesis submitted in partial fulfillment of the requirements for

the Degree of Doctor of Philosophy Program in Educational Administration
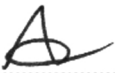
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ABSTRACT

The objectives of this paper were 1) to study the current status of information literacy strategy development for undergraduate universities in Guangxi, 2) to formulate information literacy strategy development for undergraduate universities in Guangxi, and 3) to evaluate the information literacy strategy development for undergraduate universities in Guangxi. The sample group of this paper were 375 teachers in undergraduate universities in Guangxi. They were selected by systematic random sampling and sample random sampling. The interview group was the 2 teachers from each undergraduate university, totaling 12 people. The experts for evaluated the adaptability and feasibility of information literacy strategy development for undergraduate universities consisted of high-level teacher from each undergraduate university, totaling 15 people. The research instruments were document analysis, questionnaire, structured interview, SWOT analysis and evaluation form. The statistic to analyze the data were percentage, mean and standard deviation.

The results were found that 1) the current situation of information literacy in undergraduate university in four aspects was at high level. Considering the results of this paper aspects ranged from the highest to lowest level were as follow: the highest mean was information ethics, followed by information awareness, and information ability was the lowest mean. 2) The information literacy strategy development for undergraduate universities is pay attention to the importance of information literacy,

conduct effective training and communication, develop evaluation standards, incentive and assessment systems, and integrate information literacy into teaching. 3) The results about evaluation of the adaptability and feasibility of information literacy strategy development for undergraduate university in Guangxi was at high level.

Keywords: Strategy Development, Information Literacy, Undergraduate University

ชื่อเรื่อง   การวิจัยกลยุทธ์การพัฒนาทักษะสารสนเทศในมหาวิทยาลัย
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บทคัดย่อ

วัตถุประสงค์ในการวิจัยนี้รวมถึง 1) วิจัยสถานะปัจจุบันของกลยุทธ์การพัฒนาทักษะสารสนเทศในมหาวิทยาลัยหลักสูตรปริญญาตรีของมณฑลกว่างซี 2) สร้างสถานะปัจจุบันของกลยุทธ์การพัฒนาทักษะสารสนเทศในมหาวิทยาลัยหลักสูตรปริญญาตรีของมณฑลกว่างซี 3) ประเมินกลยุทธ์การพัฒนาทักษะสารสนเทศในมหาวิทยาลัยหลักสูตรปริญญาตรีของมณฑลกว่างซี ทักษะสารสนเทศรวมถึง 4 ด้าน ดังนี้ 1) ความตระหนักถึงในข้อมูลสารสนเทศ 2) ความรู้ด้านข้อมูลสารสนเทศ 3) ความสามารถด้านข้อมูลสารสนเทศ 4) จริยธรรมในการใช้ข้อมูลสารสนเทศ เป้าหมายของการวิจัยครั้งนี้คืออาจารย์ผู้สอนในมหาวิทยาลัยหลักสูตรปริญญาตรีของมณฑลกว่างซี ผ่านการคัดเลือกแบบสุ่มเลือกจากระบบแล้ว ผู้สัมภาษณ์คืออาจารย์ 2 ท่านจากแต่ละมหาวิทยาลัยที่เป็นหลักสูตรปริญญาตรี รวมทั้งสิ้น 12 คน ผู้เชี่ยวชาญในการประเมินความเหมาะสมและความเป็นไปได้ของการสร้างกลยุทธ์การพัฒนาทักษะสารสนเทศประกอบด้วยอาจารย์ระดับสูงของมหาวิทยาลัยหลักสูตรปริญญาตรี รวมทั้งสิ้น 15 คน เครื่องมือการวิจัยรวมถึงการวิเคราะห์เอกสาร แบบสอบถาม การสัมภาษณ์แบบมีโครงสร้าง การวิเคราะห์ SWOT และตารางประเมิน การวิเคราะห์ข้อมูลจะใช้ค่าสถิติ เช่น เปอร์เซ็นต์ ค่าเฉลี่ย และค่าเบี่ยงเบนมาตรฐาน

ผลการวิจัยแสดงให้เห็นว่า สถานะปัจจุบันของทักษะสารสนเทศในมหาวิทยาลัยหลักสูตรปริญญาตรีอยู่ในระดับค่อนข้างสูงใน 4 ด้าน เรียงตั้งแต่สูงสุดถึงต่ำสุดตามลำดับคือจริยธรรมในการใช้ข้อมูลสารสนเทศ ต่อมาคือความตระหนักถึงในข้อมูลสารสนเทศ ความสามารถด้านข้อมูลสารสนเทศอยู่ในระดับต่ำที่สุด การสร้างกลยุทธ์การพัฒนาทักษะสารสนเทศในมหาวิทยาลัยหลักสูตรปริญญาตรีให้ความสำคัญกับทักษะสารสนเทศ ดำเนินการฝึกอบรมและการสื่อสารที่มีประสิทธิภาพ กำหนด

มาตรฐานการประเมิน ระบบส่งเสริมและประเมินผลการทำงาน นำทักษะสารสนเทศผสมผสานเข้าไป ในการสอน ผลการประเมินความเหมาะสมและความเป็นไปได้ของการสร้างกลยุทธ์การพัฒนาทักษะ สารสนเทศของมหาวิทยาลัยหลักสูตรปริญญาตรีของมณฑลกว่างซีอยู่ในระดับที่ค่อนข้างสูง

คำสำคัญ: กลยุทธ์การพัฒนา ทักษะสารสนเทศ มหาวิทยาลัยหลักสูตรปริญญาตรี

Acknowledgements

Contents

Contents (Continued)

List of Figures

List of Tables

List of Tables (Continued)

Chapter 1
Introduction

Rationale

According to the latest data, as of 2023, the number of global Internet users has exceeded 5 billion, accounting for 64% of the global population, Internet penetration is gradually increasing, and Internet penetration in many developing countries is also gradually increasing. People's habit of obtaining information from the Internet has been formed, and in the context of the rapid development of social informatization, information is growing explosively. Information literacy is needed to obtain the information needed from a large amount of information and create value for society, so the world is developing national information literacy according to its own national conditions. With the development of big data, blockchain and artificial intelligence and their application in real life, the demand for high-level information literacy talents has surged, and the importance of information literacy education as the best way to achieve lifelong education and create a learning society cannot be ignored.

Teachers are the guiding figures of educational activities, and they are an important part of the high-quality development of education empowered by technology in the face of a new round of education informatization. Cultivating teachers' information literacy is a requirement for students' all-round development in the digital environment.

The world: Information literacy has a long history of research in countries around the world. Information literacy was first mentioned in 1965 by Professor Ernest ·Roe, a Australia education scholar, who argued that in order to promote the effective use of information resources, librarians should help users use search strategies. In 1974 United States Paul Zurkowski put it in his report to the United States government: "An information literate person is someone who is well trained in how to apply information resources to his work." In 1983, Horton, an United States informatician, argued that education departments should develop information literacy courses to improve

people's ability to use electronic mail, data analysis, and library networks. Buchanan, Harlan, Bruce and others believe that information literacy is the skill or step that people manage when locating and using information, including the ability to identify information needs, the skills to locate and access information, the methods of evaluating information, and the ability to process, organize and use information efficiently and ethically. The International Society for Technology in Education (ISTE) has developed national standards for teacher education with a focus on pre-service teacher education, which define the basic concepts, knowledge, skills and attitudes for the use of technology in educational contexts, to help primary and secondary school teachers and administrators apply technology to facilitate learning. In 2003, UNESCO convened a national information literacy expert meeting, and information literacy experts from many countries determined that the driving force for information literacy needs is to solve information problems, and having comprehensive information literacy ability is the foundation of lifelong learning, and it is also an important support for the stable development of the information society. In 2007, Japan issued a relevant document to set relevant standards for the evaluation of teachers' ability to use information technology, and it involves a number of indicators such as the ability to apply ICT guidance in teaching and guide students to comply with information ethics.

To sum up, the research on information literacy in foreign countries is in-depth and concrete, and has strong operability. In China, the research on information literacy started late and needs further research.

China: The academic research articles on information literacy education in China can be roughly traced back to the article *Overview of Information Literacy Education in the Information Society* written by Jin Guoqing in 1995, which opened a precedent for information literacy research in China. The research on information literacy by domestic scholars mainly focuses on four aspects: information awareness, information knowledge, information ability and information ethics, and studies the information literacy level of different groups, including some studies on the information literacy of university teachers and the information literacy education of university teachers. The multi-angle research is carried out from different perspectives, and the research is carried out in combination with the current situation of informatization in

China. Wang Jiqing proposed that information literacy refers to the ability to obtain, utilize, disseminate and develop information. Li Kedong proposed that information literacy is the attitude and ability to effectively use information and integrate into society, and it is the application, criticism and understanding of information technology. In 2019, the Ministry of Education and the Ministry of Finance issued the "Opinions on the Implementation of the Plan for the Construction of High-level Vocational Schools and Majors with Chinese Characteristics", which clearly stated that it is necessary to improve the informatization level of vocational schools and improve the information literacy of teachers and students. On March 16, 2021, the Ministry of Education issued a notice on the "Specifications for the Construction of Digital Campuses in Colleges and Universities (Trial)", which pointed out that the improvement of teachers' information literacy should be included in the basic capacity building of the teaching staff to ensure the normalization and sustainability of the improvement of information literacy of faculty and staff.

Guangxi: University teacher are the main body and bearer of Guangxi's talent training, and their level of information literacy affects the cultivation of talents in Guangxi and their social functions after work. Therefore, the level of information literacy of university teachers in Guangxi affects the level of information literacy of Guangxi talents, and thus affects the economic development of Guangxi. Therefore, improving the information literacy level of university teachers in Guangxi and developing the technology of integrating information technology and subject teaching are not only the key to improving the teaching quality and scientific research level of university teachers, but also the requirements of the information age, and the core elements to realize the value and main functions of university teachers. Therefore, it is very necessary to study the development strategy of information literacy of university teachers in Guangxi, and provide a certain reference for Guangxi universities.

Research Questions

      1. What is the current status of information literacy strategy development for undergraduate universities in Guangxi?

      2. How to formulate information literacy strategy development for undergraduate universities in Guangxi?

      3. Is the information literacy strategy development for undergraduate universities in Guangxi feasibility?

Objectives

      1. To study the current status of information literacy for undergraduate universities in Guangxi.

      2. To formulate information literacy strategy development for undergraduate universities in Guangxi.

      3. To evaluate the suitability and feasibility of the information literacy strategy development for undergraduate universities in Guangxi.

Scope of the Research

Population and the Sample Group

Population

      The population in this paper were 11,570 teachers from 6 public universities in Guangxi.

The Sample Group

      The sample group in this paper were 375 teachers in undergraduate universities in Guangxi, basing on sample table of the Krejie and Morgan (1970). They were selected by purposive sampling method from 6 universities which located in different city and specialized in Guangxi, and used by systematic random sampling. The 6 universities selected include: Guangxi University, Guilin University of Electronic Technology, Guilin Medical University, Yulin Normal University, Guangxi Arts University, Baise University.

Key Information

The interviewee in this paper was 12 high-level administrators in undergraduate universities in Guangxi. The qualifications of interviewees are as follows: 1) professional teachers with 5 years of work experience in public undergraduate university, 2) have extensive experience in information literacy, 3) certain scientific research ability, 4) graduated with master's degree or above.

The experts for evaluating the suitability and feasibility of information literacy strategy development were 15 experts from undergraduate universities. The qualifications of the experts are as follows: 1) library practitioners who have been engaged in graphic research for more than 5 years, 2) personnel with knowledge of information disciplines, 3) master's or doctoral degrees, and 4) associate professor or above.

The Variable

Information literacy strategy development for undergraduate universities in Guangxi was in 4 aspects:

1. Information awareness

2. Information knowledge

3. Information ability

4. Information ethics

Advantages

1. It provides a basis for the evaluation of information literacy for undergraduate universities in Guangxi.

2. It provides a reference for the information literacy strategy development in undergraduate universities in Guangxi.

3. It will provide a reference for the improvement of information literacy in other universities.

4. It will provide a reference for university librarians to conduct information literacy training.

Definition of Terms

Development Strategy refers to the direction and method of a series of actions and decisions made by an organization and enterprise to achieve long-term goals in the future. Under different environmental conditions, it is formulated on the basis of analysis and judgment based on factors such as the resources and capabilities of the organization or enterprise, as well as market demand and competitive situation. Development strategy is that an organization or enterprise clarifies the direction and goals of its future development within a specific time frame according to its mission, vision and values, and formulates corresponding action plans and resource allocation.

Information Literacy refers to the objective existence of information and information activities in people's minds, manifested as people's information sensitivity to things or things they care about, observation, analysis and judgment ability, insight and information innovation ability, that is, people's information sensitivity, is people's understanding, feeling, evaluation and innovation from the perspective of information of various phenomena, behaviors, theoretical views, etc. in nature and society. It is a consciousness peculiar to human beings. Information awareness is people's information demand, the formation of information motivation, and then consciously seek information, use information, form information interest of the driving force and source, for teachers, information awareness is the desire to use information, the use of information technology teaching or scientific research innovation desire. In layman's terms, it is to face the problems that you do not understand, you can actively use information technology to find answers, and know which information sources to find, and what methods to use to seek answers, this is information awareness. Information awareness includes information economy and value awareness, information acquisition and dissemination awareness, information confidentiality and security awareness, information pollution and law-abiding awareness, information dynamic change awareness, etc. There are consisted of four aspects: Information awareness, information knowledge, information ability and information ethics.

Information Awareness refers to Information awareness refers to the active reflection of information and information activities in people's minds, that is, people's information sensitivity, understanding the importance and value of information

awareness, having a strong desire to use information technology to improve work efficiency, the desire to use information technology to teach and the desire to use information technology for scientific research and innovation, and the use of rich information sources to solve problems. Through communication and training, we will raise awareness of information, actively share new information with others, and apply it in practice.

Information Knowledge refers to Information knowledge includes the basic concepts and knowledge of information, the information society, the socio-cultural characteristics of information, and the awareness and understanding of its impact on human beings; Including traditional cultural literacy, the information age must have the ability to read quickly and obtain valuable information from rich information sources; Including information retrieval knowledge, information evaluation knowledge, information transmission knowledge, information processing and processing, etc. In the face of the complex information society, we can obtain the latest information knowledge in a timely manner and understand the value of the latest information knowledge.

Information Ability refers to the ability to understand, obtain, use, communicate, and use information technology. Understanding information is the ability to analyze the content and source of information, identify the quality of information, make decisions about information trade-offs, and analyze the cost of information. Access to information is the ability to collect, find, extract, record, and store information through a variety of means and methods. The use of information is the ability to purposefully use information to solve practical problems or for learning and scientific research, to explore the potential value and meaning of information through known information and to use it comprehensively, and to create new knowledge. Information exchange refers to the ability to exchange information between people online and offline, in real time, and in non-real time. The use of information technology refers to the ability to use computer networks and other tools to collect information, process information, transmit information, publish information and express information.

Information Ethics refers to the ethical requirements, ethical norms and ethical norms in information activities such as information demand, information search, information processing, information management, information utilization, information creation, and information feedback. In terms of privacy, personal information should not be snooped on for no reason and inappropriate evaluations should be made; In terms of information security, in order to protect personal information, computer networks and storage media from viruses or hacker attacks; Confidentiality, which means that the information must be kept confidential due to law, business contract or other reasonable grounds; The respect aspect refers to respecting the rights and interests of others, respecting their opinions and contributions, and valuing intellectual property rights.

Research Framework

Ministry of Education (2021, p.15) refer to information literacy consists of information awareness, information knowledge, information ability and information ethics. And according to concept of information literacy, the researchers analyzed and conceptual theory and research related to the impact on information literacy, summarizing them into 4 features, including: 1) Information awareness, 2) Information knowledge, 3) Information ability, 4) Information ethics.
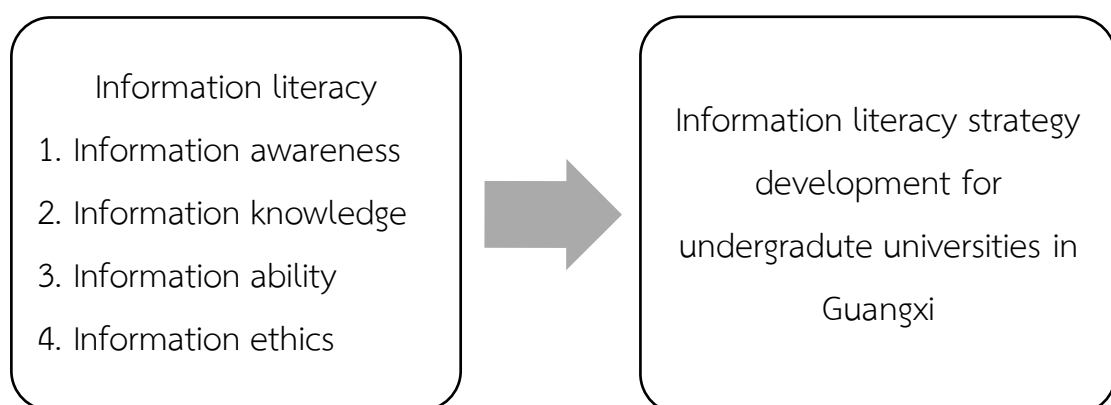
Figure 1.1 Research Framework

Chapter 2
Literature Review

This chapter will focus on the research questions raised in Chapter 1 and summarize the main theoretical basis and related researchers involved in this paper, so as to clarify the theoretical inheritance, improvement and expansion relationship between this paper and existing achievements. In order to explore the theoretical basis of the information literacy in universities, this chapter sets out the theories as follow:

1. Concept of Educational Administration
2. Concept of Educational Informatization
3. Concept of Information Literacy
4. Concept of Development Strategy
5. Related Research

The details are as follows.

Concept of Educational Administration

Educational administration is the administration of people and the administration of people. In essence, educational administration activities should be aimed at people, conducive to the free development of people, and promoting life generation should be the ultimate goal of educational administration. Educational administration generally refers to school administration, and understanding education administration from the concept of big education in modern society obviously does not just refer to school administration. Since school administration is always the most important component in the whole education administration system, most of the research on the phenomenon of education administration focuses on school administration. Different scholars define education administration, affected by country, time and other factors, and the expression of the concept of education administration is different, but in a general sense, education administration mainly refers to the specific operation of school education activities and the organization and leadership of education.

Mei Ruli, Wang Shutian (1995. p.1) believes that educational administration includes the strength and action law of all levels and types of educational administrative organs and all types of school administration at all levels, from which educational administration can be divided into two parts: educational administration and school administration.

Xiao Zongliu (2004, p.21) believes that educational administration can be divided into two new disciplines, educational administration, which mainly studies the leadership and administration of education by national education administrative departments, and school administration, which mainly studies the internal administration of schools.

Li Minghui (2022, p.35-37) believes that education administration is the activity process of managers organizing and coordinating the education team, giving full play to the role of education human, financial, material resources and other information, and using various favorable conditions within education to efficiently achieve educational administration goals, which is a series of activities organized by the state to organize, coordinate and control the education system.

Jiang Wenmin, Han Zongli (1988, p.76) believes that education administration is defined as education administration, which refers to the macro-administration work of all types of educational administrative organs at all levels and the micro-administration of all types of school education at all levels.

Wang Huiqing (1999, p.78-81) argues that educational administration and educational administration are not completely equivalent concepts. From the perspective of occurrence science, just like administration and administration, educational administration is born with the emergence of educational activities, its history is as long as education, and educational administration is not only the function of educational administrative departments, it includes all fields of society and the public's attention to education.

Yang Tianping (2005, p.90-93) believes that education administration is the application of administration in the field of education, which is a professional activity for the administration of education or administration education, and is an activity that intersects and combines educational activities and administration activities. In China,

there is a broad and narrow distinction between education administration. Educational administration in a broad sense refers to the administration of all educational activities, including educational administration and school education administration. Education administration in a narrow sense refers to education administration, that is, the intervention, intervention, control, coordination, guidance and service of the state and government education departments in education.

Feng Daming. (2002, p.6) Tony Bush, a professor at the University of Reading in the United Kingdom, also pointed out that in the United Kingdom and some other countries, educational administration is regarded as a specialized field of educational administration, and its primary task is to support the teaching of primary and secondary schools. Its effectiveness is mainly measured by its contribution to the improvement of student learning, and its purpose is to provide a theoretical framework or structure for effective teaching, so they are accustomed to referring to educational administration, including educational administration.

Li Xu, Hou Huaiyin (2022, p.59-70) Educational management is an examination of educational management under management and public administration, which not only provides a perspective and theoretical background for the study of educational management, but also ensures the integrity and scientificity of the discipline system of educational management.

Chen Xuejun and Zhang Xinping (2007, p.17-21) The knowledge of organizational theory, behavioral science, policy science, economics and other disciplines borrowed from the discipline system of educational management is also intervened through management.

Zang Tianxue. (2006, p.83-87) The construction of an open discipline system of educational management based on the "concept of big educational management" should follow the logic of "rational method-theory as evidence-concept guidance", and form an open knowledge framework including three levels: formal theory of educational management, paradigm theory of educational management, and philosophy of educational management.

Li Xu, Hou Huaiyin (2022, p.59-70) Educational management itself is a comprehensive science, and in the process of differentiation and integration, it has gradually formed disciplines such as school management, educational administration, educational policy, educational law, educational evaluation, educational supervision, and educational decision-making, which have increasingly developed into a huge group of disciplines. Educational management has continuously developed itself on the basis of absorbing the knowledge, theories and methods of other disciplines, deepened scholars' knowledge and understanding of educational management activities, and broadened the scope of theoretical research on educational management and the subject area of educational management.

Wang Xiaomei, Mei Junqiang. (2022, p. 61-63) The content of education management includes the operation and quality evaluation of teaching plans, teaching management system and practical teaching and other capital construction management, and the task of college student education management is to study the laws of education management, establish a stable teaching order, and organize the implementation of teaching reform.

Zhao Tianxue (2018, p.246-248) believes that the main body of education management is people, and the purpose of management is to serve people.

Yang Yaning (2019, p.12) Educational management refers to the process of making full use of various conditions to make the orderly operation of teaching, office and other activities in schools.

Zhang Fuquan (1989, p.21) proposed in Modern Educational Management that educational management belongs to a category of social management, which will involve many aspects in various fields of social management. Educational management is the process of activities in which managers manage the education team, give full play to the role of various educational information, and make use of the advantages within education to achieve the goals of education management with high efficiency.

In summary, different researchers have different understandings of the concept of educational administration, so there are different concepts of educational administration. Educational administration is under the constraints of the political, economic and cultural environment of a country or region, under the control of the

values of the leaders of the education administration department, using scientific methods to predict and plan, organize and guide, supervise and coordinate, motivate and control all types of educational organizations at all levels under its jurisdiction, so that limited educational resources can be developed and rationally allocated, so as to achieve the purpose of improving the quality of education, increasing the efficiency of running schools, stabilizing teaching order, improving school-running conditions, and promoting the development of education.

The Development of Educational Management

With the changes of the times and the progress of science and technology, education management is also constantly developing and evolving, from the initial basic management to the current high degree of information and intelligent management. Education management has gone through many historical stages and is facing many challenges and opportunities.

1. The historical development stage of educational management

The development of educational management theory is divided into several important stages. The first is the early stage, which focuses on how to build the organizational structure of the school, develop curriculum and instructional plans, and solve common problems in learning operations. At the stage of scientific management, people began to apply scientific methods to improve the efficiency of educational processes and institutions. Subsequently, the administrative phase emphasizes the administrative role and intelligence of the education manager, focusing on the management of people, budget, and resources. By the time it comes to the systems/organization management stage, people begin to view the school as a complex organizational system with an emphasis on holistic, systems thinking, and social interaction. Finally, learning organization and leadership management theories are gradually emerging, focusing on the learning ability and knowledge management of schools, as well as the leadership and influence of educational managers.

Zhang Weiguang (2021, p.26) Modern educators have formulated correct institutional thinking, system, and mechanism as a normative system for the implementation and guarantee of the implementation of guidance through their own efforts to transform Chinese education from the system.

Sun Miantao, Xu Hang (2023, p.1-11) The American scholar Samuel Hall published two books on education in 1829 and 1832 respectively, and the West has been studying educational management for 200 years. It has been half a century since each scholar James March and Johan Oisen began working on university governance in 1976. At the end of the 19th century, Chinese scholars translated and introduced foreign treatises on educational management and began to take the discipline of educational management as an independent course in normal schools as a characteristic of China's independent form of educational management, and the study of educational management in China has a history of more than 100 years.

Liu Delei. (2018, p.20-24) refer to since China began to study education governance at the beginning of the 21st century, there have been 20 years of research on education governance in China's century-long study of education management. In just a few decades, a phenomenon worthy of attention has emerged in the study of educational management: a new research trend has emerged in the relatively independent research on educational management in the past, the study of educational governance, and this paper has become more and more popular and has become a new specialized research field.

2. The evolution of educational management philosophies and models

With the changes of the times, the concepts and models of educational management are also constantly evolving, from the initial teacher-centered teaching model to the student-centered personalized teaching model, these changes reflect the renewal and progress of educational management concepts. At the same time, with the development of information technology, the education management model has gradually become informatized, and the direction of intelligence has changed, such as online teaching, virtual laboratory and other forms of information teaching.

Lang Junru, Zhi Chuan. (2021, p.178-180) Under the concept of double first-class construction, the innovation of education management system and mechanism should be carried out in accordance with the development concept of the new era, in view of the reasonable innovation and reform of education management mode and education governance model, and the reasonable creation and improvement of education management system and mechanism, so as to ensure that the education

management system and mechanism used can promote the completion of the double first-class construction and lay a good foundation for the subsequent development and progress of colleges and universities.

Zhuo Ran, Ding Lan. (2023, p.39-41) The application of big data technology has greatly improved the speed of information processing and made it more accurate, providing better technical support for education administrators. Big data technology can also effectively extract information purity, remove useless information, provide effective key information for education managers, and make effective guidance for education management decision-making. The grand data scale and scientific data analysis provide strong technical support for educational management decision-making, and the educational management decision-making obtained through the analysis of the objective situation through big data is more scientific and more in line with the actual situation, which can effectively promote the progress of educational management decision-making.

Jiang Fucheng (2020, p.170) Education managers in the new era should establish advanced educational concepts, attach importance to students' innovative consciousness and ability training, and implement innovative educational concepts into the practice of education management.

Luo Man (2023, p.42-44) Education management faces many opportunities and challenges. The education policy has put forward new requirements for education management. The application of artificial intelligence + educational information technology has changed the role and status of teachers, and at the same time changed the way students learn, which has affected all aspects of educational organization.

3. The impact of modern educational technology on education management

Modern educational technology has had a profound impact on education management, on the one hand, modern educational technology has improved the efficiency and quality of educational management, such as the sharing of teaching resources through information technology, online evaluation and feedback, etc., on the other hand, modern educational technology has also promoted the innovation and development of educational management, such as personalized teaching through big data and artificial intelligence technology, intelligent evaluation, etc.

Li Xiangyang (2017, p.6) With the advent of the era of big data, the evaluation of education is no longer limited to subjective assumptions and personal experience, but has become an objective evaluation supported by data. It can not only count the number of clicks of students on each tutor's course on various teaching platforms, but also support the data of the entire education evaluation through activity surveys.

Li Yue. (2021, p.37-38) University education management is one of the most important links in university management, in essence, the healthy development of university education and teaching is inseparable from the teaching management of scientific universities, so many colleges and universities have adopted information technology to manage education and teaching links, and big data has brought a new management concept and model to university education management. The advent of the information age has brought a new way of working to university education management, especially the university education management from the perspective of big data is more accurate and scientific, and has effectively improved the quality and efficiency of education management.

History of Educational Administration

As an important branch in the field of education, the historical evolution of educational management reflects the change of educational concepts, the progress of technology, and the development of society.

Luo Man (2023, p.42-44) Classical education management philosophy: emphasizing the authority of teachers and the obedience of students, focusing on the transfer of knowledge and the training of skills. Scientific management stage: using the management theories of scientists such as Taylor, emphasizing quantitative analysis and standardized operations, and improving the efficiency of education. Behavioral Science Management Stage: Focusing on human behavior and psychological factors, emphasizing the improvement of teaching quality through motivation and communication. Humanistic management stage: people-centered, focusing on individual growth and development, emphasizing democratic participation and self-management. People-oriented is the basic foothold of contemporary education concept that conforms to the development needs of the times.

Higher Education

Sun Shubiao (2019, p.25) The connotative development of higher education is the development of improving quality as the core and taking the internal factors of higher education as the main driving force. The proposal of this concept is the product of the historical development of China's higher education to a certain stage, and is an objective requirement for implementing the scientific outlook on development in the field of higher education.

Sun Shang (2018, p.3) believes that higher education is a dynamic concept that is constantly changing with the development of the times. Higher education covers two aspects: one is the foundation or starting point of higher education, and the other is the nature of higher education.

Pan Maoyuan (1999, p.21-23) The sustainable development of higher education can be defined as promoting the healthy, orderly and sustainable development of higher education on the basis of respecting the law of higher education development. "The sustainable development of higher education requires that the development of society should be met first, and equal priority development and overall development should be emphasized.

Pan Maoyuan (2013, p.290) believes that higher education is a practical discipline with strong comprehensiveness. However, due to the lack of completeness of its structure, it is necessary to define and explore the basic theory while constantly refining the structure. In order to further prove that higher education is to take the special contradictions of higher education practice as the research object, and on this basis, explore the general laws that should be followed in higher education practice, and guide the reform and practice of higher education.

Zhou Jianxin (2019, p.6) Higher education includes various types of learning, training, or research-based training at the post-secondary level implemented by universities or other institutions of higher learning approved by the state as higher education institutions.

Shen Yanting (2020, p.7) Higher education mainly studies the theory of the nature and function of higher education, the theory of teaching and education, the theory of all-round human development and the training goals of colleges and

universities, and the law of scientific and technological development in colleges and universities.

Sun Biao (2017, p.35) The Law on People's Republic of China Higher Education issued in 1998 stipulates that "higher education is education carried out on the premise of completing senior secondary education.

Higher Education Administration

The definition of higher education administration contains the following three meanings, indicating that the basis of higher education administration activities is the purpose of higher education and the law of higher education development; Noting that the task of higher education administration is to consciously regulate the relations within and outside the higher education system and the resources available to higher education; The result of higher education administration is a continuous contribution to the achievement of the objectives of the higher education system. Higher education administration is the process of consciously regulating various relationships and resources inside and outside the higher education system according to the purpose of higher education and the law of higher education development, so as to achieve the purpose of the established higher education system.

Zhang Bo (2008, p.37-40) Higher education administration was formally proposed as a normative discipline concept in 1985. Different scholars have analyzed higher education administration from different perspectives, and believe that higher education administration abstracts various laws, connections and problems in the fixed field of higher education administration, so as to form a discipline concept category that understands the objectivity of higher education administration activities. Generally, higher education administration is divided into two parts for study, namely higher education administration and higher school administration.

Xu Jianling (2002, p.55-57) analyzes the characteristics of the development of higher education management in China, and also divides the development of higher education management research in China into three stages after the founding of the People's Republic of China: the experience-led stage from 1949 to 1977, which is dominated by experience in higher education management, so the theoretical level is relatively scarce and rough; The period from 1978 to 1988 was a period of theoretical

exploration, in which people tried to find a way to flourish China's higher education, and once again objectively thought and studied many educational management issues; Since 1989, compared with the previous stage, not only the number of research results has been improved, but also the monograph has made a qualitative leap in systematization.

Li Yifang (2003, p.98-101) divided the development of higher education management research in China into the following three stages from the perspective of changes in the educational environment: the pre-disciplinary stage from 1949 to 1977. During this period, the research on higher education management was limited to the interpretation and explanation of policies, and there were a few articles at this stage that tried to analyze practical problems based on the actual situation of the school, but the number was too small to systematize the research. The inception of the discipline from 1978 to 1983. During this period, the emphasis was on summarizing and compiling experience, and some representative works also appeared, which mainly focused on university management, thus promoting the emergence and development of university management. However, they only focus on the introduction of experience and the relevant theories are relatively weak, so they cannot form a complete discipline system. From 1984 to the present, the development stage of the discipline has realized the transformation from empirical research to theoretical research. During this period, the monographs gradually departed from the writing ideas of exposition, and tried to use scientific methodology as a clue to study the discipline system of higher education management, which laid a solid foundation for the improvement of the discipline system in the future.

Wang Huiju (2003, p.39-41) believes that higher education administration is an emerging discipline, its emergence and development for higher education to add a new member, which is not only a historical process of educational administration credits, but also the inevitable result of higher education theoretical knowledge accumulation and horizontal development, from the strict discipline development as an independent discipline has its development and improvement process, in the development process of a discipline, on the one hand, people need to repeatedly

experience and investigate, form experience and ideas, through the guidance of scientific methodology, Summary rises to the subject system.

Zhang Bo (2008, p.37-40) argues that higher education administration can be understood as a dynamic colloquial conceptual category of higher education administration work or administration activities, which is fundamentally different from the static concept of discipline-oriented higher education administration. The knowledge of higher education administration is more manifested in the special realm of knowledge and problem-solving oriented characteristics, which is manifested as an intellectual judgment of higher education activities or problems with the help of past experience and realistic situations, or avoidance and control of problems, or reactive treatment of problems that have occurred.

Wang Yapu (1983, p.7) believes that higher education administration refers to the administration of the entire higher education, which is neither a simple higher education administration nor a simple ordinary college administration, but includes the state's administration of higher education and the overall administration of schools by university administrators. The author discusses the content of higher education administration within the scope of higher education administration.

Shen Yanting (2020, p.5) The concept of higher education administration is higher education administration, which is the administration covering the entire field of higher education, which can be understood from both macro and micro aspects, from the macro aspect, it refers to proposing tasks, formulating plans, providing conditions, issuing decrees, and issuing instructions according to national needs; From the micro aspect, it is to directly organize talent training and scientific research according to the requirements of superiors. To put it simply, higher education administration is the decision made by managers to optimize the allocation of various elements within the organization to ensure the order and efficiency of daily administration work and achieve higher education goals.

Wu Daguang (2004, p.20-24) The theory of popularization of higher education is a theory of scale expansion and quality development of higher education proposed and gradually matured by Martin Trow, a famous American education sociologist and professor at the University of California, Berkeley's Graduate School of Public Policy, in

the 70s of the 20th centuries, based on the development of higher education in the United States and with reference to the development of higher education in Europe. Generally speaking, the academic community recognizes Martin Terrow as the founder of the theory of popularization of higher education.

Deng Xiaochun, Liu Guorui (1996, p.17-20) Higher education management focuses on the two specific perspectives of "objective practice and law" and "higher education development goals", and believes that higher education management is a higher education manager, and integrates the relevant human and material resources of the higher education system in order to achieve specific goals.

Xue Tianxiang (2001, p.14-19) starts from the study of the system and purpose of higher education, and believes that higher education management is an extension of the logic of the system and purpose of higher education.

Wei Yitong (1988, p.98-103) extends the definition of management and believes that higher education management is to combine the activities of higher education managers and the specific activities of higher education teaching and scientific research personnel into an overall activity, so as to facilitate the smooth achievement of the goals set by higher education managers.

To sum up, there is an inextricable link between higher education, educational administration and higher education administration, which is the object of higher education administration, which in turn is subordinate to the practical activities in the field of education (it refers specifically to the various types of educational administration carried out after the completion of secondary education). According to the definition of higher education, higher education has the characteristics of large scale, multiple levels and complex content. Higher education can be formally divided into several types: general higher education, adult higher education and higher education self-study examinations. With the development of society's politics, economy, culture, science and technology, the scale of higher education has expanded, the quality of talent training, higher education resources, professional settings, coordination of teacher-student relations, and socialization of logistics work determine that the administration of higher education is significantly different from the administration of basic education. This difference is mainly reflected in the

administration object, administration principles, methods and means, manager quality and other aspects.

Concept of Educational Informatization

Educational informatization refers to the systematic engineering of actively applying information technology, in-depth development, and extensive use of information resources in all aspects of education and teaching, under the guidance of advanced educational ideology, in all aspects of education and teaching. The so-called informatization of education refers to the process of universally using modern information technology in education, developing educational resources, and optimizing the educational process in order to cultivate and improve students' information literacy and promote educational modernization.

Fan Xu (2019, p.1) In the late 60s of the 20th centuries, Japanese scholars discussed the development trend of future society and took the lead in proposing the concept of information society and informatization from the perspective of the evolution of long-term social results. Information society refers to a society in which the information industry is highly developed and the information industry is in a dominant position. Informatization represents the process of the development of the information society. From the connotation of the concept of informatization, it means that the concept of information technology is deep, the application of information technology is very extensive, and the information technology industry is developing rapidly. From the perspective of extension, it refers to the information environment of a country or region. Informatization is the abbreviation of economic and social service informatization.

Zhu Zhiting (2002, p.7) pointed out that education informatization refers to the process of comprehensively and deeply using modern information technology in the field of education to promote educational reform and educational development, and the result will inevitably be the formation of a new form of education - information education. This definition emphasizes that education informatization is a dynamic and evolving process.

Fan Xu. (2019, p.3) synthesizes these definitions, refers to the national definition of informatization, and makes a definition of education informatization: the so-called education informatization refers to the comprehensive and in-depth application of modern information technology in all fields of the education system under the unified planning and organization of the state and the education department, and accelerates the process of realizing educational modernization.

Wang Juan (2016, p.13) believe that education informatization was proposed by the US National Information Infrastructure Plan in the 90s of the 20th centuries. Education informatization and information and communication technology maintain a very close relationship. In 1993, the Clinton administration proposed a plan to build an information superhighway, and with the proposal of this plan, the Concept of educational informatization was born. It is generally believed that education informatization is a complex, multi-level system engineering, which has information exchange with politics, economy, culture, science, etc., and is constrained by various social systems and serves related systems.

Zhang Zhenyun (2018, p.1) Education informatization is aimed at the acquisition, transmission, processing, regeneration and utilization of information in the process of education and teaching, which is based on information network, information resources are the core, and the wide application of information resources and information technology is the purpose. This book defines education informatization as: taking information and information technology as a basic component of the education system, and widely using information and information technology in all fields of education to promote all-round reform of education and system engineering of educational modernization. The characteristics of education informatization: digitization of educational information processing, three-dimensional transmission of educational information, intelligent educational information system, multimedia presentation of educational information, and subjectivization of student status.

Zhang Li (2020, p.1) In 2010, the research group on the construction and application of education informatization positioned education informatization from the perspective of education strategy, pointing out that education informatization is the process of making full use of information technology in the field of education,

developing and utilizing information resources, promoting information exchange and knowledge sharing, and promoting educational modernization. The field and scope of education informatization clearly define the purpose of education informatization to promote and improve the effect and efficiency of education, and the ultimate purpose is to cultivate talents who adapt to social development.

Ai Yubing (2011, p.1) Education informatization refers to the process of applying information technology means to promote the development and reform of education and teaching in the field of teaching and research, and education informatization covers a wide range of content, involving teachers, administration, evaluation, environment, resources, etc., of which teaching informatization is the core content of education informatization. The purpose of education informatization is to promote the development of educational modernization with education informatization and to change traditional ideas, concepts and models by means of informationization. Education informatization is of great significance, it is an important part of national informatization, it is of far-reaching significance for changing educational ideas and concepts, deepening educational reform, improving education quality and efficiency, and cultivating innovative talents, and is an inevitable choice to achieve high-quality connotative development of education. The Concept of educational informatization has been widely used in China, but at present, there are many opinions on the connotation of education informatization, and a unified definition has not yet been formed.

Nan guonong (2002, p.20-24) believes that education informatization refers to the process of using modern information technology in education, developing educational resources, and optimizing the educational process to cultivate and improve students' information literacy and promote educational modernization.

Li Kedong (2001, p.46-49) Education informatization refers to the active application of information technology, in-depth development and extensive use of information resources, cultivation of innovative talents who meet the requirements of the information society, and the acceleration of educational modernization in all aspects of education and teaching, under the guidance of advanced educational ideas.

Zhu Zhiting (2002, p.10) believes that education informatization refers to the comprehensive and in-depth use of modern information technology in the field of education to promote the process of educational reform and educational development, and the result will inevitably be the formation of a new form of education - information education.

Li Jiahou (2002, p.8) believes that education informatization is a new education system based on modern information technology, including a series of reforms and changes in educational concepts, educational organizations, educational content, educational models, educational technologies, educational evaluations, and educational environments. Education informatization is not simply equivalent to computerization or networking, but a systematic project related to the entire educational reform and educational modernization. The purpose of developing education informatization is to adapt China's existing education system to the basic requirements of the information age for the new generation of civic education.

Zhang Jianwei (2003, p.9-13,28) believes that education informatization refers to the full integration and application of information and communication technology (ICT) in the education system, and to a certain extent to realize the digitalization, networking and virtualization of education teaching, organization and administration, campus life services and other activities, so as to improve the quality and efficiency of education, and finally form a new education model that meets the requirements of the information society.

Wang Jide, Zhu Shuhui (2015, p.1-7) Professor Zhu Zhiting believes that education informatization is a process, which refers to the combination of modern information technology and education to continuously promote the reform and development of education, and form a new form of education, that is, information education.

Cheng Jie (2012, p.3) Professor Nan Guonong mentioned in "Introduction to Information Education" that education informatization refers to the application of information technology to education, the development of educational resources, the optimization of the education process, the continuous improvement of students'

information literacy, the cultivation of modern talents, and the promotion of the development of educational modernization.

Fu Derong (2002, p.5-9, 72) summarized educational informatization as a basic element of the education system and the general term for various activities that continuously use information technology in education.

Li Kedong (2001, p.46-49) summarized the informatization of education as the use of information technology to develop and utilize resources in the field of education under the wave of informatization, and continuously promote the development of educational modernization.

Yang Yaning (2019, p.11) Educational informatization refers to the integration of information technology into the process of teaching, scientific research, management, etc., changing traditional education methods and concepts, and promoting the modernization and development of education. The informatization of university education management is to use information technology to change the traditional organizational form and management mode of colleges and universities, and speed up the efficiency of information transmission and business handling.

Ai Yubing (2011, p.5) With the gradual improvement of education informatization theory, its impact on the information literacy of university teachers is mainly manifested in: first, the teaching implementation process, the rise of high-quality courses and online open courses, so that university teachers have to add more information components in the classroom teaching process; Second, in the field of automated office of university teachers, in the era of network information, automated office equipment and procedures are becoming more and more perfect, and university teachers urgently need to master these skills; Third, in the field of scientific research, university teachers not only undertake teaching, but also undertake the task of scientific research; in the era of high-speed and developed networks, university teachers urgently need to master information technology and the ability to use information technology.

Sun Xingcheng (2011, p.12) The informatization of university education has rich content and profound connotation, including the construction of informatization infrastructure in colleges and universities, the training of informatization human

resources, the construction of informatization information resources, the construction of informatization management mechanism in colleges and universities, and the effective application of information technology in various aspects of colleges and universities, such as university education, teaching and scientific research, university management, teachers' professional development, student ability and information literacy training, etc.

Zhou Yu (2022, p.4) Li Kedong, Zhu Zhiting and Nan Guonong can find common ground in the definition of the concept of educational informatization, that is, no matter from the perspective of requirements, engineering or process, the concept emphasizes the application of information technology in education, and they all believe that educational informatization is ultimately to promote the modernization of education.

Wang Juan (2016, p.12) Educational informatization is the use of information technology to promote the reform of traditional education methods and educational concepts, promote the change of learning methods, and then promote the informatization of teaching and learning, and realize the modernization of education.

Yang Yaning (2019, p.12) Informatization of university education management is to use information technology to change the traditional organizational form and management mode of colleges and universities, and accelerate the efficiency of information transmission and business handling.

To sum up, education informatization refers to the active application of information technology, in-depth development, extensive use of information resources, cultivation of innovative talents who meet the requirements of the information society, and the acceleration of educational modernization in all aspects of education and teaching, under the guidance of advanced educational ideas.

Informatization of Higher Education Administration

Li Peiwei (2022, p.28-33) believes that university education informatization is roughly divided into four stages: the initial stage, the foundation stage, the application stage and the innovation stage, and the deep integration of information technology and education in the era of education informatization 2.0 from 2018 to 2020 leads

education into the innovation stage, which naturally triggers profound changes in information literacy education.

Ministry of Education (2021, p.15) University administration informatization is a branch of education administration informatization, and education administration informatization is an important part of education informatization. Education administration informatization is based on information systems, data resources and infrastructure as the basic elements, using information technology to transform administration concepts, innovate administration methods, improve administration efficiency, support educational decision-making, administration and services, and promote the process of modernization of education governance.

Zhong Zhixian (2001, p.3) University teachers' information literacy is a new content of the professional development of university teachers in the information society, according to the Opinions of the Ministry of Education on Promoting the Informatization of Teacher Education (Teacher,2002, No. 2), teacher informatization is the use of modern information technology to promote the development of teachers' professional skills and achieve self-improvement process, is the process of cultivating high-quality teachers with information teaching design and implementation ability, teacher informatization will become the core element of education informatization to drive education modernization.

Characteristics of Higher Education Informatization

Zhang Jiang (2021, p.12) believes that systematic, university administration informatization is a complex, long-term, dynamic and systematic process, including various aspects such as university teaching, scientific research and administrative administration, and also involves the comprehensive application of thinking mode, method improvement, organization implementation, system tools and other elements of information construction. The administration informatization of universities has multiple subjects such as the government, universities, students, and teachers, and it is necessary to rationally coordinate, scientifically manage, and rationally allocate information resources, continuously improve the administration level and administration efficiency, and improve the education governance system. Targeting, as a key link to realize the modernization of education administration, the administration

informatization of universities has obvious goals. At the university level, by using various information administration resources to effectively improve work efficiency, improve service satisfaction, promote the reform of school governance capacity, better serve teaching construction and scientific research construction, and contribute to the creation of double first-class. Synergy, university administration information system is a non-linear feedback system, oil capital investment. The number of teachers and students and their information literacy, the number of information talents and their literacy, the efficiency of teaching and research administration, the level of strategic planning, the construction of information technology, the education evaluation mechanism, and the degree of attention paid by decision makers. Plasticity, the composition elements of university administration informatization are complex and diverse, such as people, things, policy guidelines and other privacy directly lead to the instability and plasticity of university administration informatization

Wang Juan (2016, p.13) College education informatization terminology education signal within the scope of the dimension, but also one of the main development positions of China's national education informatization, in the documents issued by China's Ministry of Education, higher education informatization and basic education informatization, vocational education informatization, continuing education informatization, education administration informatization constitute the main development content of China's national education informatization, the content of college education informatization mainly includes infrastructure construction informatization resources, development of informatization applications, Information security and security mechanisms, etc.

Zhao Guodong (2004, p.19-24) believes that college education informatization is a systematic construction project, which uses information and communication technology, based on digital campus, and fully applies information technology to all aspects of universities, so as to promote the teaching, scientific research and administration level of universities, cultivate talents who meet social requirements and better provide services for the society.

Li Sihuan (2007, p.6) believes that the informatization of college education is essentially the use of modern information technology by universities to support many links such as teaching, scientific research and logistics services in universities, to achieve efficient information collection, processing, administration and circulation, and gradually realize the function, efficiency, standardization and science of many links of university work, so that higher education can cultivate talents who meet the needs of the information society, and finally realize the fundamental reform of higher education. The components of higher education informatization are: information network, information resources, information technology application, information technology industry, information technology talents, information technology policies and regulations.

Zhang Haofeng, Zhang Shuichao (2008, p.25) believe that education informatization is a process of effective application of information technology in education, which attaches great importance to information analysis of the education system from the perspective of information. In terms of infrastructure, it focuses on the construction of computers, projectors and related auxiliary equipment and various network infrastructure; In terms of teaching management, we strive to achieve automated management. In terms of technical operations, computer technology and telecommunication technology are mainly used; In terms of resource reserves, it mainly includes digital libraries, various educational websites at all levels, etc.; In terms of relevant personnel, attention is paid to the cultivation of teachers' and students' information attitudes and information literacy.

Hao Zixu (2014, p.144) defined the concept of educational informatization as the unified organization of education-related departments in the entire education system, and the reasonable planning of the appropriate and effective use of information technology in the education and teaching process, so as to gradually and rapidly realize the modernization of education.

To sum up, University education informatization is a complex information system project, which fully integrates and applies modern information technology in the application of college education, and provides information technology support for teaching, scientific research, administration and service of universities, so as to improve

the quality and efficiency of education and realize the modern education and administration mode of universities.

Concept of Information Literacy

In the 21st century, with the further development of the information age, the connotation of information literacy is richer than it was at the beginning. Information literacy is further defined as the overall level at which a person masters, applies and evaluates information technology knowledge and methods. It includes the mastery of basic knowledge and basic skills of technology, the ability to use information technology to solve problems, and the understanding of technology awareness, attitude and social responsibility. It is the comprehensive literacy of various abilities that people show in information activities. At this stage, the concept of information literacy developed in the direction of diversification, emphasizing its comprehensiveness, but its connotation and extension are still constantly enriching and developing.

Han Lifeng, Wang Qian etc (2015, p.118-126) 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 communities of learning.

Xiao Xinxiang (2021, p.116-121,128) The American Library Association (ALA) defined the definition of information literacy (1989); the American Association for Educational Communication and Technology (AECT) and the Association of School Libraries (AASL) jointly developed the National Information Literacy Standard for Student Learning (1998); The National Standards for Educational Technology published by the International Association of American Educational Technology (ISTE) (1998, 2000, 2007, 2008); The Higher Education Information Literacy Competency Standards launched by the National and University Library Association (SCONUL), the Australian Association of University Librarians (CAUL), and the American Association of University and Research Libraries (ACRL) in 2000 and 2004; The United Nations Educational, Scientific and Cultural Organization (UNESCO) focused on information literacy, the Prague Declaration in 2003, the Alexander Declaration in 2013, the Media and

Information Literacy Policy and Strategic Guide, and so on. These research results are long-lasting and rich, which strongly promote the development of information literacy and information literacy education, and reflect the importance attached to information literacy by the international community.

Li Guicheng (2021, p.10) In 1965, Australian education scholar Professor Ernest Roe first mentioned information literacy, arguing that to promote the effective use of information resources, librarians should help users use search strategy. In 1974, Paul Zurkowski of the United States identified information literacy as those who are well trained in how to apply information resources to work. Information literate people have learned the techniques and abilities to use various information tools and primary sources of information to form information solutions to solve problems. In 1987, informatics expert Patrieia Breivik summarized information literacy as understanding the system that provides information, identifying the value of information, choosing the best channels for obtaining information, and mastering basic skills for obtaining and storing information, such as databases, spreadsheet software, word processing, and other skills. At this stage, the ability to judge information, select information and choose the best channels to obtain information is emphasized, while also attention is paid to information storage skills. At this time, people's understanding of information literacy basically remained at the technical level of operating computers.

Zang Yifei (2007, p.23) In 1989, the American Library Association's Presidential Commission on Information Literacy formally defined information literacy in its final report: information literate people can know when they need information, and can effectively access, evaluate, and use the information they need. This definition is relatively comprehensive and often cited and more classic.

Zhang Le (2012, p.27) In the 1990 National Information Literacy Forum, the annual report proposed that information literacy people are: understanding their own information needs; Recognize that accurate and complete information is the basis for making informed decisions; Be able to systematically articulate problems based on information requirements; Ability to identify potential sources of information and develop successful search strategy; Ability to retrieve information sources, including the use of computer-based information technology or other technologies; Ability to

evaluate information; Ability to organize information for practical application; Ability to incorporate new information into existing bodies of knowledge; Ability to use critical thinking, use information and solve problems.

Zeng Xiaomu (2005, p.18) In 1992, information literacy was officially included in the ERIC (World Center for Educational Resource Information Center) database, marking the confirmation of the educational significance of information literacy.

Sheila Webber, Bill Johnston. (2000, p.381-397) believes that information literacy is the ability to adopt appropriate information behaviors and obtain information through any channel and medium that best suits information needs, while recognizing the importance of thinking about and using information lawfully in society.

Wang Junjie (2004, p.94) Doyle believes in recognizing that accurate and complete information is the basis for making sound decisions, identifying information needs, forming information needs-based problems, identifying potential sources of information, developing successful retrieval programs, including obtaining information from computers and other information sources, evaluating information, organizing information for practical applications, integrating new information with existing knowledge systems, and using information in critical thinking and problem solving.

Hannelore B (1991, p.26) argues that information-literate people have the ability to assess the validity and reliability of different information channels and sources for different information needs, and are familiar with many techniques for collecting and storing information in their possession.

Christine Bruce (2005, p.32) of the Information Service at Griffith University, Australia, identified seven key characteristics of information-literate people: the ability to learn independently; Ability to complete the information process; Ability to use different information technologies and systems; has intrinsic value in promoting the use of information; Have sufficient knowledge of the information world; Ability to process information critically; Have a personal information style.

Shirely J. (1994, p.309-322) argues that information literacy is the ability to train, master information tools, obtain relevant information, and solve practical problems.

M. F. Lenox and M. L. Walker (1991, p.312-324) believe that people with information literacy have the ability to articulate research questions, to evaluate the analysis and identification of research results, and to retrieve multiple types of information to meet information needs.

The basic knowledge and ability qualities of information literacy proposed by He Kekang (2005, p.16-19) are: information acquisition: information discovery, information collection and information optimization; Information analysis: information classification, information error checking and information evaluation; Information processing: information sorting and retrieval, information organization and expression, information storage and transformation, and information control and transmission; Use of information: Effectively use information to solve various problems in study, work and life.

Li Kedong (2001, p.46-49) Information literacy encompasses three basic points: application skills in information technology; the ability to critique and understand the content of the message; Use information and have the attitude and ability to integrate into the information society.

Wang Jiqing (1999, p.47-48) pointed out that information literacy is a kind of cultivation and ability to obtain information, use information, and develop information in the information society through education. It includes information awareness and emotion, information ethics, information common sense and information ability, which is a comprehensive and social common evaluation. At the same time, it is also pointed out that the level of personal information literacy depends not only on whether he can skillfully use the information system, but also on whether he can play the positive role of the information system in human society.

Ma Haiqun (1997, p.84-87,95) defines information literacy as the various information qualities of individual members in the information society, including information intelligence (involving information knowledge and skills), information ethics, information awareness, information consciousness, information concept, information potential, information psychology, etc.

Xie Lihong (2000, p.78-80) believes that information quality is the information awareness and various abilities or skills of information processing that people have in a society with cross-penetration of various information and highly developed technology, including the ability to collect, develop identification, comprehensive analysis, information technology use ability, and positive information psychology and good information ethics.

Sun Jianjun (2001, p.24-26) believes that information quality is a part of humanistic quality, which is a stable and basic personality psychological quality formed by knowledge, information awareness, education, environmental impact, etc. in humanistic society, which has obvious external expression. Information quality mainly includes two levels, one is information knowledge ability, which marks the level of information professional knowledge; The second is information awareness and awareness, which mainly includes literacy in information collection, ordering, utilization and evaluation.

Pi Jiezheng (2003, p.87-90,107) believes that information literacy is a stable ability and quality formed by the comprehensive formation of information concepts, consciousness, attitudes, habits and ethics and morality that should be followed by information subjects in information behavior, and the use of appropriate information tools to find, obtain and use information from various information sources.

Qin Xiaoyan (2015, p.139-143) The Information Literacy Competency Standards for Higher Education, adopted by the Association of American University and Research Libraries (ACRL) in 2000, define information literacy as the ability of individuals to recognize when information is needed and to effectively search, evaluate, and use the required information; Emphasize independence, staticness, and distinction from other literacies (e.g., information technology, computer literacy).

Yan Jia (2022, p.101-103,133) In 2003, organized by the United States Library and Information Science Council and the National Information Literacy Forum, and funded by the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Expert Conference on Information Literacy was held, which issued the Prague Declaration: Towards the Information Society, which defined information literacy as the ability to identify, find, evaluate, organize and effectively

produce, use and communicate information to solve problems, and noted that information literacy is a prerequisite for people to participate in the information society.

Qin Xiaoyan (2015, p.139-143) In the latest Information Literacy Framework for Higher Education released by ACRL in 2015, the definition of information literacy was updated: it refers to a set of comprehensive abilities that include reflective information discovery, understanding how information is generated and evaluated, and using information to create new knowledge and participate reasonably in academic societies; It emphasizes the connection and integration of dynamics, flexibility and various emerging literacies (such as media literacy, visual literacy, digital literacy, etc.).

Wang Hui (2019, p.48-57) The definition of information literacy has been updated from the Standards to the Framework, reflecting the new requirements given to its connotation and extension by the development of the times and society. In the Standards, the main features of the definition of information literacy are: access to and evaluation, integration and use of information; The Standards focus on the learning and development of information skills; The Framework focuses on the development of information competencies and emphasizes the need for lifelong learning in information literacy.

Qian Dongming (2022, p.53-59). The evolution of the concept of information literacy is roughly divided into three eras: the era of library and information, the era of information technology, and the era of digital ability. Now in the digital age. UNESCO's 2018 Global Digital Literacy Framework highlights skills in the use of new technologies, including computer literacy, ICT literacy, information literacy and media literacy, as well as the ability of digital technologies to securely and reasonably access, manage, understand, integrate, present, evaluate and create information.

Zhong Zhixian (2013, p.21-29,95) believes that information literacy is mainly manifested in 8 aspects of ability such as using information tools, obtaining information, processing information, generating information, creating information, exerting information benefits, information collaboration, and information immunity.

Liu Danhe (2022, p.123-125) In essence, information literacy is an ability, that is, the ability to identify, retrieve, use, evaluate, communicate, reflect, and create information.

Qin Xiaoyan (2015, p.139-143) The connotation of information literacy has also been explained from multiple aspects and perspectives. There are mainly two views: one is the multi-literacy theory, that information literacy is a composite concept, information and the network and media these main carrying methods are inseparable, therefore, media literacy, visual literacy, data literacy, network literacy and other concepts emerged, although there are many different literacies, but in the final analysis, are based on information literacy. Both focus on the acquisition, use, understanding and evaluation of information, focusing on cultivating critical thinking about information, the difference is that the specific information form and processing technology are different, another view is the element cultivation theory, that the essence of information literacy is an element cultivation, is the literacy that gives birth to other literacies.

Gan Qunwen (2018, p.10-17) In 2015, Elemental Cultivation expanded from the traditional information skills such as how to find, obtain, determine, understand, use and produce information to participate in collaboration, production, evaluation and contribution of information in the network digital environment, requiring learners to master information technology, information producers, collaborators and publishers to participate in research and creation, and consciously use critical thinking and self-reflection to revise and adjust cognitive processes in a timely manner.

Wang Ziping (2021, p.3) will define the concept of information literacy from five dimensions: psychology, science, technology, sociology and ethics, and believes that information literacy is divided into five dimensions.

Ministry of Education (2021, p.15) Information literacy refers to the awareness, ability, thinking and cultivation of individuals to appropriately use information technology to obtain, integrate, manage and evaluate information, understand, construct and create new knowledge, and discover, analyze and solve problems. The components of information literacy include information awareness, information knowledge, information ability, and information ethics.

Shi Xiaolan (2022, p.63-65) Information literacy refers to the ability to effectively use information tools and core information sources to effectively deal with practical problems, including not only information literacy, but also information literacy.

Wu Xinyu (2022, p.114-126,140) Information literacy is the ability to search, process, understand and construct the reorganization of information, which is a high-level learning literacy and the literacy of innovation and creation.

Jiang Congwen (2019, p.22-26) believes that teachers' information literacy refers to the combination of teachers' information cognition, information operation skills, and information thinking. Teachers' cognition of information means that teachers can identify information related to teaching, information operation skills refer to teachers' ability to integrate teaching resources with the help of information technology, and information thinking refers to teachers' ability to recognize the value of information technology and be able to spontaneously integrate information technology with teaching.

Wang Yi (2017, p.109-114) believe that based on the characteristics of teachers' work, teachers' information literacy is based on pedagogical theories and syllabuses, in order to achieve specific teaching goals, combined with their own discipline and pedagogical knowledge, through information media and appropriate teaching methods, with the assistance of information technology.

Wu Di (2021, p.46-53) believe that teachers' information literacy in the 2.0 era should have a new dimension and orientation, and the development of teachers' information literacy should focus more on the discipline level, especially the literacy of the integration of information technology and disciplines, and its information ethics also occupy a very important position.

Zhou Yu (2022, p.6) Teacher information literacy refers to the ability of teachers to have a certain sensitivity to information related to teaching and life, to master certain information knowledge to serve teaching and life, to apply educational information equipment to help teaching, and to abide by certain social moral behavior norms.

Chen Weiwei, Li Yi (2009, p.7) Professor Li Yi of Nanjing Normal University define information literacy as the attitude of individuals (people) towards information activities and the ability to obtain, analyze, process, evaluate, innovate and disseminate information. It is an awareness and ability of what information is needed for the task at hand, where it is obtained, how it is obtained, how it is processed, and how it is disseminated. In addition, a diagram of the connotation of information literacy is proposed, and the connotation of information literacy is analyzed.

Wang Gong. (2017, p.8) Information literacy refers to the ability to use information technology to obtain, analyze, process, and disseminate information, as well as the ability to screen and process the information obtained, and the ability to use the information for our own use, the awareness of using information to solve problems, and the observance of corresponding laws and ethics in information activities.

To sum up, information literacy is a basic comprehensive ability that people need to have in social informatization, involving all aspects of knowledge, is a special, wide coverage ability, it contains humanistic, technical, economic, legal factors, and many disciplines have a close connection. Information literacy focuses on content, dissemination, analysis, creation, reflection, etc., including information retrieval and evaluation, which involves a wider range of aspects. It is a knowledge structure for understanding, collecting, evaluating and using information, both through skilled information technology and through sound investigative methods, identification and reasoning. Information literacy is an information competency, and information technology is a tool for it. Information literacy generally includes four dimensions: information awareness, information knowledge, information ability and information ethics.

Information Awareness

Information awareness is a kind of self-renewal consciousness in the information age, and people with a high level of information awareness will be able to consciously adapt to the complex information society, discover new inspiration, learn new knowledge, constantly adjust their knowledge structure, adapt to the constantly updated information society at a faster speed, and obtain better personal

development. Information awareness is the driving force and source for people to generate information needs, form information motivation, and then consciously seek information, use information, and form information interests. Whether information is used or not depends on people's attitude towards information, that is, on a person's awareness of information, not just on the value of the information itself. A person who is not very information-aware will not be able to make good use of information.

Han Lifeng (2015, p.118-126) Information-aware people understand that information has many values, it can be a commodity, a means of education, a means of influence, and a way to negotiate and perceive the world. Information-conscious people often begin with a question that guides the search for the desired information. Experts believe that information retrieval is a contextually relevant, complex experience that affects the cognitive, emotional and social dimensions of the searcher, and vice versa. information awareness is the sensitivity to information, and when encountering problems, it will think of using information to judge, analyze and make decisions.

Wang Ziping (2021, p.5) From the perspective of psychology, information literacy should be positioned as having the ability to think about problems and the desire to learn, and the generation of problems can stimulate people's potential information needs and arouse people's awareness of actively seeking to find information.

Ye Wangxin (2019, p.10) refers to the active reflection of objectively existing information and information activities in people's brains, which is people's conscious psychological response to various information. People with strong information awareness can consciously grasp useful information and further carry out effective information activities.

Zhu Yi (2017, p.4) believes that information literacy is people's information sensitivity, which is people's understanding, feeling, and evaluation of various phenomena, behaviors, and theoretical views in nature and society from the perspective of information. In layman's terms, in the face of things you don't understand, you can actively look for answers, and know where to go and what

methods to use to seek answers, and consciously pay attention to information-related developments, which is information awareness.

Li Jiyan (2017, p.64-69) Information awareness is the sum of the understandings, concepts and needs generated by people in information activities. Consciousness determines action, and good information awareness is the premise and foundation for applying information technology to English teaching and research. With a high awareness of information, college English teachers can make full use of information technology in English teaching and research, change teaching concepts, and conform to the trend of university English teaching reform.

Chen Ying (2018, p.7) Information awareness is people's conscious psychological response to various information, which refers to the dynamic reflection of objectively existing information and information activities in people's minds. It is a synthesis of people's perception, recognition ability and application ability of valuable information in objective things, that is, the correct understanding of information science and self-awareness of information needs. Information awareness is a kind of self-renewal consciousness in the information age, and people with a high level of information awareness will be able to consciously adapt to find new inspiration and learn new knowledge in the complex information society, constantly adjust their knowledge structure, adapt to the constantly updated information society at a faster speed, and obtain better personal development. Information awareness is the driving force and source for people to generate information needs, form information motivation, and then consciously seek information, use information, and form information interests.

Guo Jun (2022, p.50-52) In terms of information awareness, university teachers should maintain a keen insight and continuous attention to the new characteristics and new laws of information generation, acquisition, dissemination, preservation and utilization in the intelligent environment in the process of education and teaching, scientific research, and daily life.

Zang Yifei (2007, p.15) Information awareness refers to people's conscious psychological response to various information. That is, the sensitivity to information, the ability to be aware of the required information in a timely manner, the ability to

capture and find relevant information sources, and to search for the required information. This kind of people's conscious psychological response to information depends on two factors, one is the scientific understanding of information, and the other is self-awareness of one's own information needs.

Zhuang Shanjie (2012, p.121-122) divides information awareness into three levels: information cognition, information emotion and information behavior tendency. Among them, information cognition is the perception and cognition of information and information activities, and evaluative cognition is the most important; Information emotion refers to the inner experience of the demand relationship that people gradually form in the process of receiving information; Information behavior tendency refers to the behavior tendency of individuals in information activities, which is the psychological readiness state of information behavior and the psychological preparation state of information behavior. People's information query and search activities are driven by information needs, and the main thing that affects the size of demand forces is the clarity and clarity of demand awareness. The clearer the consciousness, the clearer the goal of information behavior, and the more stable, long-lasting, and strong the motivation of information activity.

Chen Ying (2018, p.8) Information awareness has three manifestations: special keen perception of information; Have a persistent attention to information; Judgment and insight into the value of information. Whether information is used depends on people's attitude towards information, that is, people's awareness of information, not just the value of information itself. Information itself is valuable, and people with weak information awareness do not recognize the value of information and therefore cannot make good use of it.

Zhou Chun (2021, p.31-32) and Zhao Lihua (2011, p.127-130) Information awareness is people's sensitivity in the process of collecting and processing information and the value attitude towards information formed in this process.

Yang Min (2020, p.137-139) Qin Dianqi (2012, p.139-143) believes that information awareness is the attention and internal needs of information subjects, and is a conscious psychological state that exists in information activities.

Cai Hongwei (2022, p.11), Zhao Junmei and Zhang Liping believe that information awareness should include the awareness of innovative information in addition to attention and conscious state.

Xie Yueguang (2017, p.85-90) believes that information awareness includes eight elements, including the awareness of acquiring information, the awareness of recognizing the value of information, the awareness of sharing information with others, and the awareness of innovative information.

Xiao Xinxiang (2021, p.116-121,128) Information awareness refers to the unity of the understanding and needs formed by individuals in information activities. Only when a person understands the value of information can he form information awareness and internalize it into conscious action. Generally speaking, information awareness mainly includes: understanding the important role of information in the information age and establishing a new view of information, such as lifelong learning; actively demand for information, and actively transform society's requirements for individuals into their own needs for information; Have keen information insight, be good at establishing relevant connections between information phenomena and actual work, life and study, and find the key to problem solving from information. All of this is classified as information awareness, which directly affects the information behavior of individuals.

Sun Hanqun (2011, p.14) Information awareness is the individual's sensitivity to information, that is, the individual's sensitivity and persistent attention to information, being able to realize the role and value of information, having an active internal demand for information, and showing a certain interest in acquiring, processing and applying information.

To sum up: Information awareness refers to Information awareness refers to the active reflection of information and information activities in people's minds, that is, people's information sensitivity, understanding the importance and value of information awareness, having a strong desire to use information technology to improve work efficiency, the desire to use information technology to teach and the desire to use information technology for scientific research and innovation, and the use of rich information sources to solve problems. Through communication and

training, we will raise awareness of information, actively share new information with others, and apply it in practice.

Information Knowledge

Han Lifeng (2015, p.118-126) People with information knowledge make objective judgments about information resources, understand that information resources reflect the professionalism and credibility of the creator, and people evaluate information needs and usage scenarios. The construction of authority depends on the recognition of different types of authority by different groups, and authority is adapted to certain situations, because information needs help determine the level of authority required.

Wang Ziping (2021, p.3) From a scientific point of view, information literacy should be positioned in having systematic information-related theoretical knowledge, knowing what information is, how to obtain information using theoretical knowledge and being able to determine the scope of information sources, being able to evaluate the quality of the information obtained, being able to judge whether the information obtained is effective, being able to innovate the information obtained, being familiar with the principles and language of search engines and database retrieval, and being familiar with the search strategy of search engines and databases.

Ye Wangxin (2019, p.11) Information knowledge refers to the relevant knowledge and experience accumulated by people when using information technology and information exchange, and is some basic knowledge that individuals have mastered.

Zhu Yi (2017, p.5) is not only the theoretical foundation of information science and technology, but also the basic requirement for learning information technology. By mastering the knowledge of information technology, we can better understand and apply it.

Xu Yanfei et al. (2021, p.24-28) believe that information knowledge is the foundation of information literacy, and on the basis of Anderson knowledge classification, information knowledge is divided into basic knowledge of information, technical knowledge, ethical knowledge, and other knowledge.

Li Yufeng, Sui Jun (2009, p.4) believe that information knowledge is knowledge related to computers and information, including information technology knowledge, computer storage information and other principle knowledge.

Chen Ying (2018, p.9) With the cognition of information itself, she can better identify information, obtain and use information. Information knowledge is the foundation of information literacy education. However, both information theory knowledge and information technology knowledge are based on traditional cultural knowledge, and if there is no solid cultural knowledge foundation, it is impossible to have rich information knowledge.

Xiao Xinxiang (2021, p.116-121,128) Information knowledge, which constitutes the foundation of information literacy, all involving information development, utilization and creation, need to acquire information knowledge as a premise. In the information age, in addition to requiring certain traditional cultural literacy abilities (such as listening, speaking, reading, writing, etc.), it is also necessary to have basic information knowledge with the characteristics of modern information technology, such as the knowledge and understanding of the basic attributes of information and informationization and the impact of information on individuals and society, and to master the knowledge of information design, development, utilization, administration and evaluation of information in a certain aspect or field. In addition, it is necessary to be proficient in language knowledge, the information society is global, to communicate with each other, it is necessary to understand foreign information, express our ideas and concepts, in addition to mastering the mother tongue, we also need to be proficient in foreign languages.

Zang Yifei (2007, p.14) Information knowledge refers to all theories, knowledge and methods related to information. As an important part of information literacy, information knowledge is an indispensable part of information literacy, which indicates the extent to which people understand and master information technology, and through the understanding and mastery of this knowledge, people's awareness, emotions and ethics of information technology may also be consolidated and strengthened. The content of information knowledge mainly includes: traditional cultural literacy, basic knowledge and history of information technology, the working

principle of information systems, the structure and components of information systems, the role and influence of information technology, and legal and ethical issues related to information technology.

Sun Hanqun (2011, p.14) Information knowledge is the basis of information literacy of individuals, which refers to the understanding of information science knowledge (concepts, principles, methods) and the mastery of information tools (hardware, software) related knowledge.

In summary, Information knowledge refers to Information knowledge includes the basic concepts and knowledge of information, the information society, the socio-cultural characteristics of information, and the awareness and understanding of its impact on human beings; Including traditional cultural literacy, the information age must have the ability to read quickly and obtain valuable information from rich information sources; Including information retrieval knowledge, information evaluation knowledge, information transmission knowledge, information processing and processing, etc. In the face of the complex information society, we can obtain the latest information knowledge in a timely manner and understand the value of the latest information knowledge.

Information Ability

Han Lifeng, Wang Qian etc (2015, p.118-126) People with information ability understand that any form of information is generated to convey a certain information and shared through a specific transmission method, and the iterative process of researching, creating, modifying and disseminating information will be different, and the final information product will be different. Information retrieval tends to be non-linear and iterative, requiring the evaluation of a wide range of information sources and the flexibility to seek other avenues as new knowledge is formed. Information exchange is one of the ways to share information and transmit information, information exchange occupies an important position in information literacy, the emergence of mobile networks has promoted the emergence of information sharing mode, promoting information exchange more convenient and more frequent. New information can be created through the exchange of information. People with strong information communication skills can generate new ideas and create new information

by exchanging information with others. Due to the diversity of perspectives and understandings, different groups of scholars, researchers, or professionals are constantly engaged in an ongoing scholarly dialogue with new insights and discoveries. The academic and professional field is a discursive practice, and the formation, debate, and mutual trade-off of optoelectronics in this practice process take a considerable period of time. Experts understand that it is wrong to find scattered answers to complex questions, and that an issue may be given a number of conflicting perspectives in the course of an ongoing dialogue in which users and creators of information come together to discuss with each other. A topic will get a definitive answer through dialogue, and a question may get multiple uncontroversial answers.

Li Jiyan (2017, p.64-69) Information competence is the core of information literacy, which is related to the problem of how teachers apply information technology. On the basis of summarizing the work of their predecessors, Qin Meijuan et al. refined the information ability of university English teachers into seven types of ability, including information acquisition, information evaluation, information processing, information administration, information integration, use of information technology communication, and use of information technology research. This classification method not only sums the commonality but also takes into account the reminder of English teaching and research, and is easy to quantify.

Zhong Zhixian (2013, p.21-29,95) believes that information literacy is the core of information literacy, including the ability to use information tools, acquire, process, and manage information. The individual's view of a problem is limited and incomplete, no matter how powerful he is, the solution to the problem that the individual thinks of will always have some kind of deficiencies. Through communication with experts or others, you will gain different information or a perspective on information understanding, etc., and will develop a new understanding of the problem in your mind, which will modify the solution to the problem. Different experts have their own unique perspectives and views on the same problem, and through mutual exchanges and discussions with experts, some complex problems will be solved.

Zhu Yi (2017, p.5) Information ability include the basic operation ability of information systems, the ability to collect, transmit, process and apply information, and the ability to evaluate information systems and information. This is also an important survivability in the information age. Information ability is the core of information quality.

Ye Wangxin (2019, p.10) Information ability: refers to the individual's ability to retrieve, process and store information, and can effectively use the information obtained to solve practical problems in life and enhance their own practical ability. Information competency is a core competency among the elements of information literacy.

Han Lifeng, Wang Qian etc (2015, p.118-126) Research in any field is never-ending, relying on the formulation of increasingly complex or new questions, and the answers obtained will in turn lead to more questions or ideas of inquiry. Experts view inquiry as a process in which attention is needed on open or unresolved problems or doubts within or between disciplines. Experts believe that collaboration within disciplines can expand knowledge in the same field. Many times, there are controversial points in the process, and controversy or dialogue around controversy can deepen the discussion of knowledge. Through disputes or conversations, people develop a better understanding of expertise and information, from which solutions to problems can be discovered. Information exchange is very important in the process of inquiry, through which the process of inquiry extends beyond academia to the general sphere of society, and may also focus on personal, professional, or social needs.

Yang Yuanyuan (2017, p.184-186,189) believes that information ability is the guarantee of information literacy, including the ability to select information sources, retrieve information, and use and evaluate information.

Xiao Xinxiang (2021, p.116-121,128) Information ability refers to the ability to use information knowledge and carry out information activities. It is different from information knowledge, which is the foundation of information competence and the core of the entire information literacy. Generally speaking, the scope of information ability mainly includes: the ability to use various information tools, the ability to extract the required information from various information carriers, the ability to identify,

analyze, evaluate, screen, integrate information and improve the value of information use, as well as the ability to create and disseminate information. Of course, information knowledge and information ability have different requirements for different levels and types of people, which is a basic prerequisite for our information literacy education.

Wang Ziping (2021, p.4) From the perspective of sociology, information literacy should be positioned as the ability to exchange information between people, including online and offline communication, real-time and non-real-time communication, one-to-many, many-to-many and other diversified communication interactions, so as to form a cooperative learning relationship, rather than competitive and independent relationship, and increase the possibility of information dissemination, sharing and innovation in the process of information exchange (information exchange ability). From the perspective of technology, information literacy should be positioned as the ability to use retrieval tools and information, including the use of equipment required to collect information, the main functions and retrieval skills of search engines, database retrieval methods and skills, information processing ability, the ability to efficiently use information to solve problems, and the ability to publish high-quality content information.

Guo Jun (2022 p.50-52) In terms of information ability university teachers should master the operation skills of software and hardware equipment or platforms involved in information acquisition, release, dissemination, preservation, and utilization in the smart environment, and be able to teach such skills to students in education and teaching activities.

Zang Yifei (2007, p.14) Information ability is the basic quality of people who actively choose, use information and information means. It mainly refers to people's ability to effectively use information tools and information resources to obtain information, process information, and use information. This is an important ability to survive in the information age and a lifelong learning capacity. It mainly includes: the ability to obtain information, the ability to understand information, the ability to process information, the ability to use information, and the ability to express information.

Sun Hanqun (2011, p.14) Information ability is the individual's ability to use information systems, as well as the skills of acquiring, analyzing, processing, evaluating, transmitting, storing, and managing information, and the ability to apply information and create new information.

In summary, Information ability refers to the ability to understand, obtain, use, communicate, and use information technology. Understanding information is the ability to analyze the content and source of information, identify the quality of information, make decisions about information trade-offs, and analyze the cost of information. Access to information is the ability to collect, find, extract, record, and store information through a variety of means and methods. The use of information is the ability to purposefully use information to solve practical problems or for learning and scientific research, to explore the potential value and meaning of information through known information and to use it comprehensively, and to create new knowledge. Information exchange refers to the ability to exchange information between people online and offline, in real time, and in non-real time. The use of information technology refers to the ability to use computer networks and other tools to collect information, process information, transmit information, publish information and express information.

Information Ethics

Information ethics regulates people's information behavior imperceptibly with its huge binding force, and the formulation and implementation of information policy and information law must consider the moral foundation of the real society, so it is the basis for the establishment and function of information policy and information law. In areas where conscious and spontaneous moral restraint cannot be involved, information policy and information law can play a full role in regulating the various relationships in information activities by means of the legal system. The information policy makes up for the lack of lagging information law, and its form is more flexible and adaptable, while the information law solidifies the corresponding information policy and information ethics into written laws, regulations, regulations and other forms, so that the implementation of information policy and information ethics has a certain degree of compulsion and more laws to follow. Information ethics, information

policy and information law complement each other and jointly promote the normal conduct of various information activities.

Han Lifeng, Wang Qian etc (2015, p.118-126) People with information ethics understand that information has many values, it can be commodities, educational means, means of influence, and ways of negotiating and understanding the world, and legal and socio-economic interests affect the production and dissemination of information. As creators and users of information, experts know their rights and obligations when participating in student groups. Experts understand that driven by powerful interests, values can be misused and certain ideas excluded. However, value can be used by individuals or institutions to bring about change, or it can serve civil, economic, social or personal interests. Experts also understand that individuals have a responsibility to make thoughtful and informed choices when faced with current laws and socio-economic activities related to the value of information.

Wang Ziping (2021, p.4) From the perspective of ethics, information literacy should be positioned as having good moral concepts and relevant legal knowledge, including being able to consciously resist bad information, not spreading rumors, consciously protecting and respecting the information security, intellectual property rights, and trade secrets of individuals and others, and combating information violations and crimes (information ethics).

Ye Wangxin (2019, p.10) Information ethics: refers to the moral norms that individuals need to abide by in various information activities, grasp the correct direction of information use, and reduce information crimes.

Cao Chao (2012, p.12-14) believes that information ethics is that people have a certain sense of responsibility in information activities and abide by certain norms, including the ethics of collecting and classifying information and the ethics of disseminating information. Information ethics refers to the sum of moral awareness, moral norms and moral behaviors used to regulate various social relations arising from information activities such as collection, processing, storage, dissemination and utilization of information. It enables people to form certain beliefs, values and habits through social opinion, traditional customs, etc., so that people can consciously regulate their own information behavior through their own judgment. As a means of

information administration, information ethics is closely related to information policy and information law, and they each realize the regulation and administration of information and information behavior from different perspectives.

Zhu Yi (2017, p.5) cultivates people with correct information ethics and moral cultivation, and must learn to judge and select media information, consciously choose content useful for study and life, and consciously resist unhealthy content. In terms of the connotation and composition of information ethics, Yu Yang (2021, p.32-38) believes that information ethics is the moral bottom line in the process of obtaining and processing information, including information ethics awareness and intellectual property knowledge.

Cao Chao (2012, p.12-14) Information ethics with its huge binding force in subtly regulating people's information behavior, the formulation and implementation of information policy and information law must consider the moral foundation of real society, so it is the basis for the establishment and role of information policy and information law; In areas that cannot be covered by conscious and spontaneous moral constraints, information policies and information laws that regulate the various relationships in information activities by legal means can play a full role; Information policy makes up for the lack of lagging information law, its form is more flexible and has strong suitability, while information law solidifies the corresponding information policy and information ethics into written laws, regulations, regulations and other forms, so that the implementation of information policy and information ethics has a certain degree of mandatory and more legal to follow. Information ethics, information policy and information law complement each other and jointly promote the normal conduct of various information activities.

Wang Zhiqiang (2021, p.12-15) believes that information ethics is an ethical requirement, ethical norm and ethical code that regulates and restricts the information relationship between people and between people and society in the information age. Information ethics involves information dissemination, information administration, information application and other aspects, and issues related to core human values such as life, health, safety, and freedom. Information ethics is divided into two aspects, namely the subjective aspect of information ethics and the objective aspect of

information ethics. The subjective aspect refers to the moral concepts, emotions, behaviors and qualities expressed by human individuals in the form of mental activities in information activities, such as the value recognition of information labor. Contempt for the results of illegally stealing other people's information, that is, personal information ethics; The objective aspect refers to the relationship between people in social information activities and the codes of conduct and norms that reflect this relationship, such as promoting good and suppressing evil, rights and obligations, and the spirit of contract, that is, social information ethics. Information ethics refers to the organic unity of personal information ethics and social information ethics.

Xiao Xinxiang (2021, p.116-121,128) Information ethics refers to the ethical norms that need to be observed when identifying, extracting, using, integrating, evaluating and disseminating information. In the process of promoting social and economic development and promoting social progress, information technology has also triggered new challenges and crises, and produced some phenomena that are contrary to traditional ethics and morality. For example, the challenges of information security, privacy leakage, telecommunications fraud, malicious attacks, etc., not only endanger personal security, but even endanger national security. As a member of the information society, we must fully recognize the important role played by information and information technology in social production and life, firmly establish the awareness of information responsibility, standardize our own information behavior, follow relevant information ethics, resolutely refrain from engaging in activities that harm others and society, consciously resist information pollution, and jointly help build an ideal information society.

Guo Jun (2022 p.50-52) In terms of information ethics, university teachers, as actors, should strictly abide by the laws and regulations related to information acquisition, dissemination, storage, and utilization in the smart environment, reasonably use other people's information on the premise of respecting personal privacy, and have the ability to effectively protect personal information from infringement.

Zang Yifei (2007, p.15) Information ethics refers to the sum of ethical norms in the whole information activity. Specifically, information ethics means that people should abide by certain ethical norms in the process of acquiring, using, producing, and disseminating information, refrain from disseminating bad information, and refrain from doing things that harm the interests of others or endanger public information security.

Sun Hanqun (2011, p.14) Information ethics is the performance of individuals who abide by relevant laws, regulations and ethical norms in the process of acquiring, processing and applying information, and do not endanger society or infringe on the legitimate rights and interests of others in information activities.

To sum up, Information ethics refers to the ethical requirements, ethical norms and ethical norms in information activities such as information demand, information search, information processing, information management, information utilization, information creation, and information feedback. In terms of privacy, personal information should not be snooped on for no reason and inappropriate evaluations should be made; In terms of information security, in order to protect personal information, computer networks and storage media from viruses or hacker attacks; Confidentiality, which means that the information must be kept confidential due to law, business contract or other reasonable grounds; The respect aspect refers to respecting the rights and interests of others, respecting their opinions and contributions, and valuing intellectual property rights.

From the above, it can be seen that the four elements of information awareness, information knowledge, information ability and information ethics are complementary and organic and unified as a whole, information awareness is the prerequisite for information literacy, information knowledge and information ability are the foundation and core of information literacy, and information ethics is a necessary condition to ensure the healthy development of information literacy in the right direction, and the four are closely related and indispensable.

The Importance of Information Literacy

Han Lifeng, Wang Qian etc (2015, p.118-126) this framework aims to harness the enormous potential of information literacy as a more in-depth and systematic learning program that involves a variety of aspects of professional and technical

courses, undergraduate research, group learning, and curriculum-assisted learning throughout the student's time in school.

Ministry of Education of China. (2018, p3) Education Informatization 2.0 Action Plan (2018), which proposes to achieve the general improvement of the level of informatization application and the information literacy of teachers and students by 2022, build an Internet + education platform, promote the transformation from special resources for education to large resources for education, and from improving the application ability of information technology of teachers and students to comprehensively improving their information literacy. It can be seen that the Ministry of Education of China attaches great importance to information literacy, and writes the improvement of information literacy of teachers and students into the goal, indicating that information literacy of teachers and students has an important impact on learning. Vigorously improve teachers' information literacy. Implement the Opinions of the CPC Central Committee and the State Council on Comprehensively Deepening the Reform of the Construction of the Teacher Team in the New Era, promote teachers to actively adapt to new technological changes such as informatization and artificial intelligence, and actively and effectively carry out education and teaching. Launch the Artificial Intelligence + Teacher Team Building Action to promote a new path of AI to support teacher governance, teacher education, education and teaching, and targeted poverty alleviation, and promote teachers to update their concepts, reshape their roles, improve their literacy, and enhance their ability. Innovate teacher training programs, improve the curriculum system of teacher education, and strengthen the cultivation of information literacy and information teaching ability of teacher students.

Xiao Xinxiang (2021, p.116-121,128) Vigorously improving the significance and value of information literacy, comprehensively strengthening information literacy education, and effectively enhancing the suitability and creativity of members of society have extraordinary practical significance for individual development and social progress.

Information Literacy Promotes Lifelong Education for Individuals

Lifelong education means that education should run through the beginning and end of life, or that people should be educated throughout their lives. Information literacy is an indispensable ability for self-learning and lifelong learning, and it is also an important condition for creating a learning society. A person's education in school only acquires about 10% of the knowledge he needs for his life, while the remaining 90% of the knowledge is acquired through continuous learning in his future work and life.

Li Yixian (2004, p.25-28) The term lifelong education originated in the United Kingdom. Most Western scholars believe that the concept of lifelong education was first proposed by Smith, chairman of the British Commission on Adult Education Education, in his 1919 Report.

Gao Zhimin (2005, p.35) Japan is at the forefront of the development of the concept of lifelong learning, as early as 1992, the Japan Career Education Association published the Lifelong Learning Dictionary, which defines the concept of lifelong learning as: Give the necessary answers to the learner's requirements, and the learner chooses the appropriate learning means and methods by himself, and then carries out through his lifelong life, which is lifelong learning. In 1996, UNESCO, from the meaning of social development and individual survival, put forward the connotation of lifelong education, which refers to the sum of all educational activities in life from birth to the end of life, covering all aspects of social education.

Ding Baolang. (2006, p.18-21) The emergence and formation of the concept of lifelong education in China began in the seventies and eighties of the twentieth century. In 1993, the Outline of China's Educational Reform and Development issued by the CPC Central Committee and the State Council pointed out that adult education is a new type of education system that develops from traditional school education to lifelong education. The concept of lifelong education was thus incorporated into government documents.

Chen Nailin (2008, p.13-17) proposed that lifelong education refers to an educational activity that is related to all aspects of social life. Lifelong education is an education that runs through the entire life course of life, and it is an education based

on the human life world. Real life is rich and colorful, and it constitutes the origin and basis for the existence and development of lifelong education. Life is education, education is life, and the socialization and education of society are not only the concept of lifelong education, but also the reality of lifelong education.

Jiang Qingxi (2015, p.19-22) At present, there are two popular expressions of the concept of lifelong learning in China, the first is that Professor Hu Mengwhale, a well-known scholar in Taiwan, defined lifelong learning as: The so-called lifelong learning refers to the learning process throughout life, which includes formal, informal and informal learning activities, aiming to match the social roles and development at all stages of life, so as to achieve the goal of developing personal latency, improving the quality of life, and promoting social transformation.

Li Yuanyuan (2016, p.8-13) pointed out that lifelong education is a new form of educational development to achieve comprehensive human development, take learners as the center of education and run through human life, take education socialization and social education as conditions, promote the development and integration of individuals and society, and face the future. Lifelong learning becomes part of sustainable human development. Lifelong learning refers to the continuous learning process that runs through each member of society throughout a person's life in order to adapt to the needs of social development and realize individual development. This learning process is inseparable from Internet information, and information technology also provides an environment and conditions for lifelong learning.

Wu Zunmin (2018, p.12-19) proposed that lifelong education refers to the unity of educational activities aimed at achieving comprehensive and free human development through continuous learning. Lifelong learning theory is developed from lifelong education theory. With the rapid development of science and technology, the media are diversifying, and people's lifestyles are also changing. At this time, people realized that the length of education should not be fixed, but should run through the lifelong development of the person. Education is no longer limited to the process of passively receiving knowledge at a specific stage, but acts on the process of comprehensive human development. In fact, the purpose of lifelong education is to

become perfect. The concept of lifelong learning not only reflects the requirements of today's society for citizens, but also reflects the important role of teachers in the reform of education informatization.

Ren Lifan (2022, p.9) International Chinese teachers must first become lifelong learners in order to guide students to continuously learn new knowledge and set an example for lifelong learning. This requires teachers to maintain the enthusiasm and initiative of constantly updating their own literacy ability, including updating the professional knowledge structure, teaching skills and ability, and network technology operation ability, etc., but also to make adjustments from educational concepts and teaching concepts, follow the pace of the development of the times, and always pay attention to the new dynamics in the subject field. With the innovation of educational concepts, the core of contemporary education development has changed from the main body of teachers to the main body of learners. Therefore, the theory of lifelong education is gradually replaced by the theory of lifelong learning. Lifelong learning is the passport of the 21st century and the process of continuous learning throughout the life of each member of society in order to meet the needs of personal and social development. Through lifelong uninterrupted learning, each person continuously acquires new knowledge, and the content of new skills itself also cultivates the ability to use new knowledge and new skills, analyze ability, organizational ability, and innovate ability. These connotations coincide with the core content of information literacy competencies.

Han Kuikui (2023, p.141-144) In the information society, as a teacher, you must not only adapt to the development of the times, but also adhere to the concept of lifelong learning, arm yourself with new knowledge and technology, improve your own literacy, and make changes in learning concepts, learning attitudes, learning methods and learning needs to meet the requirements of the information age.

To sum up, lifelong education refers to the sum of various types of education that people receive at all stages of their lives, and it is a unified synthesis of different types of education received in people's lives. It includes all stages and modalities of the education system, both schooling and social; There are both formal and non-formal education. Lifelong education advocates providing the necessary knowledge

and skills in the best possible way for each person when they need it. The idea of lifelong education has become the guiding principle for educational reform in many countries.

Information Literacy Promotes Teacher Professional Development

Teacher professional development emphasizes the professional growth of teachers, and it is a development process experienced by teachers as an education and teaching professional from immaturity to relative maturity and maturity. The connotation of teachers' professional development is multi-level and multi-field, including the accumulation of knowledge, the proficiency of skills, the improvement of ability, but also the change of attitude and the development of affection.

Wang Jianna (2020, p.104-107) In the context of educational informatization, information literacy of foreign language teachers is the premise of professional development, and information literacy is a necessary condition for the professional development of foreign language teachers, and has become the basis of teachers' lifelong learning. In the context of educational reform in the context of the information age, teachers are the main initiators, operators, and implementers of the reform, and the main body of teachers is the key to the success of the reform. This requires that university teachers should fully understand the importance of "information literacy" in educational reform and their own development, and should have the necessary ability to use modern information technology to solve problems in education and teaching, as well as improve their own professional development.

Meng Zhongyuan (2007, p.121-122) Teacher professional development refers to the process of continuous development and improvement of teachers, as full-time education staff, in terms of ideology, knowledge literacy, skill level, etc.

Xu Ling, Zhang Dongming (2013, p.125-127) Teachers have gradually become academic teachers in the professional field through professional training and self-active learning. Teachers' professional development is the foundation of teachers' professional specialization, the foundation of teachers' professionalization, and the process of constantly updating, adjusting and improving teachers' internal professional structure, knowledge structure and career planning. Teacher professional development in a broad sense is related to the concept of teacher professionalization, which refers

to the process of strengthening teacher professionalism. In a narrow sense, teachers' professional development refers to the process of improving the degree of individual specialization of teachers and continuously acquiring new knowledge and skills, and is a process in which teachers' professional ideals, professional ethics, professional emotions, and sense of social responsibility continue to mature, improve, and innovate.

Guo Yongzhi, Liang Chen. (2023, p.84-86) Today's society has fully entered the era of mobile Internet, and the deep integration of modern information technology and professional courses has become an inevitable trend of education reform. Teachers' information literacy determines the degree and effectiveness of information technology application, therefore, to a certain extent, one of the basic skills required by teachers to carry out teaching reform in the new era is to master modern information technology.

Wang Di, Wang Xiuxiu (2023, p.89-95) Chinese scholar Professor Pan Maoyuan believes that the development of general university teachers covers all in-service university teachers, which refers to the continuous improvement and improvement of teachers' professional level through theoretical learning and practical activities in various ways and methods.

Guo Hongxia (2012, p.58-61) Teachers' professional competence development is the core of teachers' professional development. Teachers in the context of the information age must have appropriate information literacy in order to achieve continuous professional development through various information channels. Information literacy is an important part of people's comprehensive capabilities in the information society. In the context of the information age, the development of teachers' professional competence is inseparable from good information literacy.

Wang Luqi (2023, p.3) The professional development of university teachers has a broad and narrow sense. From a narrow perspective, some scholars have emphasized improving teachers' teaching ability and obtaining training and education specifically for new teachers to integrate into their roles as early as possible. For example, Millis believes that the essence of university teacher development is to improve the teaching ability of university teachers. Broadly speaking, in addition to

teaching, it also includes professional knowledge and emotions in scientific research and social services, with the ultimate goal of achieving the goal of individual teacher development and improving the overall quality of education.

Guo Ping. (2017, p.8) Teacher professional development refers to the process in which individual teachers' professional knowledge, professional skills, professional affection, professional autonomy, professional values, and professional development awareness are low to high, and gradually meet the standards of teacher professionals. In the process of development, teachers have undergone a long development process from empirical and haphazard to specialization. In 1966, UNESCO and the International Labour Organization made the view that education should be regarded as a specialized profession in their jointly published Recommendation concerning the Status of Teachers. Subsequently, at the 45th session of the International Conference on Education, UNESCO re-emphasized the issue of teacher professionalism.

Dilorenzo T M. (1994, p.485-491) argues that teacher development is the process by which teachers improve any academic ability. The definition of the connotation of teacher development by foreign scholars mainly refers to the development of teachers' academic research activities, and less consideration is given to teachers' personal career development. With the deepening of theoretical research on teacher development, researchers generally believe that the core of teacher development is the professional development of teachers. As the transmitter of knowledge, university teachers shoulder the important responsibility of knowledge transfer, innovation and development in professional development. With the continuous development of higher education, teachers need to constantly update their knowledge and adapt to the needs of social development. University teachers should pay close attention to the latest research, research trends, and research hotspots of their majors, and constantly improve their professional knowledge in order to impart the latest knowledge to students. In June 1980, an article titled Help! Help! teacher can't teach caused public concern about the quality of teachers, and people began to pay attention to the professionalization of the teaching profession, kicking off the prelude to educational reform centered on improving teacher literacy and promoting teacher professional development.

Deng Fengsui (2017, p.2) In 1990, the Holmes Group proposed six basic principles for the establishment of PDS in its report Tomorrow's Schools, which provided an important theoretical basis for the construction and development of early teacher professional development in the United States, and laid the foundation for the subsequent development of teacher professional development school standards.

The Ministry of Education (2018) proposed to implement the Cross-century Gardener Project in the Action Plan for the Revitalization of Education for the 21st Century, and improve the overall quality of the teaching team through various methods and forms. The implementation of this project means that China's teacher education has shifted from the simple upgrading of academic qualifications to the improvement of individual teachers' professional quality. Paying attention to the improvement of teachers' intrinsic quality and respecting the awareness of the regularity of teachers' individual professional development has become an unstoppable historical trend.

Guo Ping. (2017, p.7) Hoyle argues that teacher professional development refers to the process by which teachers acquire the knowledge and skills necessary for good professional practice at every stage of their teaching career. Fulan and Harggraves believe that teacher professional development refers both to the development of specific aspects acquired through in-service teacher education or teacher training, and to the overall improvement of teachers in terms of sense of purpose, teaching skills, and the ability to work with colleagues. Ye Lan believes that teacher professional development is the process of teachers' professional growth or the continuous renewal, evolution and existence of teachers' internal professional structure.

Wang Di, Wang Xiuxiu (2023, p.89-95) Based on years of practical experience, the National Education Association of the United States believes in the report Higher Education Development: Improvement of National Strength that the professional development of university teachers mainly refers to the acquisition and refinement of professional knowledge, skills and awareness. Professor Pan Maoyuan, a Chinese scholar, believes that the development of general university teachers covers all in-service university teachers, which refers to the continuous improvement and improvement of teachers in the professional level through theoretical learning and

practical activities in various ways and methods, and its connotation includes three components: subject professional level, teacher professional knowledge and skills, and teacher ethics.

Huang Mei (2009, p.59) In today's society, there is an increasing focus on teachers' professional development. Professional development for teachers does not happen overnight, it is a process. The characteristics of teachers' professional development in the era of information Internet are mainly reflected in the need to adapt to changes in two aspects: first, the advent of the knowledge economy and society, the establishment of a learning society and a lifelong education system, teachers are no longer limited to traditional learning, and second, the application of information Internet technology in the field of education and teaching is changing the traditional education methods, processes and organizations, and the relationship between teaching and learning, the role of teachers and working methods have changed. These have placed new demands on teachers, and teachers in the information age must adapt to such changes and requirements.

Wang Hangang (2011, p.204-205), Zhu Yi (2017, p.1) Global informatization is triggering profound changes in today's world, and a country's national literacy level is the most important indicator to judge the country's informatization level, and it is also an important factor affecting the country's international competitiveness. The gradual development of the information society requires citizens to improve their information literacy, naturally the requirements for teachers are higher, teachers as the recipient of knowledge, improve the information literacy of teachers is an urgent requirement of the information age, only innovative talents with information literacy, can continue to capture valuable new information, constantly acquire new knowledge, through innovation and continuous development. Therefore, information literacy education for teachers in universities has become an inevitable demand for the development of the information age.

Dai Yan, Xu Jiahong (2018, p.92-99) In the context of Internet +, teachers, as direct contacts of education informatization, their information literacy level directly affects the development process of education informatization.

It can be seen that in the context of the information society, teachers need to master information technology and information acquisition methods to improve their professional knowledge and teaching level, which is closely related to teachers' information literacy. Teacher professional development requires improving their information literacy.

Information Literacy Components

The way people define information literacy has been in a dynamic process, and so far most scholars in China believe that the components of information literacy are composed of four parts: information awareness, information knowledge, information competence and information ethics.

Cai Hongwei (2022, p.10) This study believes that the review part of the constituent elements of information literacy mainly focuses on the connotation and composition of the four elements: Information awareness, information knowledge, information competence and information ethics.

Guo Jun (2022 p.50-52) The information literacy of university teachers in the environment of education informatization 2.0 is mainly reflected in information awareness, information knowledge, information skills, information ethics, etc.

Wu Jingqi, Chen Jun (2023, p.78-81) The connotation of information literacy for college English teachers mainly includes information awareness, information knowledge, information skills, information ethics and information integration ability.

Jiao Jinjian (2014, p.2) investigated the basic situation of information literacy of students majoring in physical education in Inner Mongolia Normal University, investigated their current situation in information awareness, information knowledge, information ethics and information technology, and further saw the basic status of physical education students in Inner Mongolia Normal University in terms of information literacy.

Ren Lifan (2022, p.8) Teachers' information literacy should include information awareness, information knowledge, information ability, information ethics, and the ability to use information technology to effectively carry out education and teaching.

Wang Lizhu (2016, p.325-328) explores and systematically studies the information literacy assessment methods of university teachers, and establishes a standardized comprehensive evaluation system for teacher information literacy through the combination of qualitative and quantitative methods, with a total of four first-level dimensions and 12 second-level dimensions. Innovative ability to obtain and use information: literature information and scientific research retrieval, information utilization skills, information teaching application, sensitivity to information; Information awareness: the desire to use information, the desire to use information technology to teach; Information knowledge: information source knowledge, information science and technology knowledge, information processing strategy knowledge, information integrity; Information ethics: information integrity, information ethics education.

Chen Dawei (2008, p.44-48) refers to the objective data analysis of university teachers in information awareness, information ability, information integration ability and information ethics in the information environment is carried out, and the problems existing in the information literacy of university teachers are identified: the lack of information awareness caused by teachers' insufficient understanding of mainstream media, the lack of necessary information ability, and the practicality of information literacy needs to be strengthened.

Wang Lijuan (2009, p.102-103) Based on the requirements of information literacy of university teachers and the basic principles of quantitative evaluation, the quantitative evaluation criteria of information literacy of university teachers are preliminarily formulated, and it is believed that university teacher's information literacy includes the following aspects: cultural quality, information awareness and understanding and attitude towards informatization, the ability to understand and flexibly use a variety of information technologies, the mastery and application of information knowledge, and information ethics.

Lu Kai, Hou Yidong (2020, p. 68-72) investigated the information literacy of foreign language teachers in 14 universities in Guangxi from the four dimensions of information awareness, information knowledge, information ability and information

ethics, found the problems of information literacy of foreign language teachers, and proposed strategy to improve information literacy.

Liu Chunying (2016, p.65-67) conducted an information literacy survey on nursing full-time teachers in five universities in Guangxi from the aspects of information awareness, information ability, information ethics, information integration ability, cultural quality and existing problems, and proposed strategy to improve the information literacy of full-time nursing teachers in Guangxi universities.

Yang Yan (2019, p.117-122) studied the current situation of information literacy of three teachers from four aspects: information awareness, information knowledge, information ability and information ethics, found problems from them, and proposed corresponding development strategy.

Li Jiyan (2017, p.64-69) The information literacy of applied teachers in universities mainly includes four aspects: information awareness, information ability, information knowledge, and information ethics.

Luo Junbing. (2017, p.103-108) Teacher information literacy is the integration of general information literacy, professional information literacy and professional information literacy, in a general sense, mainly refers to the literacy that teachers should have in terms of information, including information knowledge, information skills, information awareness and information ethics.

Liu Xuelin (2006, p.1) believes that the information literacy of university teachers includes the following aspects: cultural quality, information awareness, information ability, information ethics, information technology ability, information integration ability, and the ability to educate university students to learn to learn.

Table 2.1 Literature on factors influencing the information literacy

Influencing factors Researcher	Information awareness	Information knowledge	Information ability	Information ethics	Information technology ability	Information integration ability	Cultural quality
Cai Hongwei (2022)	√	√	√	√			
Guo Jun (2022)	√	√		√	√		
Wu Jingqi, Chen Jun (2023)	√	√		√	√	√	
Jiao Jinjian (2014)	√	√		√	√		
Ren Lifang (2022)	√	√	√	√	√		
Wang Lizhu (2016)	√	√		√			
Chen Dawei (2008)	√		√	√	√	√	√
Wang Lijuan (2009)	√	√		√	√	√	√
Lu Kai, Hou Yidong (2020)	√	√	√	√			
Liu Chunying (2016)	√		√	√		√	√
Yang Yan (2019)	√	√	√	√			
Li Jiyan (2017)	√	√	√	√			
Luo Junbing (2017)	√	√	√	√			
Liu Xuelin (2006)	√		√	√	√	√	√
Total	14	11	9	14	7	5	4

According to table 2.1, the researchers analyzed and refined the literature, conceptual theory and research related to the impact on information literacy, including Cai Hongwei (2022), Guo Jun (2022), Wu Jingqi, Chen Jun (2023), Jiao Jinjian (2014), Ren Lifang (2022), Wang Lizhu (2016), Chen Dawei (2008), Wang Lijuan (2009), Lu Kai, Hou Yidong (2020), Liu Chunying (2016), Yang Yan (2019), Li Jiyan (2017), Luo Junbing (2017), Liu Xuelin (2006). the researchers used standards to consider the corresponding

characteristics as the framework for this study, by selecting features with a frequency of 9 or higher and summarizing them into four features, including: 1) Information awareness, 2) Information knowledge, 3) Information ability, 4) Information ethics.

Concept of Development Strategy

Development strategy refers to the direction and method of a series of actions and decisions made by an organization and enterprise to achieve long-term goals in the future. Under different environmental conditions, it is formulated on the basis of analysis and judgment based on factors such as the resources and capabilities of the organization or enterprise, as well as market demand and competitive situation. Development strategy is that an organization or enterprise clarifies the direction and goals of its future development within a specific time frame according to its mission, vision and values, and formulates corresponding action plans and resource allocation.

Shen Jie (2019, p.99-106) is characterized by his ability to apply the results of development research to development planning, development policy and practice. In a certain sense, development strategy is an organic combination of development goals, development plans and development policies. This kind of development strategy with more reasonable goals should be reflected in the organic combination of happiness index and GDP indicators, and integrate gold to measure development practices at the national level and at the level of different administrative regions, especially in the index system of development quality.

Feng Yun. (2019, p.4) Development strategy is the foundation of an enterprise, an enterprise has no strategy, no goal, no soul, the development strategy of an enterprise is the core of enterprise development must be solved. Any company in the early stage of its establishment is the most difficult period for its operation, because it has to face not only the suppression of existing large companies in the external counterparts and the containment of potential competitors, but also various internal difficulties and challenges.

Tong Ming. (2021, p.4) In 1962, United States scholar Chandler A.D. first introduced the concept of development strategy in enterprise strategic management, defining it as "determining the basic long-term goals of an enterprise, choosing a path

of action, and allocating resources to achieve these goals". Since then, the theory of corporate strategy has been inherited and developed through the research of different scholars and schools, and is mainly divided into two categories: traditional concepts and modern concepts. The traditional concept emphasizes planning and focusing on the end point, represented by Porter M., who emphasized that "strategy is the combination of the end point that the company strives to strive for, and the path of struggle sought to achieve it". The modern concept emphasizes adaptability and focuses on pathways, represented by Mintzberg H. (1989), which views strategy as "a series or set of ways of making decisions or actions". The author argues that both definitions have their own rationalities and limitations: from the perspective of stable enterprise development, a long-term strategy should be formulated to control the overall situation, and from the perspective of rapid environmental changes, it should be flexibly adjusted to meet risks. Therefore, this paper adopts the definition of strategy by Tomson S. (1998), that is, "strategy is both pre-active and reactive".

Liu Yan (2018, p.8) The meaning of development strategy refers to the comprehensiveness and comprehensiveness of enterprises through certain design, which is used to study and develop the core competitiveness of enterprises, so as to ensure that enterprises obtain many competitive advantages, as well as countermeasures and measures for the coordination of factors. If an enterprise has formulated a certain strategy suitable for itself, it shows that it is in a different competitive environment, moving with the times, adapting measures to local conditions, and choosing different development strategies.

Zheng Zidong. (2022, p.13) Development strategy refers to the formulation of a company's or institution's future strategic development plan from a long-term and overall perspective, which is also a management discipline in order to achieve effective capital allocation. From the perspective of future development, it is also a plan: from the perspective of corporate development, strategy is also a model.

Zhou Yuxian. (2016, p.3) Enterprise development strategy is the overall planning of the company's development strategic objectives and ways and means to achieve this goal in order to achieve long-term and stable survival and development, continue to make profits and serve the society, according to the actual situation of the

enterprise itself. Although enterprise development strategy is a popular management method in recent years, it is difficult to give a precise definition of enterprise development strategy from the perspective of corporate structure, peer competitors and enterprise operation.

Hai Tao (2005, p.2) Enterprise development strategy emphasizes making full use of the opportunity of the external environment to fully explore the internal advantages of the enterprise, so as to seek the development of the enterprise in a higher direction on the basis of the existing strategy. In today's increasingly complex and changeable environment, in the face of severe challenges of economic globalization and knowledge economy, for any enterprise, regardless of whether it is necessary to make a written strategic plan, enterprise strategy is no longer dispensable, and it also needs to be fully demonstrated and reached a consensus within the enterprise.

To sum up, the development strategy refers to the long-term and overall vision of the enterprise or organization, the use of the opportunity of the external environment to fully tap the internal advantages of the enterprise, and formulate the future strategic development plan, in order to seek further development of the enterprise or organization on the basis of the existing strategy.

Related Research

The interpretation of the connotation of information literacy by domestic scholars mainly focuses on the four dimensions of awareness, knowledge, ability and ethical security, and focuses on teachers, students and other groups of different professions.

Qin Yuchao. (2022, p.25) The survey of the current situation of information literacy of university teachers by questionnaire survey and interview method found that the overall level of information awareness of university teachers is high, but the recognition of technology by individuals needs to be improved. The level of information knowledge is average, and the theoretical foundation is still relatively weak; uneven information capabilities and lack of data analysis capabilities; Information ethics are generally good, and the code of conduct needs to be improved; The group

differences are serious, and the differentiation of arts and sciences is very obvious. Combined with the theoretical model and the analysis of the current situation, this paper proposes the improvement path of university teachers' information literacy from the perspective of smart education. At the macro element level, it is necessary to use diversified policy tools to give full play to the leading and promoting role of education policy. Build a flexible institutional system to generate a long-term improvement mechanism for human-machine harmony; Pay attention to the building of information culture and create a good atmosphere of information culture. At the level of industry organizations, it is necessary to promote cross-border cooperation among technical experts to jointly build a technical environment. increase school-enterprise cooperation and actively introduce emerging technologies; Complete the technical assessment in a timely manner and rationally lay out the smart education environment; optimize teacher training and comprehensively improve the training effect; Build a collaborative innovation community to achieve collaborative update of technology and literacy. At the level of technology environment, it is necessary to improve the information infrastructure environment and promote the structural transformation of technology supply and demand. At the peer group level, it is necessary to strengthen the communication between heterogeneous groups and the cooperation between homogeneous groups, promote the flow of technical cognition, and demonstrate the educational wisdom of teachers. From the individual level of university teachers, it is necessary to stimulate teachers' awareness of technology application, advocate university teachers to carry out action research, and explore diversified information literacy evaluation methods.

Yang Yan, Hu Zhongfeng (2019, p.117-122). This paper conducts an empirical investigation and analysis on the current situation of information literacy of teachers in three undergraduate universities, and finds that university teachers have strong information awareness, basic information knowledge structure, lack of information application ability, and high awareness of information ethics. Expand the learning of information knowledge, adhere to the close integration of subject teaching and information technology; Strengthen the application of information skills and continuously improve teaching design; Strictly abide by the bottom line of information

ethics and improve self-cultivation; Improving the richness and effectiveness of post-service training.

Miao Yanan (2023, p.1) Based on the theory of teachers' professional development and the theory of information literacy, this study investigated the information literacy of teachers in higher vocational colleges in Shandong Province through a questionnaire survey. After the questionnaire investigation, it is found that: First, the overall level of information literacy of teachers in higher vocational colleges in Shandong Province is good, and the information knowledge and information application ability are weak, and there is more room for development. Second, there are significant differences in gender awareness among teachers in higher vocational colleges. There are significant differences in the age of higher vocational teachers in information ethics and security. There were no significant differences in the information awareness, information knowledge, information application ability and information ethics and security of higher vocational teachers. There are significant differences in the information awareness, information application ability and information ethics and security of higher vocational teachers. On the basis of in-depth analysis of the data presented in the questionnaire, it is found that there are some problems in the information literacy of teachers in higher vocational colleges in Shandong Province, such as the misunderstanding of teachers' information awareness, the incomplete structure of information knowledge, the lack of information application ability, and the weak awareness of information ethics and security. Combined with the interview data, the reasons for this analysis include: teachers' weak self-coordination and management ability, difficulty in building an information-based teaching team, imperfect construction of school hardware facilities, lack of a complete incentive evaluation system and information technology training objectives, and the need for innovation in content and mode. According to the current situation of teachers' information literacy in higher vocational colleges, this paper puts forward strategies for improving the information literacy of higher vocational teachers from the three levels of government, schools and teachers: the government accelerates the construction of resource service informatization support platform with vocational education characteristics, mobilizes multi-party participation to encourage social capital to increase the construction of

vocational education informatization, carries out educational informatization leadership training, enhances the informatization awareness of administrative administrators, improves the information literacy evaluation system, and innovates evaluation methods and means to form an incentive evaluation system; The school has strengthened the informatization hardware infrastructure, organized and launched informatization teaching competitions, strengthened the construction of virtual simulation training and teaching environment in colleges and universities, and built a hierarchical and classified information literacy training system for teachers. Teachers should raise their awareness, understand the value of information-based teaching, learn independently, improve their own information-based teaching ability, teamwork, establish a learning community for information-based teaching, standardize behaviors, and enhance information security and risk prevention capabilities.

Xi Sitian (2020, p.1) mainly conducted a systematic survey from four aspects: information awareness, information knowledge, information ability and information ethics through questionnaires and interviews, and the survey results found that secondary vocational teachers have a certain information awareness, and the vast majority of teachers want to learn modern information technology and are willing to participate in information technology training. In terms of information knowledge, most of the secondary vocational teachers have mastered the relatively simple and basic knowledge of information theory. In terms of information ability, they can master the basic courseware production methods, but for more complex software, the mastery level is not high; It is at a medium level in terms of information ethics. There is also a need to further improve the level of information ethics. Countermeasures and suggestions for improving the information literacy of secondary vocational school teachers were put forward from three aspects: the government, schools and individual teachers. At the government management level, we should increase investment in secondary vocational schools, create an atmosphere of informatization teaching in vocational education, build a communication platform for informatization of vocational education, and improve the incentive system for improving teachers' information literacy. At the level of school supervision, strengthen and improve the construction of campus informatization infrastructure, improve the information literacy

training mode of school teachers, regularly hold informatization teaching competitions and exchange activities, and establish a sound teacher evaluation and incentive system; At the teacher level, it is necessary to change the concept of education, train information awareness, promote the integration of information technology and curriculum, improve information ability, correctly use information resources, and establish a good concept of information ethics.

According the questionnaire survey of university teachers in Jiangxi, Zou Yangde (2005, p.1) found that university teachers have a strong sense of information and were aware of the importance of information technology, but they couldn't effectively integrate information technology into modern classrooms. Teachers have strong information ability, teachers do not have enough sense of cooperation in the process of operating information technology for teaching, teachers can actively participate in information technology training, and teachers have high expectations for information technology training, but low satisfaction.

Tian Chengquan, Zhang Xiulin, Lu Bing. (2021, p.66-71) This study took some teachers from three universities in Yantai as the research object, and used the questionnaire survey method, supplemented by online teacher interviews, to objectively analyze the current situation of information technology literacy of local university teachers. The research shows that teachers in local universities have a strong awareness of information technology, but the ability of information technology to assist teaching and scientific research is lacking. At the same time, it was found that the information technology ability of male teachers was significantly higher than that of female teachers, and the teaching experience was negatively correlated with information technology ability. Based on the analysis of relevant data, this paper puts forward the countermeasures to improve the information technology literacy of local university teachers, carry out effective training, improve the information technology application ability of university teachers, accelerate the construction of campus informatization, establish a reasonable evaluation management model, accelerate the transformation of the role of university teachers, improve the scientific research ability of university teachers, and optimize the feedback cycle of information literacy.

Wang Jianying, Zhang Hong. (2021, p.15-19) This study took foreign language teachers from four universities in Inner Mongolia as the research object, and investigated and analyzed the information literacy status of foreign language teachers in the region through a combination of questionnaires and interviews. The results show that the research subjects have a high level of information ethics, and information awareness, information knowledge, and information ability can be further improved. Starting from the three aspects of teachers' own initiative, macro management and policy, this paper puts forward strategies to improve the information literacy of foreign language teachers in Mongolia ethnic minority areas: foreign language teachers should give full play to their own subjective initiative and improve their information awareness; At the management level, it is necessary to increase investment in hardware facilities in combination with the actual construction of informatization, and at the same time improve the informatization training mechanism for foreign language teachers, so that every foreign language teacher can receive specialized information knowledge and provide regular and quantitative training activities for foreign language teachers; In the era of change of education informatization, we need to gather strength.

Yang Qirui (2022, p.1) This study comprehensively uses literature research, survey research and comparative research methods to study the information literacy of college teachers. Through a questionnaire survey, the current situation of information literacy of college teachers in China was investigated. The survey found that the information literacy of teachers in colleges and universities in China is at a general level, and variables such as age, discipline, school location, and school level have a significant impact on the information literacy level of teachers. In order to understand the influencing factors of the current situation of information literacy of college teachers in China, an in-depth interview was conducted with college teachers. The interview found that there are problems such as insufficient incentive and supervision system, incomplete infrastructure construction, and weak self-motivation among university teachers in China. In order to provide experience for improving the information literacy of college teachers in China, the following suggestions are put forward for the improvement of the information literacy of college teachers in China: strengthen the policy formulation and guidance of information literacy of college

teachers; Changing the concept of informatization teaching in college teacher education; reduce the rejection of information teaching by college teachers; improve the ability of college teachers to integrate information technology with education and teaching; improve the construction of informatization teaching infrastructure in colleges and universities; strengthen the construction of information literacy training system for college teachers; improve the information literacy incentive and supervision system for college teachers; Build a smart learning platform for teachers in colleges and universities across the country; Coordinate the balanced development of information literacy of college teachers in China.

Xiang Yujie (2022, p.1) The results show that the main problems in the development of teachers' information literacy are: teachers' awareness of using information technology to help students learn is weak; Teachers have a weak ability to rely on information technology to carry out innovative teaching; The ability of information technology service subject teaching content is weak. Teachers do not have enough understanding of information ethics and do not pay enough attention to information security. According to the problems found in the survey, relevant strategies are proposed: first, the government should improve the public service ability and level of teachers, standardize the construction of resources, and improve the training effect of teachers' information literacy. Secondly, the school should create a practical environment conducive to the integration of teachers' information technology; Sort out the existing platform, optimize management, and motivate the development of teachers' innovative information-based teaching ability. Finally, teachers should pay attention to the development of students in the teaching design, and learn time management to improve work efficiency.

Zhu Yi (2017, p.1) This paper investigated the current situation of teachers' information literacy in Hunan Agricultural University through a questionnaire, and found that the overall level of information literacy of teachers in Hunan Agricultural University was moderately low, among which the level of information awareness, information ability and information ethics was high, and the level of information knowledge was moderately low. According to the current situation, the following improvement strategies are proposed to strengthen the cultivation of teachers' information

knowledge, and maintain the development of information awareness, information ability and information ethics; alleviate the pressure of teachers' teaching and scientific research; Create a good academic atmosphere; improve educational technology training; the introduction of relevant incentive policies; Strengthen spiritual motivation.

Lu Kai, Hou Yidong (2020, p.68-72) investigated and researched the information literacy of foreign language teachers in local colleges and universities through questionnaires, and found that most of the foreign language teachers in local colleges and universities had strong information awareness. Most of the teachers have a strong understanding of information knowledge, an average level of information technology, and a high level of information ethics, so the following strategies for improving information literacy are proposed: college teachers should pay attention to the improvement of their own information literacy and actively carry out offline and online independent learning; Use the team to gather collective strength and carry out mutual learning and practice; Colleges and universities should provide hardware and software support, make good plans, and formulate long-term, hierarchical information literacy training programs.

Li Jiyan (2017, p.64-69) Through the questionnaire survey on the current situation of information awareness and information ability of college English teachers in Hebei and Shandong provinces, the data show that college English teachers have strong information awareness and information ability is at the lower middle level, and the following information literacy improvement strategies are proposed: continue to improve the information awareness of English teachers, strengthen the policy support and encouragement for teachers' use of information technology, and incorporate teachers' information literacy into the regular assessment, promote the networking, personalization, pertinence and sustainability of teachers' information literacy training, further enrich the content of teacher development community, and promote professional development and professional titles, the improvement of information literacy is organically integrated; Particular attention should be paid to the improvement of the information capacity of female teachers.

Ren Lifan (2022, p.1) This study uses the questionnaire survey method to investigate the current situation of information literacy of international Chinese teachers, and the data shows that international Chinese teachers have strong information awareness, information knowledge, information ability and information ethics. According to the current situation, four improvement strategies are proposed: improve the professional level of informatization, improve the sensitivity of information security, actively cooperate with multiple parties, and enhance the ability of technology to empower students.

Chapter 3
Research Methodology

This paper focuses on developing the information literacy for undergraduate universities in Guangxi. To study the current situation and formulate strategy development and evaluation strategy for developing information literacy for undergraduate universities in Guangxi. The researcher has the following procedures.

1. The Population / Sample Group

2. Research Instruments

3. Data Collection

4. Data Analysis

Phase 1: The Objective of this Phase is to Study the Level of Information Literacy of University Teachers in Undergraduate Universities in Guangxi.

The Population / Sample Group

The Population

The population of this paper were 11,570 teachers from 6 undergraduate universities in Guangxi.

The Sample Group

The sample group were 375 teachers in undergraduate universities from 6 undergraduate universities in Guangxi, according to the Krejie and Morgan (1970) sample table. They were selected by purposive sampling method from 6 universities which located in different city and specialized in Guangxi. By using stratified random sampling and simple random sampling.

Table 3.1 Lists of universities and sample size

No	Private University in Guangxi	Population	Sample Group
1	Guangxi University	3,690	120
2	Guilin University of Electronic Technology	3,200	104
3	Guilin Medical University	930	30
4	Yulin Normal University	1,100	36
5	Guangxi Arts University	1,200	39
6	Baise University	1,450	46
	Total	11,570	375

According to table 3.1, it showed that there are 6 universities, it is Guangxi University, Guilin University of Electronic Technology, Guilin Medical University, Yulin Normal University, Guangxi Arts University, Baise University.

Research Instruments

Questionnaire

The instrument to collect the data for objective one, to study the current status of information literacy for undergraduate universities in Guangxi was a questionnaire. The questionnaire was designed based on information literacy in four following aspects: 1) information awareness, 2) information knowledge, 3) information ability, and 4) information ethics. The questionnaire was provided into two parts:

Part 1: Survey about information of respondents, classified by gender, professional title, education background, teaching experience.

Part 2: Survey about the current status of information literacy for undergraduate universities in Guangxi. There are 11 questions for information awareness, 11 questions for information knowledge, 12 questions for information ability and 11 questions for information ethics. total 45 questions. The criteria for data interpretation based on five-point Likert's scale, as follows:

5 refers to the current status of information literacy of university teachers at highest level

4 refers to the current status of information literacy of university teachers at high level

3 refers to t the current status of information literacy of university teachers at medium level

2 refers to the current status of information literacy of university teachers at low level

1 refers to t the current status of information literacy of university teachers at lowest level

The data interpretation for mean based on Rensis Likert (1932). The data interpretation are as follows:

4.50 – 5.00 express to highest level

3.50 – 4.49 express to high level

2.50 – 3.49 express to medium level

1.50 – 2.49 express to low level

1.00 – 1.49 express to lowest level

Constructing a Questionnaire Process

The construction process of questionnaire was as follows:

Step 1: Concepts, documents, research and theories related to information literacy for undergraduate university would be reviewed and analyzed.

Step 2: The questionnaire about the current status of information literacy for undergraduate universities in Guangxi was constructed. Then outline of questionnaire was sent to the thesis advisors, and the researcher revised and reviewed the contents by the suggestion which sent by thesis advisors.

Step 3: Five experts examined the index of objective congruence (IOC) of the questionnaire. The index of objective congruence (IOC) was 0.67 to 1.00.

Step 4: According to the experts' suggestions, researcher revised the questionnaire.

Step 5: The researcher distributed the questionnaire to 30 university teachers in Guangxi for try-out and obtained the reliability of the questionnaire by Conbach's Alpha Coefficient. The reliability was 0.968.

Step 6: The questionnaire of information literacy was applied to 375 teachers in 6 undergraduate universities in Guangxi.

Data Collection

The data collection for objective 1: to study the current situation of information literacy for undergraduate universities in Guangxi. as following:

Step 1: For requiring to collect the data from 375 teachers in undergraduate universities in Guangxi, the researcher asked the graduate university, Bansomdejchaopraya Rajabhat University for requirement letter.

Step 2: The researcher distributed 375 questionnaires to 375 university teachers in undergraduate university of Guangxi.

Data Analysis

The researcher analyzed the data in this paper as following:

Step 1: Classified by gender, age, professional title, education background, working experience years, The personal information of the respondents was analyzed by frequency and percentage.

Step 2: The current status of information literacy for undergraduate universities in Guangxi in four aspects: 1) information awareness, 2) information knowledge, 3) information ability, and 4) information ethics, the data was analyzed by standard deviation and mean.

Phase 2: The Objective of this Phase is to Formulate the Information Literacy Strategy Development for Undergraduate University in Guangxi.

Key Information

The Interviewees

The interviewees in this paper were 12 high-level university teachers in public undergraduate university in Guangxi. The interviewees' qualifications are as follows: 1) professional teachers with 5 years of work experience in public undergraduate university, 2) have extensive experience in information literacy, 3) certain scientific research ability, 4) graduated with master's degree or above.

Research Instruments

To formulate the information literacy strategy development for undergraduate university in Guangxi is the instrument to collect the data for objective two. There were two steps: SWOT analysis and Structured Interview.

SWOT Analysis

The designed based on information literacy for undergraduate university and SWOT analysis on information literacy in following aspects: 1) the information awareness, 2) information knowledge, 3) information ability, 4) information ethics. The structured interview provides into two parts:

Part 1: This SWOT analyzes include the strengths, weaknesses, opportunities and threats of information literacy of undergraduate teachers in Guangxi. SWOT analysis designed based on information literacy in following 4 aspects: 1) information awareness, 2) information knowledge, 3) information ability, 4) information ethics.

Part 2: According to the SWOT analysis method, the strategy can be constructed into four strategies: SO strategy, ST strategy, WO strategy, and WT strategy.

Constructing SWOT Analysis Process

The construction process of the SWOT analysis is as follow:

Part 1: The strengths, weaknesses, opportunities, and threats of information literacy of university teachers in Guangxi are listed.

Part 2: Based on strengths, weaknesses, opportunities, threats of information literacy of university teachers in Guangxi, the SO strategy, ST strategy, WO strategy and WT strategy are analyzed.

Part 3: The analyzed strategy are sorted out by variables to form a general strategy.

Structured Interview

The structured interview designed based on the form a general strategy from SWOT analysis. The interviewee would give his or her own opinion on the SWOT strategy and complements the strategy. The researchers collated these strategies to form a final overall strategy. The formation of these strategy is divided into 4 aspects: 1) the information awareness, 2) information knowledge, 3) information ability, 4) information ethics. The structured interview provides into two parts:

Part 1: the interviewees' personal information was classified by interviewee, education background, expertise, work experience years, interview time and date.

Part 2: the questions about information literacy strategy development was four aspects: 1) information awareness, 2) information knowledge, 3) information ability, 4) information ethics, for undergraduate university in Guangxi.

Constructing a Structured Interview Process

There are two steps about the construction process of structured interview:

Step 1: Made an appointment with interviewee in advance and prepared the materials, then send the SWOT analysis strategy to the interviewee.

Step 2: Constructing the structured interview about information literacy strategy development from SWOT analysis base on four aspects: 1) information awareness, 2) information knowledge, 3) information ability, 4) information ethics. And record each interviewee's suggestions for the SWOT analysis strategy.

Data Collection

The data collection for objective 2: to formulate the information literacy strategy development for undergraduate university in Guangxi, as following procedure:

Step 1: for requiring to interview the high-level university teachers from 6 public undergraduate universities in Guangxi, the researcher asked the graduate school, Bansomdejchaopraya Rajabhat University for requirement letter.

Step 2: The researcher interviews the high-level university teachers by face-to-face conversation, and recorded the views on the SWOT analysis strategy and the complementary strategy.

Data Analysis

The researcher analyzed the opinions of all the interviewees and the complementary strategy for undergraduate university In Guangxi by content analysis.

Phase 3: The Objective of this Phase is to Evaluate the Information Literacy Strategy Development for Undergraduate University in Guangxi.

Key Information

Expert Group

There were 15 high-level experts for evaluating the suitability and feasibility of information literacy strategy development for undergraduate university in Guangxi. The qualifications of the experts are as follows: 1) library practitioners who have been

engaged in graphic research for more than 5 years, 2) personnel with knowledge of information disciplines, 3) master's or doctoral degrees, and 4) associate professor or above.

Research Instruments

Evaluation Form

The instrument to collect the data for objective three, the evaluation the information literacy strategy development for undergraduate university in Guangxi. Based on the information literacy strategy for undergraduate university the evaluation form was designed in four following aspects: 1) information awareness strategy, 2) information knowledge strategy, 3) information ability strategy, 4) information ethics strategy. The evaluation form includes two parts: the feasibility and suitability of the strategy.

According to the five-point Likert scale, the criteria for data interpretation are as follows:

5 refers to the suitability and feasibility of information literacy strategy development at the highest level

4 refers to the suitability and feasibility of information literacy strategy development at a high level

3 refers to the suitability and feasibility of information literacy strategy development at a medium level

2 refers to the suitability and feasibility of information literacy strategy development at a low level

1 refers to the suitability and feasibility of information literacy strategy development at the lowest level

The data interpretation for average value is based on Rensis Likert (1932). The data interpretation is as follows:

4.50 – 5.00 refers to the highest level

3.50 – 4.49 refers to high level

2.50 – 3.49 refers to medium level

1.50 – 2.49 refers to low level

1.00 – 1.49 refers to the lowest level

Constructing an Evaluation Form Process

The construction process of evaluation form are as follows:

Step 1: Constructing the evaluation form about information literacy strategy development for undergraduate university in Guangxi.

Step 2: The evaluation form was applied to 15 high-level university teachers in undergraduate university.

Data Collection

The data collection for objective 3: to evaluate the information literacy strategy development for undergraduate university in Guangxi, as following procedure:

Step 1: For requiring to invite the experts to evaluate the strategy, the researcher asked the graduate school, Bansomdejchaopraya Rajabhat University for requirement letter form.

Step 2: The evaluation form was distributed to 15 high-level university teachers.

Data Analysis

The data analysis in this paper, the researcher analyzes the data by package program, as follows: the researcher analyzed the evaluation of the suitability and feasibility of the information literacy strategy development for undergraduate university in Guangxi by mean and standard deviation.

Chapter 4

Data Analysis Results

The research information literacy strategy development for undergraduate universities in Guangxi. The objectives of this paper were 1) to study the current status of information literacy strategy development for undergraduate universities in Guangxi, 2) to formulate information literacy strategy development for undergraduate universities in Guangxi, 3) to evaluate the information literacy strategy development for undergraduate universities in Guangxi. The data analysis result can be presented as follows:

1. Symbol and Abbreviations

2. Presentation of Data Analysis

3. Results of Data Analysis

The details are follows:

Symbol and Abbreviations

N   Number of experts

n   Refers to sample group

$\overline{X}$ Refers to mean

S.D.   Refers to standard deviation

Presentation of Data Analysis

Part 1: The analysis result about personal information of respondents, classified by gender, education background, university, age, professional title, and work experience. Presented the data in the form of frequency and percentage.

Part 2: The analysis result about the current status of information literacy development for undergraduate universities in Guangxi. Presented the data in the form of mean and standard deviation.

Part 3: SWOT analysis results about information literacy strategy development for undergraduate university in Guangxi.

Part 4: The analysis result about the interview contents about the information literacy strategy development for undergraduate universities in Guangxi.

Part 5: The analysis result about the evaluation of the suitability and feasibility of information literacy strategy for undergraduate universities in Guangxi. Presented the data in the form of mean and standard deviation.

Results of Data Analysis

The researcher analyzed the data in 3 parts as follows:

Part 1: The Analysis Result about Personal Information of Respondents, Classified by Gender, Education Background, University, age, Professional title, and Work Experience. Presented the Data in the Form of Frequency and Percentage.

Table 4.1 Personal information of the survey respondents

(n = 375)

	Personal Information	Frequency	Percentage
Gender	Male	170	45.33
	female	205	54.67
	Total	**375**	**100**
Education background	Bachelor's degree	47	12.53
	Master's degree	201	53.60
	Doctor's degree	127	33.87
	Total	**375**	**100**
University	Guangxi University	120	32.00
	Guilin University of Electronic Technology	104	27.73
	Guilin Medical University	30	8.00
	Yulin Normal University	36	9.60
	Guangxi Arts University	39	10.40
	Baise University	46	12.27
	Total	**375**	**100**

Table 4.1 (Continue)

	Personal Information	Frequency	Percentage
Age	30 years old or younger	47	12.53
	31 to 45 years old	190	50.67
	46 years or up	138	36.80
	Total	**375**	**100**
Professional title	Teaching assistant	30	8.00
	The lecturer or Assistant Professor	138	36.80
	Associate professor	152	40.53
	Professor	55	14.67
	Total	**375**	**100**
Work experience years	5 or less years	53	14.13
	6 to 10 years	23	6.13
	11 to 15 years	80	21.33
	16 to 20 years	107	28.53
	more than 20 years	112	29.87
	Total	**376**	**100**

According to Table 4.1, showed that the majority respondents were 205 females, accounting for 54.67%, and 170 males, accounting for 45.33%. The education background of respondents was mainly Master' degree for 201 people, accounting for 53.6%, followed by doctor's degree, bachelor's degree and Junior college or others was the lowest level for 0 people, accounting for 0%. respondents were from 6 universities, the respondents from Guangxi University were 120 people, accounting for 32%, followed by Guilin University of Electronic Technology and Guilin Medical University was the lowest for 30 people, accounting for 8%. Respondents' age was mainly 31 to 45 years old for 190 people, accounting for 50.67%, followed by 46 years old or up and 30 years old or younger was the lowest for 47 people, accounting for 12.52%. Respondents' Professional title was mainly Associate professor for 153 people, accounting for 40.53%, followed by lecturer or Assistant Professor and teaching

assistant was the lowest for 30, accounting for 8%. Respondents' work experience was more than 20 years for 112 people, accounting for 29.87%, followed 16 to 20 years and 6 to 10 years was the lowest for 23, accounting for 6.13%.

Part 2: The Analysis Result about the Current Status of Information Literacy Development for Undergraduate Universities in Guangxi. Presented the Data in the Form of Mean and Standard Deviation.

Table 4.2 The mean and standard deviation of the current status of information literacy development of teachers in four aspects

(n = 375)

	Information Literacy for Undergraduate Universities in Guangxi	$\overline{X}$	S.D.	Level	Order
1	information awareness	3.70	0.48	high	2
2	information knowledge	3.68	0.47	high	3
3	information ability	3.61	0.51	high	4
4	information ethics	3.73	0.50	high	1
	Total	3.68	0.49	high	

According to table 4.2, found that the current status of information literacy for undergraduate universities in four aspects was at high level ($\overline{X}$ = 3.68). Considering the mean ranged from the highest to lowest mean were as follow: the highest mean was information ethics ($\overline{X}$ = 3.73), followed by information awareness ($\overline{X}$ = 3.70), and information ability was the lowest mean ($\overline{X}$ = 3.61).

Table 4.3 The mean and standard deviation of the current status of information literacy in information awareness

(n = 375)

	Information Awareness	$\overline{X}$	S.D.	Level	Order
1	University teachers have a certain degree of information sensitivity and actively seek and use information to improve teaching quality	3.78	0.72	high	2
2	University teachers understand the importance of information awareness, understand that information technology is conducive to innovating educational methods and research directions, and improve the creativity and competitiveness of university teachers	3.84	0.75	high	1
3	University teachers understand the value of information, can integrate information knowledge in teaching, and improve students' information literacy	3.78	0.74	high	3
4	University teachers have a strong interest in information and are willing to use information technology to support their teaching and research work.	3.76	0.83	high	4
5	University teachers believe that information can improve teachers' professional satisfaction and work efficiency.	3.72	0.78	high	7
6	University teachers actively seek new information resources and tools to enrich teaching content and research fields	3.70	0.74	high	9
7	University teachers will share best practices in information awareness with colleagues to promote the dissemination and application of information awareness.	3.73	0.75	high	5

Table 4.3 (Continue)

	Information Awareness	$\overline{X}$	S.D.	Level	Order
8	University teachers continuously learn and update their information technology knowledge to adapt to the changing educational and research environment	3.73	0.77	high	6
9	University teachers encourage students to cultivate information awareness and help them make better use of information resources for learning and research	3.71	0.76	high	8
10	University teachers actively participate in the research and application of information technology in the field of education, and promote the modernization and improvement of education	3.24	0.82	medium	10
	Total	**3.67**	**0.77**	**high**	

According to table 4.3, found that the current status of information literacy for undergraduate universities in information awareness in overall was at high level ($\overline{X}$ = 3.67). Considering the mean ranged from the highest to lowest mean were as follow: the highest mean was that university teachers understand the importance of information awareness, understand that information technology is conducive to innovating educational methods and research directions, and improve the creativity and competitiveness of university teachers ($\overline{X}$ = 3.84), followed by university teachers have a certain degree of information sensitivity and actively seek and use information to improve teaching quality and university teachers understand the value of information, can integrate information knowledge in teaching, and improve students' information literacy ($\overline{X}$ = 3.78), and university teachers actively participate in the research and application of information technology in the field of education, and promote the modernization and improvement of education was the lowest mean ($\overline{X}$ = 3.24).

Table 4.4 The mean and standard deviation of the current status of information literacy in information knowledge

(n = 375)

	Information Knowledge	$\overline{\text{X}}$	S.D.	Level	Order
1	University teachers have basic knowledge of information, including theoretical knowledge of information, knowledge and understanding of information society and its impact on human beings	3.83	0.66	high	1
2	University teachers have sufficient knowledge in traditional cultural literacy and can integrate traditional culture with the modern information age	3.78	0.83	high	2
3	University teachers master the knowledge of information retrieval in this major and know how to obtain teaching and scientific research information of this major	3.74	0.77	high	4
4	University teachers master the knowledge of information evaluation and can make correct evaluations of most of the information of the major	3.74	0.76	high	3
5	University teachers understand the importance of information transmission knowledge and can use information technology to support teaching and scientific research activities.	3.68	0.76	high	6
6	University teachers understand the methods of information processing and processing, and can teach them to students in teaching and scientific research activities	3.67	0.74	high	8
7	University teachers understand the important information sources of the profession and can effectively process and organize information resources	3.70	0.77	high	5

Table 4.4 (Continue)

	Information Knowledge	$\overline{X}$	S.D.	Level	Order
8	University teachers master the basic skills in searching and can teach the basic skills of retrieval to students in combination with teaching.	3.68	0.77	high	7
9	University teachers understand the importance of information knowledge, actively seek to learn and update information knowledge, and keep up with the development of the information age.	3.65	0.73	high	9
10	University teachers regularly attend professional development and information literacy training to keep information knowledge and skills up to date	3.34	0.82	medium	10
	Total	**3.68**	**0.76**	**high**	

According to table 4.4, found that the current status of information literacy for undergraduate universities in information knowledge in overall was at high level ($\overline{X}$ = 3.68). Considering the mean ranged from the highest to lowest mean were as follow: the highest mean was that university teachers have basic knowledge of information, including theoretical knowledge of information, knowledge and understanding of information society and its impact on human beings ($\overline{X}$ = 3.83), followed by university teachers have sufficient knowledge in traditional cultural literacy and can integrate traditional culture with the modern information age ($\overline{X}$ = 3.78), and university teachers regularly attend professional development and information literacy training to keep information knowledge and skills up to date was the lowest mean ($\overline{X}$ = 3.34).

Table 4.5 The mean and standard deviation of the current status of information literacy in information ability

	Information Ability	$\overline{\mathrm{X}}$	S.D.	Level	Order
1	University teachers have sufficient information acquisition ability and can effectively search academic literature and research resources	3.83	0.73	high	2
2	University teachers have sufficient information utilization ability and can effectively use information to solve problems in teaching and scientific research	3.79	0.78	high	4
3	University teachers are able to assess the credibility of information on the Internet and identify reliable and unreliable sources of information	3.77	0.74	high	5
4	University teachers have sufficient information skills and are proficient in the use of information technology to support teaching and research activities	3.67	0.80	high	7
5	University teachers have sufficient information ability to explore the potential value of known information and can comprehensively apply it to practice.	3.69	0.74	high	6
6	University teachers can analyze known information and have the ability to create new knowledge of information	3.62	0.82	high	8
7	University teachers have sufficient information exchange ability, and often conduct online and offline information exchange, real-time and non-real-time communication in teaching and scientific research activities	3.13	0.97	medium	10

Table 4.5 (Continue)

	Information ability	$\overline{\text{X}}$	S.D.	Level	Order
8	University teachers understand the process and principle of information transmission, screen the transmitted information, and cut off the transmission path in time for false information.	3.80	0.70	high	3
9	University teachers can create new information and new knowledge, and can publish new information knowledge to the corresponding media	3.09	1.00	medium	11
10	University teachers can correctly express the new information they create and can promote the dissemination of new information	3.84	0.68	high	1
11	University teachers regularly participate in professional development and information literacy training, keep their information knowledge and skills updated, and continuously improve their information ability	3.51	0.79	high	9
	Total	**3.61**	**0.80**	**high**	

According to table 4.5, found that the current status of information literacy for undergraduate universities in information ability in overall was at high level ($\overline{\text{X}}$ = 3.61). Considering the mean ranged from the highest to lowest mean were as follow: the highest mean was university teachers can correctly express the new information they create and can promote the dissemination of new information ($\overline{\text{X}}$ = 3.84), followed by university teachers have sufficient information acquisition ability and can effectively search academic literature and research resources ($\overline{\text{X}}$ =3.83), and university teachers can create new information and new knowledge, and can publish new information knowledge to the corresponding media was the lowest mean ($\overline{\text{X}}$ = 3.09).

Table 4.6 The mean and standard deviation of the current status of information literacy in information ethics

(n = 375)

	Information Ethics	$\overline{X}$	S.D.	Level	Order
1	University teachers comply with regulations and guidelines related to information ethics, including provisions on information privacy and intellectual property rights	3.83	0.69	high	2
2	University teachers should understand that information ethics is essential in teaching and research, and should be emphasized and educated in teaching	3.75	0.77	high	8
3	University teachers have the right to protect personal information, and student information is not to be prying on for no reason and not to be improperly evaluated	3.81	0.77	high	6
4	University teachers should protect personal information, student information, computer networks and storage media from viruses or hacker attacks	3.81	0.78	high	7
5	University teachers should understand the importance of keeping personal and student information confidential to prevent misuse.	3.83	0.77	high	3
6	When using other people's literature or achievements, university teachers should indicate the source of the literature of others	3.86	0.73	high	1
7	University teachers should respect intellectual property rights, and must obtain the consent of the data owner when using data that has not been disclosed by others.	3.82	0.75	high	4

Table 4.6 (Continue)

	Information ethics	$\overline{X}$	S.D.	level	order
8	University teachers believe that information ethics can help them better process information and ensure that information is used safely and reasonably.	3.82	0.76	high	5
9	University teachers should frequently communicate information literacy with colleagues or students to promote the dissemination and popularization of information ethics knowledge.	3.71	0.73	high	9
10	University teachers regularly participate in information literacy training to continuously improve their knowledge of information ethics	3.10	0.82	medium	10
	Total	3.73	0.76	high	

According to table 4.6, found that the current status of information literacy for undergraduate universities in information ethics in overall was at high level ($\overline{X}$ = 3.73). Considering the results of this paper aspects ranged from the highest to lowest mean were as follow: the highest mean was when using other people's literature or achievements, university teachers should indicate the source of the literature of others ($\overline{X}$ = 3.86), followed by university teachers comply with regulations and guidelines related to information ethics, including provisions on information privacy and intellectual property rights and university teachers should understand the importance of keeping personal and student information confidential to prevent misuse ($\overline{X}$ = 3.83), and university teachers regularly participate in information literacy training to continuously improve their knowledge of information ethics was the lowest mean ($\overline{X}$ = 3.10).

Part 3: The SWOT Analysis Result about Information Literacy Strategy Development for Undergraduate Universities in Guangxi

Through the sharing of the strengths, weaknesses, opportunities and threats of information literacy for undergraduate university in Guangxi, this paper accurately grasps the problems existing in information literacy for undergraduate university in Guangxi and finds out reasonable solutions.

Table 4.7 The SWOT analysis result about information literacy strategy development for undergraduate university in Guangxi.

Strengths	Weakness
Information awareness	**Information awareness**
1) many channels to obtain information.	1)Insufficient attention to the importance of information awareness and to capture the innovation point of information in time, low information sensitivity
2) rich professional knowledge and information awareness.	2) In Guangxi the concept of information awareness is relatively weak.
	3) Some teachers lack the ability to judge the value of information.
Information knowledge	**Information knowledge**
1) rich subject knowledge, traditional cultural literacy and information knowledge	1) New information technology is constantly updated, and it is impossible to grasp new information technology in time.
2) rich teaching experience.	2) The content of information literacy training is not systematic and scientific.
3) familiar with the information resources of the discipline and know how to obtain the information resources of the major.	
4) advanced modern information technology and equipment.	

Table 4.7 (Continue)

Opportunity	Threat
Information ability	**Information ability**
1) master media tools.	1) lack the ability to integrate new information technologies with subject teaching.
2) quickly access the information	
3) have the ability to process information.	2)lack the ability to process and refine information.
4) have the ability to evaluate and process information.	3) There is a lack of talents of integrate professional information technology.
	4) The content of information competency training is outdated.
Information ethics	**Information ethics**
1) have knowledge of information ethics.	1) Insufficient attention is paid to information ethics.
2) University has resource strengths.	2) Ignore personal biometric information
Information awareness	**Information awareness**
1) The National Information Literacy Development Strategy brings about development plans.	1) Difficulties in information screening.
	2) few targeted information awareness training, and few ways to enhance the information awareness
2) The degree of social informatization and informatization has penetrated into all sectors of society.	3) The information awareness of the competent departments of university is weak.
3) Information creates value and makes society pay more attention to information awareness. The rise of self-media has enabled enterprises to publish marketing information to major social networking platforms to create more value.	

Table 4.7 (Continue)

Opportunity	Threat
Information knowledge	**Information knowledge**
1) New information technology has brought development opportunities.	1) Information technology is constantly updated, and new information knowledge is constantly emerging.
2) Affected by the epidemic, it provides opportunities for the development of information literacy.	
3) Network resources provide convenience	
Information ability	**Information ability**
1) Development of information technology provides new opportunities for the information literacy.	1) The design of information literacy training is unreasonable, the training lacks pertinence, and there is a lack of special training opportunities. There is not enough funding to support training.
	2) University don't reward teachers with high information literacy.
	3) There are few talents who master the integration of information knowledge and subject teaching.
Information ethics	**Information ethics**
1) The continuous improvement of network laws and regulations provides a guarantee for the development of information ethics	1) The increase in information resources, and the information disseminated by fake websites makes it difficult to distinguish the true from the false.
	2) There is less training on information ethics.

The results of swot analysis of information literacy for undergraduate universities in Guangxi.

Strength Analysis

Information Awareness

1) Modern society is an information society, and university teachers are always exposed to all kinds of information, and there are many channels to obtain information and can obtain information anytime and anywhere.

2) University teachers have undergone highly educated education, formed a certain knowledge system with professional knowledge, and have a high level of information awareness.

3) In the process of higher education, university teachers already have strong innovation ability and information awareness knowledge.

Information Knowledge

1) University teachers have sufficient knowledge. Have abundant subject knowledge, traditional cultural literacy and information knowledge, have many years of professional knowledge education, master the basic knowledge of information, have sufficient knowledge in traditional cultural literacy, have solid subject knowledge, have the ability to read quickly, and be able to effectively obtain valuable information in a large amount of information.

2) University teachers have rich teaching experience. He has been engaged in education and teaching in university, and has accumulated rich teaching experience, and can be comfortable in teaching.

3) University teachers are familiar with the information resources of the discipline and know how to obtain the information resources of the major.

4) University have advanced modern information technology and equipment.

Information Ability

1) Most of the university teachers are proficient in using new media short video platforms such as Weibo, QQ Space, Douyin, Video Account, and WeChat.

2) University teachers have basic information skills and can quickly obtain the information they need.

3) University teachers have in-depth processing of information.

4) University teachers have the ability to evaluate and process information.

Information Ethics

1) University teachers have certain knowledge of information ethics

2) Resource strengths: university have libraries, rich and reliable collection resources, schools have information centers, have strong information screening capabilities, and can quickly identify illegal websites.

Weakness Analysis

Weakness analysis refers to the internal weakness of a company or individual, including poor product or service quality, poor management, lack of competitiveness, poor brand image, backward technology, etc.

Information Awareness

1) Some university teachers do not pay enough attention to the importance of information awareness, and the information sensitivity is low, so they can't capture the innovation points of information in time.

2) Guangxi is located in the western part of China, and the concept of information awareness is relatively weak.

3) Some teachers lack the ability to judge the value of information

Information Knowledge

1) New information technology is constantly updated, and some teachers can't grasp the new information technology in time.

2) The content of information literacy training is not systematic and scientific.

Information ability

1) University teachers lack the ability to integrate new information technologies with subject teaching.

2) Some university teachers lack the ability to process and refine information.

3) There is a lack of talents who integrate professional information technology with subject teaching.

4) The content of information competency training is outdated. The information literacy training of university teachers still follows the training concept of "focusing on the knowledge taught by teachers", and teaches the acquisition and

utilization of information resources at a fixed time and designated place, which is too outdated and ignores the cultivation of university teachers' independent university ability. There is a single teaching method for information literacy training. At present, the training of university teachers mainly adopts the training method of "teacher explanation + PPT presentation".

Information Ethics

1) Insufficient attention is paid to information ethics. Some university teachers do not pay enough attention to information ethics, and unconsciously complain about their personal life status on social platform software and make irresponsible comments. Due to the poor ability to discriminate information, follow the trend and forward links to false statements.

2) Ignore personal biometric information. Lack of understanding of network laws and regulations leads to privacy leakage, network fraud, computer hacking, etc.

Opportunity Analysis

Opportunity analysis refers to the opportunities in the external environment of enterprises or individuals, including increased market demand, policy support, competitor retreat, new technology application, etc.

Information Awareness

1) The National Information Literacy Development Strategy brings about development plans. In 2018, the state provided policy support for the development of information literacy. The release of the "Education Informatization 2.0 Action Plan" and the "14th Five-Year Plan for National Informatization" have fundamentally changed the overall environment for the development of information literacy in China and brought a broad space for the development of information literacy. Under the guidance of these development plans, information literacy for university teachers is no longer an option for higher education, but has become a compulsory item that every university must implement. This brings opportunities for the development of information literacy for university teachers.

2) The degree of social informatization has been further strengthened, and informatization has penetrated into all sectors of society.

3) Information creates value and makes society pay more attention to information awareness. The rise of self-media has enabled enterprises to publish marketing information to major social networking platforms to create more value.

Information Knowledge

1) New information technology has brought development opportunities for the information literacy of university teachers, QQ, Weibo, WeChat, Kuaishou, Douyin and other short video platforms. The social communication of the network has changed from simple text communication to "text + sticker", and then to the integration of text, sticker, voice and video, and the powerful vitality of modern technology has made information literacy applied to every corner of society. Teaching is carried out to the point of omnipotence, and as long as the teacher has the right time, teaching activities can be carried out face-to-face anytime, anywhere.

2) Affected by the epidemic, university teachers are forced to teach online, which provides more learning opportunities for university teachers to contact the Internet and online courses. It provides opportunities for the development of information literacy among university teachers.

3) The openness, sharing and timeliness of network resources provide convenience for university teachers to learn information knowledge. University teachers can use network resources to improve their information knowledge and professional knowledge anytime and anywhere. You can use the fragmented time to learn information knowledge.

Information Ability

1) With the development of information technology, it provides new opportunities for the information literacy of university teachers. The development of new technologies such as big data and cloud computing, the development and application of design software, and the establishment of information knowledge sharing platforms have provided technical support for university teachers to improve their information literacy level.

Information Ethics

1) The continuous improvement of network laws and regulations provides a guarantee for the development of information ethics.

Threat Analysis

Threat analysis refers to threats to the external environment of enterprises or individuals, including intensified market competition, policy changes, changes in customer needs, and new technology applications

Information Awareness

1) Difficulties in information screening. The Internet has made information open and open, and university teachers can obtain various information through multiple channels. It has become very easy to obtain all kinds of knowledge and news information, but for the information disseminated by some fake websites, it is difficult to distinguish the truth from the false, and some information can even affect people's minds and poison people's hearts.

2) There was few targeted information awareness training, and there are few ways to enhance the information awareness of university teachers.

3) The information awareness of the competent departments of university is weak

Information Knowledge

1) Information technology is constantly updated, and new information knowledge is constantly emerging.

Information Ability

1) The design of information literacy training for university teachers is unreasonable, and the induction training of university lacks pertinence and special training opportunities. There is not enough funding for information literacy training for university teachers.

2) University do not reward teachers with high information literacy.

3) There are few talents who master the integration of information knowledge and subject teaching.

Information Ethics

1) The increase in information resources, and the information disseminated by fake websites makes it difficult to distinguish the true from the false.

2) There is little training on information ethics, and university teachers can only learn information ethics knowledge on their own.

SO Strategy	WO Strategy
Information Awareness	**Information Awareness**
1) Enhancing the importance of information awareness	1) Improving information awareness exchanges between university teacher, universities and enterprises
2) Enhancing information awareness competitions.	**Information Knowledge**
Information Knowledge	1) Supporting to teach themselves information knowledge by various resources.
1) Supporting modern educational technology that deeply integrates information technology with subject teaching.	**Information Ability**
Information Ability	1) Supporting targeted information ability training.
1) Supporting modern educational technology that deeply integrates information technology with subject teaching.	**Information Ethics**
Information Ethics	Supporting information ethics communication.
1) Enhancing regularly information ethics competitions.	
ST Strategy	WT Strategy
Information Awareness	**Information Awareness**
1) Solving information awareness incentive system.	1) Improving information awareness by training.
Information Knowledge	**Information Knowledge**
1) Enhancing importance of information knowledge.	1) Solving information knowledge by training.
Information Ability	**Information Ability**
1) Enhancing regularly information ability competitions.	1) Solving a systematic information ability incentive system.
Information Ethics	**Information Ethics**
1) Supports the integration of information ethics knowledge into teaching	1) Solving the training problems in information ethics.

Figure 4.1 The information literacy strategy development for undergraduate universities in Guangxi by SWOT

SO Strategy (Rely on Internal Strengths, Leverage External Opportunities)

The opportunity and strengths combination strategy refers to the development strategy that relies on internal strengths and takes strengths of external opportunities, which is the most ideal model. With the development of the information society, the information literacy of university teachers has attracted more and more attention from all levels of society. Take strength of good internal strengths and external opportunities to improve the information literacy of university teachers.

Information Awareness

1) Enhancing the importance of information awareness. Only when university teacher pay enough attention to information awareness can they always pay attention to information and judge the value of information in their study, life and work. By always paying attention to information and using it. It will raise university teacher's information awareness.

2) Enhancing information awareness competitions. To improve information awareness, it is first necessary to understand the knowledge of information awareness, and through the competition of information awareness knowledge, university teachers can master the knowledge of information awareness in the competition, so as to improve the subjective initiative of university teachers.

Information Knowledge

1) Enhancing information knowledge competitions. Information knowledge develops with the development of society, and in order to keep university teachers abreast of the latest information and new technologies, more information knowledge competitions should be organized so that university teachers can master the knowledge of new information technologies in the knowledge competitions. With the rapid development of society and the continuous emergence of new knowledge, university teachers rely on their own rich knowledge to constantly learn new knowledge, integrate it into their own knowledge, and enrich their own information knowledge.

Information Ability

1) Supporting modern educational technology that deeply integrates information technology with subject teaching. University teachers rely on their familiarity with media tools to impart their rich professional knowledge to students using new information technology means, so as to improve the quality of teaching.

Information Ethics

1) Enhancing regularly information ethics competitions. The network center and library of the university can use the Internet to carry out information ethics competitions, so that university teachers can master the laws and regulations of the Internet and the knowledge of information ethics in the competition.

WO Strategy (Exploiting External Opportunities and Overcoming Internal weaknesses)

Guangxi is located in the western region of China, the economy is underdeveloped, and the information literacy of university teachers is weak compared with other provinces. Therefore, Guangxi university teachers need to take strengths of the opportunities of the external environment to reverse the weaknesses situation. The strategy are as follows:

Information Awareness

1) Improving information awareness exchanges between university teacher, universities and enterprises. Taking advantage of the benefits of social informatization, it is possible to carry out information awareness exchange activities through the Internet or offline, and improve the level of information awareness of university teachers through communication.

Information Knowledge

1) Supporting to teach themselves information knowledge by various resources. With the continuous development of the information society, there are more and more resources for learning information knowledge on the Internet, and there are more and more resources for free training of information knowledge.

Information Ability

1) Supporting targeted information ability training. New information technologies are constantly emerging, using new information technologies for professional teaching. Colleges and universities should organize targeted information ability training, and conduct special training on the combination of emerging information technology and professional applications.

Information Ethics

1) Supporting information ethics communication. University teachers can take advantage of the convenience of the Internet to carry out information ethics communication activities, and promote the development and improvement of information ethics through communication.

ST Strategy (Leverage Internal Strengths to Avoid External Threats)

Take strengths of internal strengths and avoid external threats. By giving full play to the subjective initiative of university teachers, they actively use network resources to improve their own information literacy level.

Information Awareness

1) Solving information awareness incentive system. University teachers have rich knowledge and strong learning ability, and university should formulate an incentive system for information awareness to motivate teachers to actively improve their information awareness and keep their information awareness up with the development of the information age.

Information Knowledge

1) Enhancing importance of information knowledge. I With the rapid development of the information society, information knowledge is also constantly developing, and with the emergence of new information technology, new information knowledge is generated. It is very important to grasp the information of new technologies, and in order to keep up with the pace of the information age, it is necessary to update one's own information knowledge in a timely manner.

Information Ability

1) Enhancing regularly information ability competitions. University teachers have a wealth of knowledge about the use of the Internet, and universities can use the rich knowledge of Internet to carry out online information ability competitions, so that university teachers can actively participate, so as to improve the information ability of university teachers.

Information Ethics

1) Supports the integration of information ethics knowledge into teaching. The rich ethical knowledge of university teachers is integrated into daily teaching to improve students' knowledge of information ethics and reserve information ethics knowledge for future university teachers.

WT Strategy (Reducing Internal weaknesses and Avoiding External Threats)

It is necessary to overcome internal weaknesses and avoid external threats. University should attach importance to information literacy, change their attitude towards information literacy, and actively improve the level of information literacy of university teachers.

Information Awareness

1) Improving information awareness by training. University should invite experts from inside and outside the province to train university teachers in information awareness. With the rapid development of the information society, the information awareness of university teachers cannot keep up with the changes of the times, so the information awareness level of university teachers is trained through information literacy majors inside and outside the province to improve their information awareness level.

Information Knowledge

1) Solving information knowledge by training. For some new information technology knowledge that is difficult to master, it is necessary for experts to guide them to master. Therefore, universities should invite professional information literacy experts to conduct targeted information knowledge training for university teachers.

Information Ability

1) Solving a systematic information ability incentive system. In order to stimulate the enthusiasm of university teachers to enhance their information ability, a perfect information ability incentive system should be formulated.

Information Ethics

1) Solving training problems in information ethics. With the rapid development of the information society, information ethics is also changing, so it is necessary to train university teachers to keep up to date with the latest knowledge of information ethics.
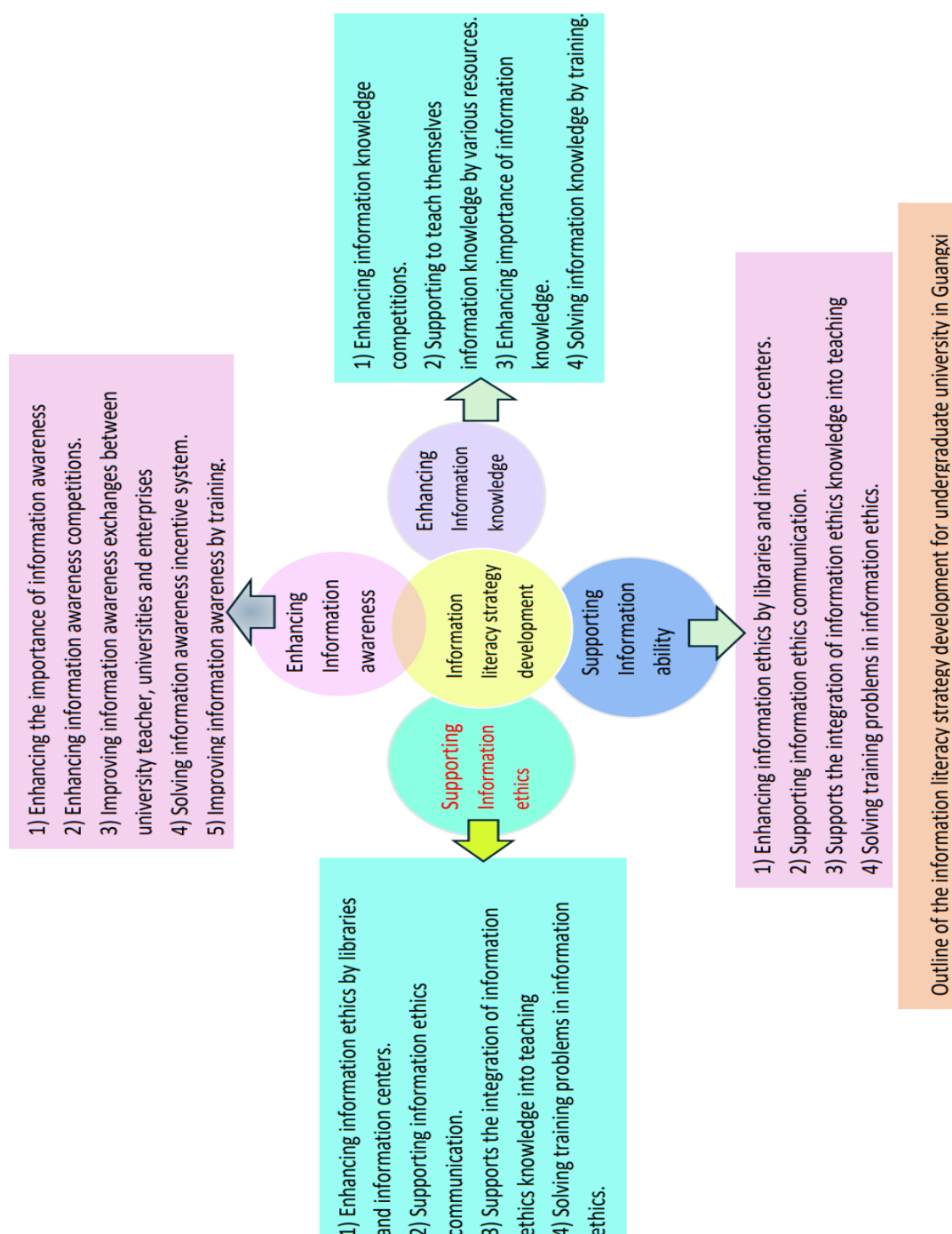
Figure 4.2 Outline of the information literacy strategy development for undergraduate
university in Guangxi

Table 4.8 The strategy development for undergraduate university by SWOT

Strategy	Measures
Enhancing Information awareness	1) Enhancing the importance of information awareness. 2) Enhancing information awareness competitions. 3) Improving information awareness exchanges between university teacher, universities and enterprises. 4) Solving information awareness incentive system. 5) Improving information awareness by training.
Enhancing Information knowledge	1) Enhancing information knowledge competitions. 2) Supporting to teach themselves information knowledge by various resources. 3) Enhancing importance of information knowledge. 4) Solving information knowledge by training.
Supporting Information ability	1) Supporting modern educational technology that deeply integrates information technology with subject teaching. 2) Supporting targeted information ability training. 3) Enhancing regularly information ability competitions. 4) Solving a systematic information ability incentive system.
Supporting Information ethics	1) Enhancing information ethics by libraries and information centers. 2) Supporting information ethics communication. 3) Supports the integration of information ethics knowledge into teaching 4) Solving training problems in information ethics.

Part 4: The Analysis Result about the Interview Contents about Information Literacy Strategy Development for Undergraduate Universities in Guangxi.

Table 4.9 Personal information of interviewee

Interviewee	Personal Information	Interview Date	Interview Time
Interviewee 1	Education: Doctor's degree Expertise: Library studies Work experience: 15 years	Feb 21st 2024	9:00 am GMT +8 55 minutes
Interviewee 2	Education: Doctor's degree Expertise: Education management Work experience: 9 years	Feb 22nd 2024	9:30 am GMT +8 45 minutes
Interviewee 3	Education: Doctor's degree Expertise: Library studies Work experience: 8 years	Dec 22nd 2024	14:30 pm GMT +8 53 minutes
Interviewee 4	Education: Doctor's degree Expertise: Library studies Work experience: 12 years	Feb 23rd 2024	8:30 am GMT +8 43 minutes
Interviewee 5	Education: Doctor's degree Expertise: Education management Work experience: 11 years	Feb 23rd 2024	10:30 am GMT +8 51 minutes
Interviewee 6	Education: Doctor's degree Expertise: Education management Work experience: 8 years	Feb 23rd 2024	14:30 pm GMT +8 39 minutes
Interviewee 7	Education: Master's degree Expertise: Library studies Work experience: 21 years	Feb 24th 2024	9:30 am GMT +8 46 minutes

Table 4.9 (Continue)

Interviewee	Personal Information	Interview Date	Interview Time
Interviewee 8	Education: Doctor's degree Expertise: Education management Work experience: 7 years	Feb 24th 2024	10:50 am GMT +8 47 minutes
Interviewee 9	Education: Doctor's degree Expertise: Library studies Work experience: 17 years	Feb 25th 2024	8:45 am GMT +8 50 minutes
Interviewee 10	Education: Doctor's degree Expertise: Library studies Work experience: 13 years	Feb 25th 2024	10:33 am GMT +8 42minutes
Interviewee 11	Education: Doctor's degree Expertise: Library studies Work experience: 12 years	Feb 26th 2024	8:30 am GMT +8 46minutes
Interviewee 12	Education: Doctor's degree Expertise: Education management Work experience: 6 years	Feb 26th 2024	11:10 am GMT +8 49 minutes

The researcher conducted 12 face-to-face interviews. Each interview was conducted one-on-one in a more private location where others could not overhear the converstion, ensuring that the interviewees were not distrurbed by other factors.
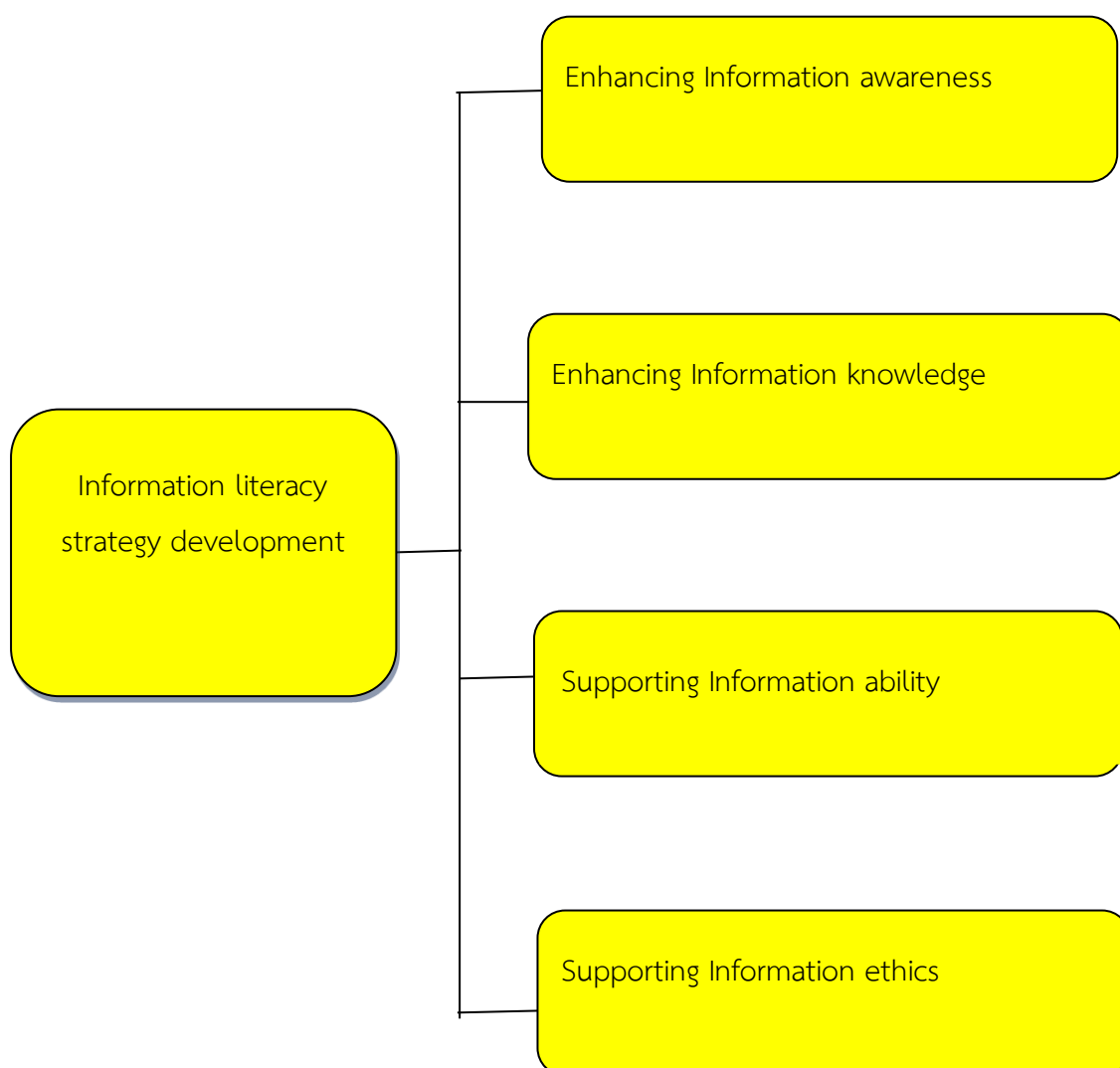
Figure 4.3 Information literacy strategy development for undergraduate university in Guangxi
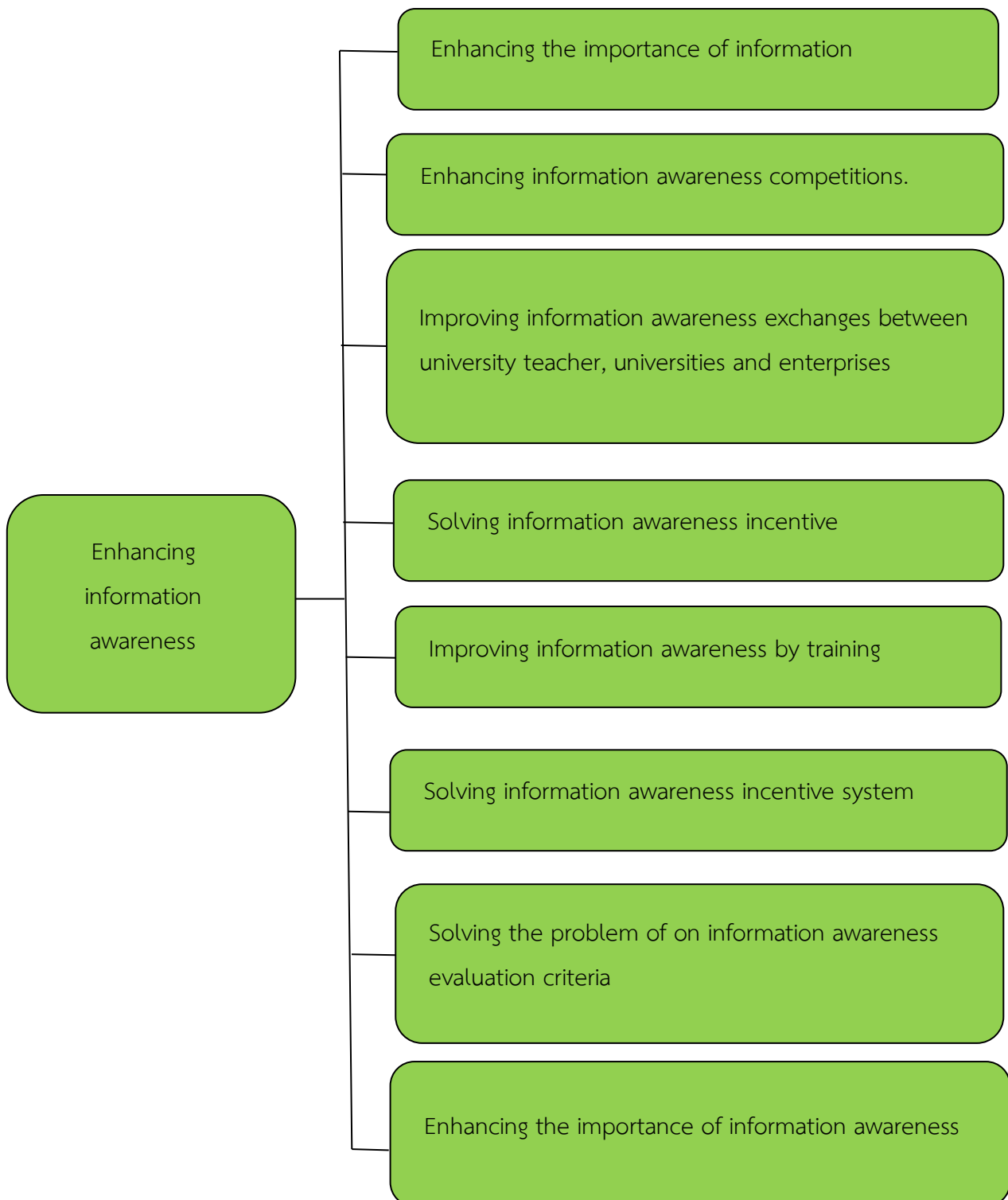
Figure 4.4 The strategy of enhancing information awareness
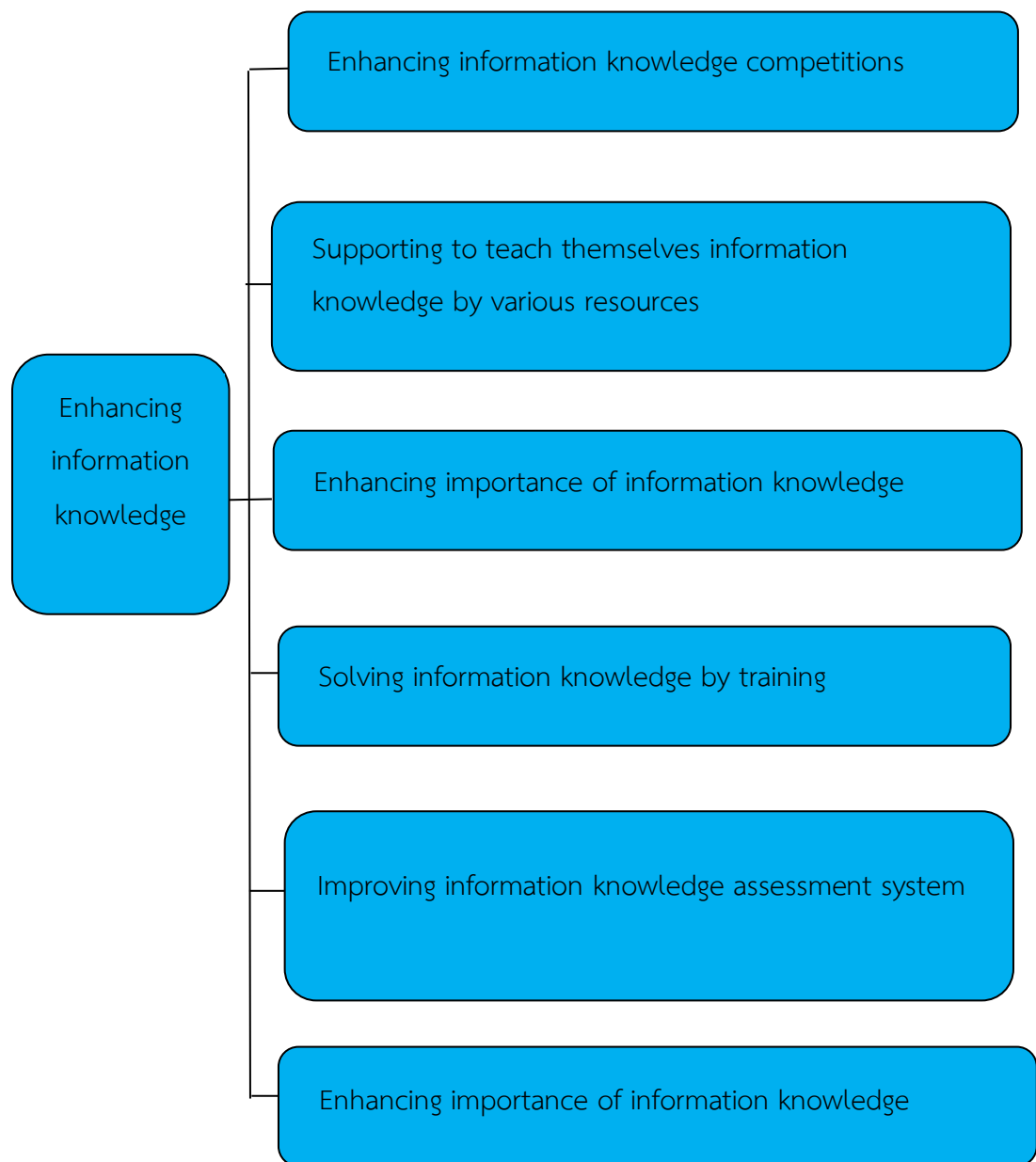
Figure 4.5 The strategy of enhancing information knowledge

Figure 4.6 The strategy of supporting information ability

Enhancing information ethics by libraries and information centers

Supporting information ethics communication

Supporting information ethics

Supporting the integration of information ethics knowledge into teaching

Solving training problems in information
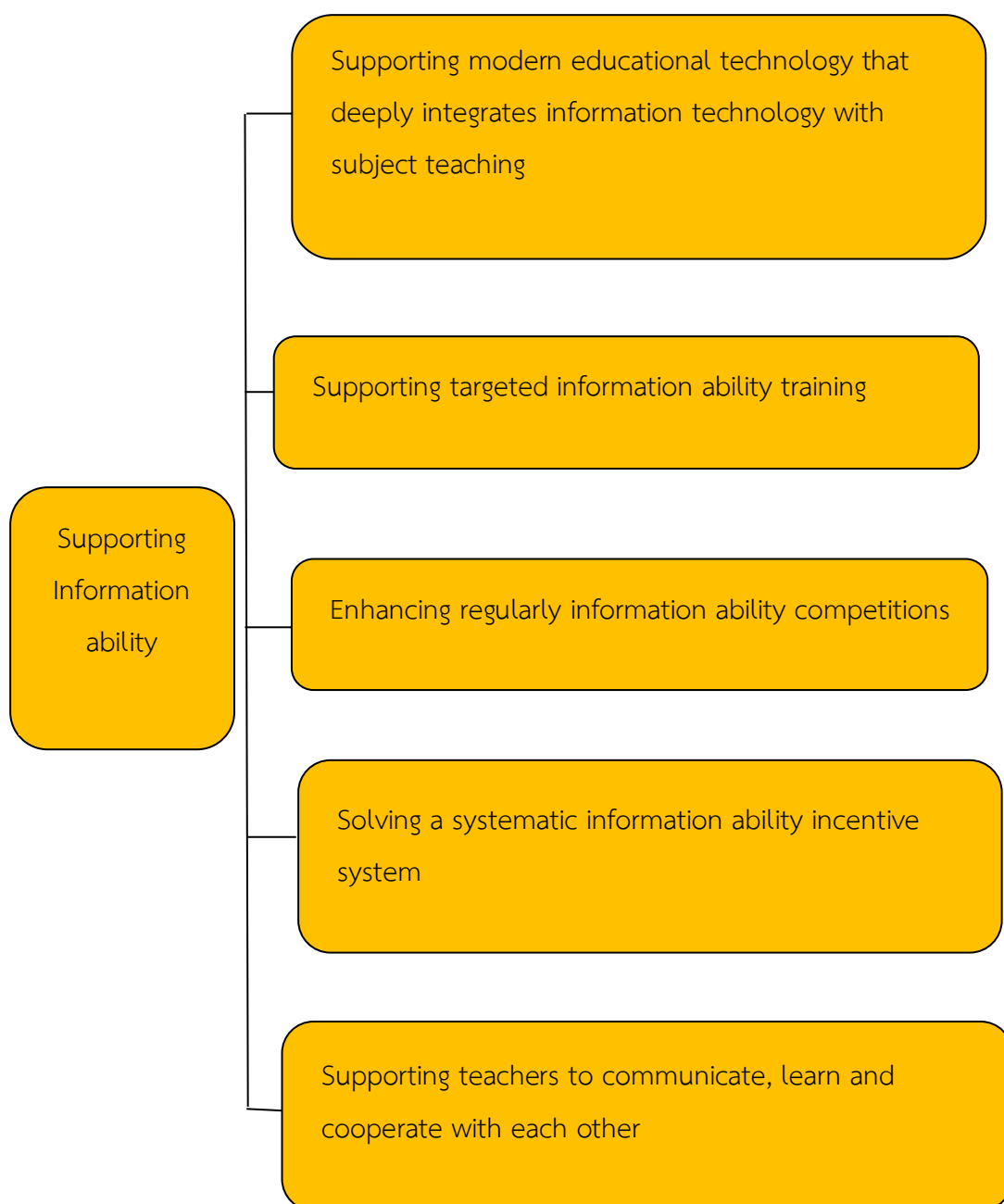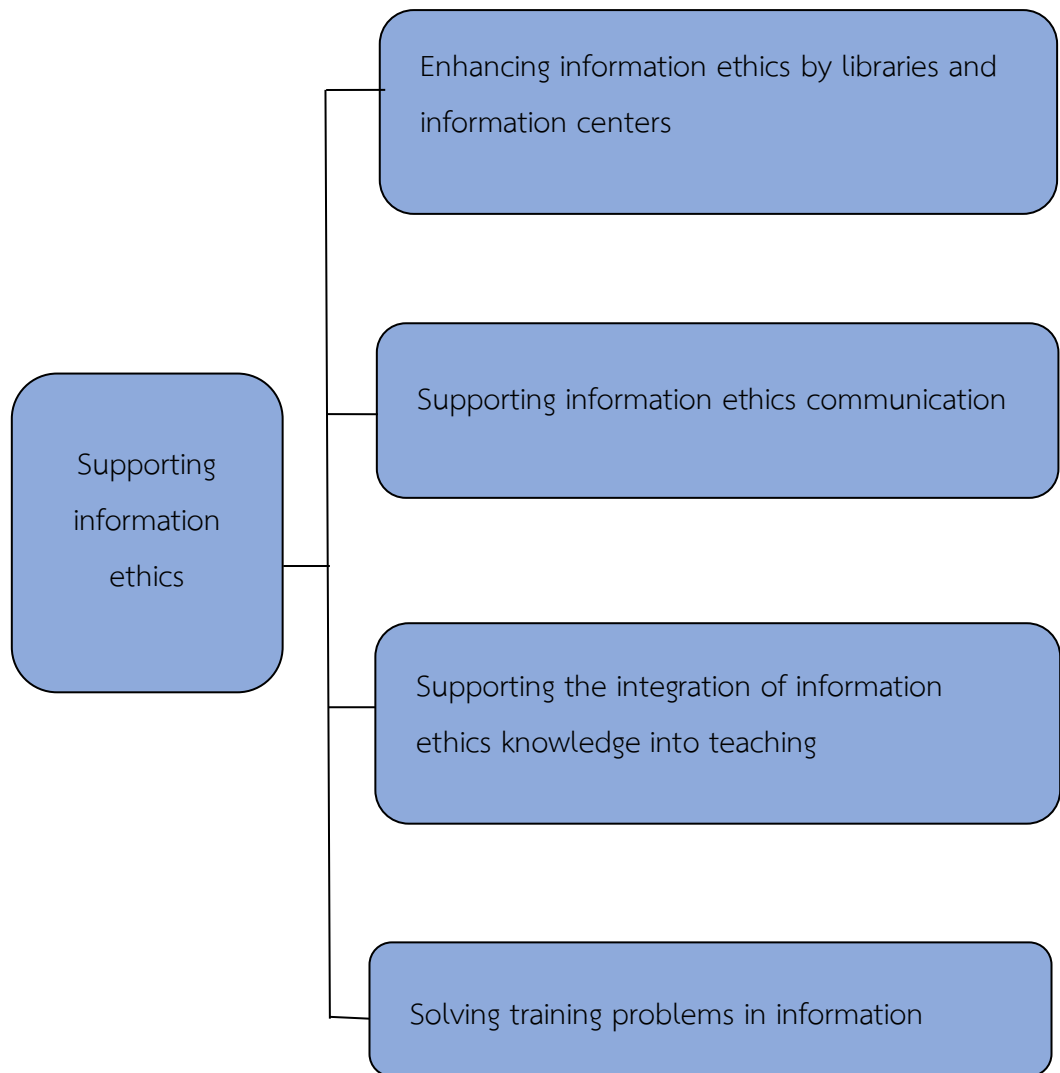
Figure 4.7 The strategy of supporting information ethics

1) Enhancing information knowledge competitions.
2) Supporting to teach themselves information knowledge by various resources.
3) Enhancing importance of information knowledge.
4) Solving information knowledge by training.
5) improving information knowledge assessment system.
6) Enhancing importance of information knowledge.

1) Enhancing the importance of information awareness
2) Enhancing information awareness competitions.
3) Improving information awareness exchanges
4) Solving information awareness incentive system.
5) Improving information awareness by training,
6) Solving information awareness incentive system.
7) Solving the problem of no information awareness evaluation criteria.
8) Enhancing the importance of information awareness.

Enhancing Information awareness

Enhancing Information knowledge

Information literacy strategy development

Supporting Information ability

Supporting Information ethics

1) Enhancing information ethics by libraries and information centers.
2) Supporting information ethics communication.
3) Supports the integration of information ethics knowledge into teaching
4) Solving training problems in information ethics.
5)Supporting teachers to communicate, learn and cooperate with each other.

The information literacy strategy development for undergraduate university in Guangxi

1) Enhancing information ethics by libraries and information centers.
2) Supporting information ethics communication.
3) Supports the integration of information ethics knowledge into teaching
4) Solving training problems in information ethics.

Figure 4.8 The information literacy strategy development for undergraduate university in Guangxi

Table 4.10 Information literacy strategy development for undergraduate universities in Guangxi

Strategy	Measures
Enhancing information awareness	1) Enhancing information awareness competitions. 2) Enhancing to incorporate information awareness into the teaching plan of professional courses. 3) Supporting universities to include information awareness in the regular assessment. 4) Improving information awareness exchanges between university teacher, universities and enterprises. 5) Improving information awareness by training. 6) Solving information awareness incentive system. 7) Solving the problem of no information awareness evaluation criteria. 8) Enhancing the importance of information awareness.
Enhancing information knowledge	1) Supporting the information knowledge exchange activities. 2) Supporting to teach themselves information knowledge by various resources. 3) Solving information knowledge by training. 4) Enhancing information knowledge competitions. 5) improving information knowledge assessment system. 6) Enhancing importance of information knowledge.

Table 4.10 (Continue)

Strategy	measures
Supporting information ability	1) Supporting modern educational technology that deeply integrates information technology with subject teaching.
	2) Supporting targeted information ability training
	3) Enhancing regularly information ability competitions.
	4) Solving a systematic information ability incentive system.
	5) Supporting teachers to communicate, learn, and cooperate with each other.
Supporting information ethics	1) Enhancing information ethics by libraries and information centers.
	2) Supporting information ethics communication.
	3) Supports the integration of information ethics knowledge into teaching
	4) Solving training problems in information ethics.

Analysis of Interview Results

According to table 4.10, the researcher provided the information literacy strategy development for undergraduate universities in four aspects, which contain 23 measures. There are 8 measures for information awareness, 6 measures for information knowledge, 5 measures for information ability, and 4 measures for information ethics.

Part 5: The Analysis Result about the Evaluation of the Suitability and Feasibility of Information Literacy Strategy Development for Undergraduate Universities in Guangxi. Presented the Data in the Form of Mean and Standard Deviation.

This section aims to evaluate the suitability and feasibility of information literacy strategy development for undergraduate university in Guangxi. There were 15 qualified experts to evaluate the literacy information literacy strategy development for undergraduate university in Guangxi. The results are following:

Table 4.11 the mean and standard deviation of the evaluation of suitability and feasibility of information literacy strategy development for undergraduate university in Guangxi

(N=15)

	Strategies and Measures	Suitability			Feasibility		
		$\overline{X}$	S.D.	Level	$\overline{X}$	S.D.	Level
1	Enhancing information awareness	4.47	0.13	high	4.48	0.22	high
2	Enhancing information knowledge	4.49	0.21	high	4.50	0.18	highest
3	Supporting information ability	4.52	0.22	highest	4.52	0.24	highest
4	Supporting information ethics	4.53	0.27	highest	4.45	0.20	high
	Total	4.50	0.21	highest	4.49	0.21	high

According to table 11, the suitability of information literacy strategy development for undergraduate university in Guangxi were at the highest level with values between 4.47 and 4.53, which means the strategies for improving information literacy for undergraduate university in Guangxi are suitability.

According to table 11, the feasibility of information literacy strategy development for undergraduate university in Guangxi were at the high level with values between 4.45 and 4.52, which means the strategies for improving information literacy for undergraduate university in Guangxi are feasibility.

Table 4.12 The average value and standard deviation of the evaluation of the suitability and feasibility of information awareness strategy

(N = 15)

No	Enhancing Information Awareness	Suitability			Feasibility		
		$\overline{X}$	S.D.	Level	$\overline{X}$	S.D.	Level
1	Enhancing information awareness competitions	4.40	0.74	high	4.73	0.46	highest
2	Enhancing to incorporate information awareness into the teaching plan of professional courses	4.40	0.63	high	4.27	0.46	high
3	Supporting universities to include information awareness in the regular assessment	4.33	0.62	high	4.33	0.49	high
4	Improving information awareness exchanges between university teacher, universities and enterprises	4.53	0.52	highest	4.47	0.52	high
5	Improving information awareness by training	4.67	0.49	highest	4.67	0.49	highest
6	Solving information awareness incentive system.	4.67	0.59	highest	4.53	0.52	highest
7	Solving the problem of no information awareness evaluation criteria	4.33	0.73	high	4.27	0.60	high
8	Enhancing the importance of information awareness	4.40	0.51	high	4.53	0.64	highest
	Total	4.47	0.13	high	4.48	0.22	high

According to table 4.12, the suitability of information literacy strategy development for undergraduate universities in enhancing information awareness were at high level with the values between 4.33 and 4.67, which means the information awareness strategy development for undergraduate universities are suitability.

According to table 4.12 the feasibility of information literacy strategy development for undergraduate universities in enhancing information awareness were at highest level with the values between 4.27 and 4.67, which means the information awareness strategy development for undergraduate universities are feasibility.

Table 4.13 The average value and standard deviation of the evaluation of the suitability and feasibility of information knowledge strategy

(N = 15)

No	Enhancing information knowledge	Suitability			Feasibility		
		$\overline{X}$	S.D.	Level	$\overline{X}$	S.D.	Level
1	Supporting the information knowledge exchange activities	4.47	0.52	high	4.33	0.62	high
2	Supporting to teach themselves information knowledge by various resources	4.60	0.51	highest	4.60	0.51	highest
3	Solving information knowledge by training	4.60	0.51	highest	4.80	0.41	highest
4	Enhancing information knowledge competitions	4.53	0.52	highest	4.33	0.49	high
5	Improving information knowledge assessment system	4.20	0.56	high	4.27	0.46	high
6	Enhancing importance of information knowledge	4.53	0.52	highest	4.67	0.49	highest
	Total	**4.49**	**0.21**	**high**	**4.50**	**0.18**	**highest**

According to table 4.13, the suitability of information literacy strategy development for undergraduate universities in enhancing information knowledge were at high level with the values between 4.20 and 4.60, which means the information knowledge strategy development for undergraduate universities are suitability.

According to table 4.13, the feasibility of information literacy strategy development for undergraduate universities in enhancing information knowledge were at high level with the values between 4.27 and 4.80, which means the information knowledge strategy development for undergraduate universities are feasibility.

Table 4.14 The average value and standard deviation of the evaluation of the suitability and feasibility of information ability strategy

(N = 15)

No	Supporting Information Ability	Suitability			Feasibility		
		$\overline{X}$	S.D.	Level	$\overline{X}$	S.D.	Level
1	Supporting modern educational technology that deeply integrates information technology with subject teaching	4.47	0.52	high	4.47	0.52	high
2	Supporting targeted information ability training	4.73	0.46	highest	4.60	0.51	highest
3	Enhancing regularly information ability competitions	4.40	0.51	high	4.44	0.51	high
4	Solving a systematic information ability incentive system	4.60	0.51	highest	4.67	0.49	highest
5	Supporting teachers to communicate, learn, and cooperate with each other	4.40	0.51	high	4.47	0.52	high
	Total	4.52	0.22	highest	4.52	0.24	highest

According to table 4.14, the suitability of information literacy strategy development for undergraduate universities in supporting information ability were at high level with the values between 4.44 and 4.73, which means the information ability strategy development for undergraduate universities are suitability.

According to table 4.14, the feasibility of information literacy strategy development for undergraduate universities in supporting information ability were at high level with the values between 4.44 and 4.67, which means the information ability strategy development for undergraduate universities are feasibility.

Table 4.15 The average value and standard deviation of the evaluation of the suitability and feasibility of information ethics strategy

(N=15)

No	Supporting Information Ethics	Suitability			Feasibility		
		$\overline{X}$	S.D.	Level	$\overline{X}$	S.D.	Level
1	Solving training problems in information ethics	4.60	0.51	highest	4.40	0.51	high
2	Enhancing regularly information ethics competitions	4.47	0.52	high	4.47	0.64	high
3	Supporting information ethics communication	4.53	0.52	highest	4.60	0.51	highest
4	Supports the integration of information ethics knowledge into teaching	4.53	0.52	highest	4.33	0.49	high
	Total	**4.53**	**0.27**	**highest**	**4.45**	**0.20**	**high**

According to table 4.15, the suitability of information literacy strategy development for undergraduate universities in supporting information ethics were at high level with the values between 4.47 and 4.60, which means the information ethics strategy development for undergraduate universities are suitability.

According to table 4.15, the feasibility of information literacy strategy development for undergraduate universities in supporting information ethics were at high level with the values between 4.33 and 4.60, which means the information ethics strategy development for undergraduate universities are feasibility.

To sum up: The 8 measures for information awareness, 6 measures for information knowledge, 5 measures for information ability, and 4 measures for information ethics are all suitability and feasibility.

Chapter 5

Conclusion Discussion and Recommendations

The research for improving the information literacy strategy development for undergraduate universities in Guangxi. The objectives of this paper were 1) to study the current status of information literacy for undergraduate universities in Guangxi, 2) to formulate information literacy strategy development for undergraduate universities in Guangxi, and 3) to evaluate the suitability and feasibility of the information literacy strategy development for undergraduate universities in Guangxi, that were including 4 following aspects: 1) information awareness, 2) information knowledge, 3) information ability, 4) information ethics. The sample group in this paper were teachers in undergraduate universities in Guangxi. The interview group was 12 high-education and rich teaching experience teachers. The research instruments were documents analysis, questionnaire, and structured interview. The statistic to analyze the data were percentage, mean, and standard deviation. The conclusion, discussion and recommendations of this paper are as follows:

Conclusion

The research for improving information literacy strategy development for undergraduate universities in Guangxi. The researcher summarizes the conclusion into 3 parts, details as follows:

Part 1: the current situation of information literacy of undergraduate universities in Guangxi.

Part 2: for improving the information literacy strategy development for undergraduate universities in Guangxi.

Part 3: the suitability and feasibility of the information literacy strategy development for undergraduate universities in Guangxi.

Part 1: The Current Situation of Information Literacy of Undergraduate Universities in Guangxi.

The current status of information literacy of undergraduate universities in four aspects was at high level. Considering the mean ranged from the highest to lowest mean were as follow: the highest mean was information ethics, followed by information awareness, and information ability was the lowest mean. In terms of information ethics, university teachers consciously abide by relevant laws and regulations and do not do illegal things, and information awareness is because university teachers consciously want to maintain progress with the society in the face of continuous informatization of society, so the level of information awareness is high. Information ability requires university teachers to learn various information technologies, which is relatively difficult, and it is a relatively difficult technology for university teachers to master.

Information Awareness in overall was at high level. Considering the mean ranged from the highest to lowest mean were as follow: the highest mean was that university teachers understand the importance of information awareness, understand that information technology is conducive to innovating educational methods and research directions, and improve the creativity and competitiveness of university teachers, followed by university teachers have a certain degree of information sensitivity and actively seek and use information to improve teaching quality and university teachers understand the value of information, can integrate information knowledge in teaching, and improve students' information literacy, and university teachers actively participate in the research and application of information technology in the field of education, and promote the modernization and improvement of education was the lowest mean.

Information Knowledge in overall was at high level. Considering the mean ranged from the highest to lowest mean were as follow: the highest mean was that university teachers have basic knowledge of information, including theoretical knowledge of information, knowledge and understanding of information society and its impact on human beings, followed by university teachers have sufficient knowledge in traditional cultural literacy and can integrate traditional culture with the modern

information age, and university teachers regularly attend professional development and information literacy training to keep information knowledge and skills up to date was the lowest mean.

Information Ability in overall was at high level. Considering the mean ranged from the highest to lowest mean were as follow: the highest mean was university teachers can correctly express the new information they create and can promote the dissemination of new information, followed by university teachers have sufficient information acquisition ability and can effectively search academic literature and research resources, and university teachers can create new information and new knowledge, and can publish new information knowledge to the corresponding media was the lowest mean.

Information Ethics in overall was at high level. Considering the results of this paper aspects ranged from the highest to lowest mean were as follow: the highest mean was when using other people's literature or achievements, university teachers should indicate the source of the literature of others, followed by university teachers comply with regulations and guidelines related to information ethics, including provisions on information privacy and intellectual property rights and university teachers should understand the importance of keeping personal and student information confidential to prevent misuse, and university teachers regularly participate in information literacy training to continuously improve their knowledge of information ethics was the lowest mean.

Part 2: The Information Literacy Strategy Development for Undergraduate Universities in Guangxi.

The information literacy strategy development for undergraduate universities in four aspects, which contain 23 measures. There are 8 measures for information awareness, 6 measures for information knowledge, 5 measures for information ability, and 4 measures for information ethics.

Information Awareness consisted of 8 measures, as follows:

1. Enhancing information awareness competitions.

2. Enhancing to incorporate information awareness into the teaching plan of professional courses.

3. Supporting universities to include information awareness in the regular assessment.

4. Improving information awareness exchanges between university teacher, universities and enterprises.

5. Improving information awareness by training.

6. Solving information awareness incentive system.

7. Solving the problem of no information awareness evaluation criteria.

8. Enhancing the importance of information awareness.

Information Knowledge consisted of 6 measures, as follows:

1. Supporting the information knowledge exchange activities.

2. Supporting to teach themselves information knowledge by various resources.

3. Solving information knowledge by training.

4. Enhancing information knowledge competitions.

5. Improving information knowledge assessment system.

6. Enhancing importance of information knowledge.

Information Ability consisted of 5 measures, as follows:

1. Supporting: the modern educational technology of deep integration of information technology and subject teaching.

2. Supporting targeted information ability training

3. Enhancing regularly information ability competitions.

4. Solving a systematic information ability incentive system.

5. Supporting teachers to communicate, learn, and cooperate with each other.

Information Ethics consisted of 4 measures, as follows:

1. Solving training problems in information ethics.

2. Enhancing regularly information ethics competitions.

3. Supporting information ethics communication.

4. Supports the integration of information ethics knowledge into teaching.

Part 3: The Suitability and Feasibility of Information Literacy Strategy Development for Undergraduate Universities in Guangxi

The suitability and feasibility of information literacy strategy development for undergraduate universities in four aspects were at high level with the values between 4.00 and 5.00, which means the strategy development for undergraduate universities are suitability and feasibility.

The suitability and feasibility of information literacy strategy development in information awareness was at high level. This means that these strategies can be implemented to increase the level of information awareness.

The suitability and feasibility of information literacy strategy development in information knowledge was at high level. This means that these strategies can be implemented to increase the level of information knowledge.

The suitability and feasibility of information literacy strategy development in information ability was at high level. This means that these strategies can be implemented to increase the level of information ability.

The suitability and feasibiltiy of information literacy strategy development in information ethics was at high level. This means that these strategies can be implemented to increase the level of information ethics.

Discussion

The research in the information literacy strategy development for undergraduate universities in Guangxi. The researcher summarizes the discussion into 3 parts, details as follows:

Part 1: The level of information literacy of undergraduate universities in Guangxi was at high level.

Part 2: The information literacy strategy development for undergraduate universities in Guangxi.

Part 3: The suitability and feasibility of information literacy strategy development for undergraduate universities in Guangxi.

Part 1: The Current Status of Information Literacy for Undergraduate Universities in Guangxi.

The current status of information literacy of undergraduate universities in four aspects was at high level. Considering the mean ranged from the highest to lowest mean were as follow: the highest mean was information ethics, followed by information awareness, and information ability was the lowest mean.

Information Awareness in overall was at high level. This is because 1) University teachers can identify and judge massive data and information resources, which is related to the long-term professional education and information literacy education of university teachers. In the practice of information theory and information, they can take the initiative to pay attention to the development and application of modern information technology, and constantly improve the sense of information. 2) In their work, university teachers often use the information application and teaching of major platforms, and can form the awareness of using modern technological tools in combination with the teaching content and the needs of learning. 3) In their own professional development, university teachers have the awareness of information technology to insist on learning, and generate technical thinking in the process of constantly understanding emerging technologies. 4) University teachers believe that information literacy is very important for their work, and good information sensitivity can discover new research directions and promote the progress of scientific research. Qin Yuchao (2022, p.38) University teachers can take the initiative to pay attention to the development and application of modern information technology, and can also screen the authenticity of information on major platforms, indicating that teachers as a whole have a good sense of learning and discrimination. Yang Yan and Hu Zhongfeng (2019, p117-122) University teachers believe that information literacy is very important to their work, and they can take the initiative to pay attention to and find information in their work, and combine information with the classroom. Wang Jianying, Zhang Hong (2021, p.15-19) Foreign language teachers with a strong sense of information will be sensitive to information, and can urge foreign language teachers to keep pace with the times, improve the content of foreign language teaching, and extensively and deeply involve modern information technology in foreign language teaching. For example,

with the direct connection between students and the Internet, the in-depth study of some data such as learner login information, online traces or interactive content naturally generated in the teaching process relying on information technology has brought more new research problems to foreign language teachers.

Information Knowledge in overall was at high level. This is because 1) University teachers have received systematic and high-quality education, have a profound cultural heritage, and master a large amount of traditional cultural knowledge, professional knowledge, information knowledge, etc. 2) University teachers have been engaged in professional teaching for a long time, and in the process of designing professional teaching, they obtain the required information from the Internet or libraries, actively learn modern information technology, and constantly improve their information knowledge. 3) Because of the needs of work, college teachers must adapt to the information age in order to do a good job in teaching. The object of teaching is students, students are very curious about new things, and university teachers interact with students in the process of teaching or scientific research, and obtain the latest information technology knowledge in life through communication. 4) University teachers are the backbone of scientific research. Exposure to a large number of cutting-edge research information, strong scientific research ability, continuous scientific research work, obtain professional information from various channels, and integration with their own knowledge system to further strengthen the knowledge system. 5) University teachers have strong learning ability, treat new information technology knowledge, and be able to learn and master it on their own. Miao Yanan (2023, p.39) University teachers in Shandong Province understand the concepts and basic theories of science and technology, and can obtain resources related to information teaching and materials from multiple channels, and apply them to classroom teaching and scientific research. Teachers have mastered the basic computer operation knowledge and the application knowledge of online teaching software. Xi Sitian (2020, p.22) Because of the needs of work, university teachers actively learn relevant computer knowledge, are very familiar with basic office software, can use basic office teaching software for teaching and teaching management, and also have a certain understanding of some advanced application

software. Yang Yan, Hu Zhongfeng (2019, p.117-122). The structure of information knowledge of university teachers is basically reasonable, and most of the current university teachers have received high-quality academic education, and the corresponding information knowledge has been systematically studied. The ability of university teachers to judge rationally and verify without blindly believing should be closely related to the teacher's background and learning experience. Students' evaluation of university teachers is basically the same as that of teachers' information and knowledge.

Information Ability in overall was at high level. This is because 1) Universities have abundant information resources, and the use of platforms such as library electronic resource libraries and MOOCs is an essential skill for university teachers. 2) With the popularity of social media, university teachers can obtain and share information through official account tweets, short videos, microblogs, forums and QQ teacher teaching exchange groups. 3) University teachers have undergone high-quality education, have strong information skills, understand the mainstream databases and channels for obtaining information in their majors, and can judge whether the content comes from the official website, the mainstream recognized website or APP, whether the content is authoritative, etc. 4) University teachers have strong information ability, and can integrate emerging technologies into the teaching of disciplines and specialties to improve the quality of teaching. 5) Colleges and universities are not only important places for teaching, but also the main places for scientific research, colleges and universities provide teachers with better software and hardware facilities, and provide guarantee for the information ability of college teachers. In 2020, due to the epidemic, online teaching in China's colleges and universities reached the highest peak in history. The online teaching methods of college teachers are mainly divided into live broadcast and recorded broadcasting. Various course resource platforms such as MOOC, iCourse, Chaoxing, and Rain Classroom in Chinese universities, as well as technical service platforms such as DingTalk, Tencent Meeting, and Zoom, have become the most popular online teaching platforms for teachers in various universities. The development of online teaching has become an irreversible trend, and it is also a large-scale practical activity for college teachers, which has improved the ability of college

teachers to use online teaching software and platforms. Cai Yujie (2022, p.19) completed the installation of smart blackboards in all classes and classrooms on hardware, in addition, the school is a gigabit network and full coverage of wireless networks, which provides teachers with the conditions for working and teaching with informatization. During the epidemic period, teachers used information technology more in the teaching process, affirming the importance of information technology in school reform, and can also apply relevant technology to their own teaching, and it is helpful to improve students' academic performance. Zhu Yi (2017, p.24) Teachers' information ability refers to teachers' ability to effectively use existing information software and hardware equipment and relevant knowledge to acquire, process and create resources. It is usually simply to obtain the information first, then process the information, and finally create resources.

Information Ethics in overall was at high level. This is because 1) University teachers have received systematic and high-quality education, have a high level of information ethics, and can comply with the requirements of information ethics in information activities such as information search, information processing, information management, and information creation. 2) University teachers work in colleges and universities, and the strong academic atmosphere and correct academic attitude in colleges and universities allow university teachers to consciously abide by the laws and regulations of information ethics in information search, information processing, information management and other information activities. 3) University teachers receive high-quality education as well as moral education, and as university teachers have the higher moral character of other professions. Yang Yan, Hu Zhongfeng (2019, p.117-122) At the same time, university teachers also hope that their achievements will be cited by others in compliance, showing a strong desire to respect themselves and others. Jiang Hongxia et al. (2022, p.28-32) Teachers in colleges and universities have a high level of literacy in information ethics such as protecting intellectual property rights, abiding by academic norms, and eliminating academic misconduct, and there is still a lot of room for improvement in information security literacy such as mastering information security skills, preventing attacks such as computer viruses and hackers, and regularly backing up important information and data. Miao Yanan (2023,

p.42) Higher vocational teachers in Shandong Province can abide by the laws and regulations related to informatization activities and basic social ethics in education and teaching, respect and protect their own and others' research results, and be able to manage and protect personal privacy.

Part 2: The Information Literacy Strategy Development for Undergraduate Universities in Guangxi.

The information literacy strategy development for undergraduate universities in four aspects, which contain 23 measures. There are 8 measures for information awareness, 6 measures for information knowledge, 5 measures for information ability, and 4 measures for information ethics.

Information Awareness for enhancing information awareness, this study proposes 8 measures, of which the first and the fifth measure are the most valuable, which I will express in detail below. The first measure is that enhancing the importance of information awareness. University teacher should understand the importance of information awareness, and only when they understand the importance of information awareness can they attach importance to information awareness, pay attention to information awareness at all times, and strive to improve the level of information awareness. In this way, we will continue to update the education and teaching concepts, strengthen information awareness, and improve information literacy in essence. Only when university teacher pay attention to information awareness from the heart, will they pay attention to information literacy from the heart, and will they actively think of ways to improve their own information literacy. Xi Sitian (2022, p.38) Only by updating the concept of education and having a high awareness of information can university teachers essentially improve their information ability. In the context of the Internet era, only when teachers have the concept of information teaching, have the information thinking mode, and cultivate their own innovative and critical awareness, can they truly realize the change of teaching methods and means, and feel the major changes brought by the development of information technology to human life and work. Therefore, it is necessary to make university teachers understand the importance of information awareness. Miao Yanan (2023, p.51) enables the education department and school management to cultivate information literacy awareness in

many aspects, so that they can correctly realize the great significance of information education to the future development of schools and vocational education. Li Jiyan (2017, p.64-69) continued to raise the information awareness of English teachers. Information awareness should not only stop at the recognition of the importance of information technology, but more importantly, change the teaching concept, improve information sensitivity, and enhance the initiative and consciousness of using information technology. The fifth measure is that improving information awareness by training. In order to improve the level of information awareness of university teachers, training is one of the feasible methods, university teachers only rely on self-learning information awareness, to a certain extent, due to their own influence, it is difficult to make a breakthrough. By inviting information literacy experts to conduct targeted information awareness training for university teachers, good results will be achieved. Zou Yangde (2005, p.43) Through surveys and discussions, the vast majority of teachers emphasized the importance of in-service training. Emphasizing that in-service training is the main way and important way to improve teachers' information literacy, it is the only way for teachers to learn for life, and it is important for information technology to be applied in education, and it is mentioned that many countries attach great importance to the in-service training of teachers, and have also issued corresponding national projects for in-service training of teachers' information technology. Lu Kai, Hou Yidong (2020, p. 68-72) Schools should make a good plan, formulate a long-term and hierarchical training plan, and divide teachers into three levels: primary, intermediate and advanced according to their mastery of educational information technology, and carry out targeted graded training. Teachers at the initial level focus on training information awareness and basic skills in computer-aided teaching, such as information sensitivity, use of office software, courseware design and production, image and video and audio processing, etc. Zhu Yi (2017, p.40) said that at the school level, there should be more in-service training opportunities for teachers. Do a good job in the training plan, from the needs of university teachers for information literacy, you can achieve relevant surveys, understand what teachers need to learn, and then carry out relevant training. For university teachers with weak information awareness, targeted training can be provided to them to improve their level of information awareness.

Information Knowledge for enhancing information knowledge, this study proposes 6 measures, of which the second and the third measure are the most valuable, which I will express in detail below. The second measures are that supporting to teach themselves information knowledge by various resources knowledge. In order to adapt to the development of the information age, university teacher must keep up with the changes of the times, use the Internet and the resources provided by the school or society, and constantly learn new professional knowledge and information knowledge, so as to adapt to the teaching requirements of the information society. Lu Kai, Hou Yidong (2020, p. 68-72) Self-directed learning is an important way for university teachers to develop, and it is also the easiest way to enhance information knowledge. Secondly, foreign language teachers can learn in both offline and online ways. Yang Qirui (2022, p.111) builds a smart platform for different disciplines, provides a platform for teachers to discuss and communicate with each other, realizes the sharing of teaching resources, and conveys the concept of information-based teaching. The construction of the smart platform can attract teachers who are willing to improve themselves, strengthen their information-based teaching capabilities, and improve their information literacy, and promote communication and exchanges between them. At the same time, it can also form a demonstration and spread the role of the whole teacher group, and attract more teachers to participate in learning. Zou Yangde (2005, p.46) Teachers can also make full use of the school's satellite broadcasting system and use distance education network equipment to improve their information literacy, enhance information awareness, enrich information knowledge, and improve information ability. The third measures is that solving information knowledge by training. University teacher especially those in liberal arts university, have weak ability to learn information technology knowledge independently, it is difficult to understand some complex information knowledge, self-study information knowledge is inefficient, and it is difficult to master this part of information knowledge, so it is necessary to improve information knowledge through training. When new information technology emerges, new information technology knowledge also needs to be disseminated in a timely manner, and information knowledge training is a good way to master new information technology knowledge. Lu Kai and Hou Yidong (2020) Initial-level teachers

focus on basic skills in computer-aided teaching, such as the use of office software, courseware design and production, image and video and audio processing, etc. Ren Lifan (2022, p.45) Whether it is online training or offline training, university teachers should set the goals and plans of collection before collecting information, which can be short-term goals, such as long-term online Chinese character teaching, and can set the goal of information collection as information technology means, information knowledge content and online evaluation operating systems that can assist in completing the teaching tasks of Chinese characters at this stage, accumulate more specific and effective teaching methods and skills, and continue to polish them in practice. In this way, a wealth of information and knowledge is obtained. Zhu Yi (2017, p.41) universal education: this level of training is mainly aimed at some teachers with poor information literacy ability scores, in view of the characteristics of their information technology foundation is weak, through training to let them master the basic operation and application of information technology, the training is mainly for teaching and practical operation, guided by the actual operation of the teacher, the trained teacher imitates one by one, this initiative, can improve the overall information skills and knowledge level of teachers in a large area.

Information Ability for supporting information ability, this study proposes 5 measures, of which the first and the second measure are the most valuable, which I will express in detail below. The first measure is that supporting the modern educational technology of deep integration of information technology and subject teaching. In information literacy, information ability is an important aspect, and teachers' information ability is mainly manifested in the deep integration of information technology and subject teaching, and the use of information technology to improve the quality of teaching. How to deeply integrate information technology with subject teaching has become a difficult and important point. How to organically integrate information technology with subject teaching is also one of the research hotspots of experts at home and abroad. Xi Sitian (p.39) promotes the integration of information technology and curriculum, improves information ability, and under the continuous update and development of new subject knowledge and professional skills, the connection between information technology and teacher teaching and student

learning is becoming increasingly close. However, in order to achieve the perfect integration of information technology and curriculum, it is not a simple arrangement of various information technologies and subject knowledge, but the basic basis is to take the characteristics of students' learning and the nature of the discipline as the basic basis. For teachers with rich teaching experience but weak information technology, it is necessary to focus on the training of them in the integration of information technology and curriculum. Wang Jianying, Zhang Hong (2021, p.15-19) In terms of the integration of information technology and university foreign language courses, college foreign language teachers use digital resources to assist foreign language teaching, and can design teaching content or activities with the help of smart teaching platforms. Yang Qirui (2022, p.106) The focus of improving teachers' informatization teaching ability is to promote the integration of information technology and curriculum. The purpose of improving teachers' information literacy is to apply modern information technology knowledge and ability to the classroom and improve the quality and efficiency of classroom teaching. The second measure is that supporting targeted information ability training. Training is one of the most effective ways to improve teachers' information skills. University teachers come from various majors, including teachers majoring in liberal arts and science, and information technology is a difficult field for teachers of liberal arts, and they want to learn information technology on their own, which has a certain degree of difficulty, and they need professional training to improve their information technology knowledge. In particular, information technology, which integrates information technology with subject teaching, is difficult to master and requires training by high-level information literacy experts. Tian Chengquan, Zhang Xiulin, Lu Bing. (2021) Colleges and universities should do a good job of demand analysis before information technology training, and carry out targeted training on the basis of fully understanding the individual needs of teachers of various majors, and the training content should pay attention to the actual effect, pay attention to the differences of teachers, determine the training objectives according to the different education levels and personalized needs of teachers, allocate training resources, and give full play to the autonomy of college teachers, so that they can participate in the design and development of training. Yan Yang,

Zhongfeng Hu (2019, p117-122) should constantly update the training content, increase the proportion of technical practical class hours, and carry out targeted information ability training, such as teaching APP applications, audio and video creation and editing, data search and classification skills, etc., so as to keep pace with the development of the real technology world as much as possible, and make teachers feel the actual effect. Xi Sitian (2020, p.40) should carry out targeted information ability training, for example, for teachers with rich teaching experience but weak information technology, we should focus on the cultivation of information technology and curriculum integration, and for teachers with strong information technology ability but weak theoretical knowledge and processing information resources, we should focus on cultivating their ability to integrate and process knowledge. informatization leadership, execution and teaching ability of colleges and universities.

Information Ethics for supporting information ethics, this study proposes 4 measures, of which the first and the third measure are the most valuable, which I will express in detail below.

The first measure is that solving training problems in information ethics. Information ethics is the laws and regulations that should be complied with in the process of searching and using information, and many universities do not pay enough attention to the training of information ethics. With a lack of understanding of information ethics such as intellectual property rights, university teachers rely on their own experience to restrain their use of information. University teachers should give full play to the advantages of human resources such as university libraries and network information centers, solve the information ethics problems encountered by university teachers in teaching and scientific research activities in real time, and provide solid intellectual support for college teachers to carry out teaching and scientific research activities. Miao Yanan (2020, p.55) focused on the training of older teachers and young teachers, trained them in the basic theoretical knowledge of information and the integration of information technology into education and teaching practice, and focused on the knowledge training of information security protection, information ethics and intellectual property rights for young teachers.Xi Sitian (2020, p.40) University teachers should have the awareness of marking cited literature, follow

various information security laws and regulations, and improve their consciousness of maintaining network information security. Consciously abide by information ethics norms, respect the personal privacy of others, and refuse to disclose their own and others' confidential information on unsecured websites. Universities should provide special education and training to university teachers on information ethics to enhance their ethical awareness when obtaining information.Yang Qirui (2022, p.110) Combination of university training and college training. The university training is mainly aimed at some information knowledge and skills and information ethics knowledge that all university teachers need, such as the use of network databases, information search and processing, courseware production, and knowledge of information-related laws and regulations. The training of the college is mainly aimed at the different needs of teachers of different disciplines in information teaching, and the training of the integration of information technology and the teaching subjects is carried out, which has its own subject characteristics.

The third measure is that supporting information ethics communication. The laws and regulations of information ethics are constantly updated and corrected with the development of society, and in order to keep abreast of the latest information ethics knowledge, it is necessary to continuously learn new information ethics knowledge and participate in various communication activities of information ethics. Miao Yanan (2023, p.52) should give policy preferences and rewards to teachers who are willing to build online teaching resources, carry out online course teaching, actively learn information technology knowledge, innovate and integrate information teaching, and learn information ethics knowledge, and encourage more teachers to actively participate in on-campus and off-campus training and practice activities, better integrate information literacy into classroom teaching, and improve the overall information literacy level of teachers. Teacher information literacy competitions can be held on a regular basis, and teachers with excellent performance can be appropriately favored in the evaluation of professional titles and refresher training opportunities. Yang Qirui (2022, p.111) United States psychologist Weipu · James pointed out that when people are motivated, they can exert three times their usual abilities. According to the information literacy of teachers, colleges and universities can

consider special fund awards, such as holding information ethics competitions on a regular basis, to improve the enthusiasm of university teachers to strengthen the learning of information ethics knowledge.

Part 3: The Suitability and Feasibility of Information Literacy Strategy Development for Undergraduate Universities in Guangxi.

The researcher invited 15 experts to evaluate the information literacy strategy development for undergraduate university in Guangxi. The 15 experts have a rich knowledge about information literacy. Base on Likert's (1932) average data interpretation shows that the suitability and feasibility of information literacy strategy development for undergraduate universities in four aspects were at highest level with the walues between 4.00 and 5.00, which means the information literacy strategy development for undergraduate universities are suitability and feasibility.

The Strategy of Enhancing Information Awareness for improving information literacy strategy development for undergraduate university in Guangxi are suitability and feasibility. Enhanced strategy development is necessary. Strategy to improve information awareness: 1) can be personal information sensitivity, grasp the development trend of the market and industry, so as to make the right decisions and actions. 2) It can enhance the ability to use information. Raising awareness of information can help people make better use of information resources, extract valuable information from them, and drive innovation and improvement. 3) Promote the construction of information culture and enhance information awareness to help cultivate a cultural atmosphere that pays attention to information, respects knowledge and advocates innovation. Therefore, it is of great significance to enhance information awareness for the development of individuals and organizations, and provide strong support for the growth and development of individuals and organizations by strengthening information awareness education, training and practice. Zhu Yi (2017, p.45) through the system to restrain teachers to participate in the training can't really improve the information literacy of university teachers, some teachers participate in the training only with a coping attitude, in order to enable university teachers to be flexible and creative use of educational technology to carry out teaching and research activities, from the internal theory, ultimately still depend on the conscious and

conscious learning of university teachers, teachers only really from the span of learning to I want to learn, in order to form an internal driving force, strengthen the knowledge learned at the same time will also discover new knowledge learning, so it is very important to improve the information awareness of university teachers. Ren Lifan (2020, p.46) In response to the problem of weak information awareness of international Chinese teachers, we believe that teachers should enhance their sensitivity to information awareness, and only university teachers with high information awareness can take the initiative to learn information literacy knowledge and fundamentally improve the level of information literacy. Qin Yuchao (2022, p.76) found that the information technology equipment popularized by college teachers is actually far behind that of enterprises, and some equipment can no longer meet the needs of professional teachers, which is a manifestation of weak information awareness. Therefore, it is necessary to increase the sensitivity of university leaders to emerging technologies, actively reach supply and demand cooperation with technology enterprises, increase cooperation through upper-level leaders, open technology transfer channels in a timely manner, and introduce emerging technologies into universities.

The Strategy of Enhancing Information Knowledge for improving information literacy strategy development for undergraduate university in Guangxi are suitability and feasibility. Enhanced strategy development is necessary. In today's era of information explosion, information knowledge is very important for individuals and organizations, which allows individuals or organizations to obtain valuable information in the ocean of information in a short period of time. Improves the efficiency of finding information. Information knowledge is the basis for the organic integration of information technology and subject teaching, without information knowledge, university teachers do not understand information technology, they will not be able to apply information technology in subject teaching and scientific research, and they will not be able to complete the innovation of new information. When learning information knowledge, it is difficult to grasp the knowledge that is difficult to understand and difficult to grasp by individual efforts, so it is necessary to understand and master the information knowledge through various methods. Yang Yan, Hu

Zhongfeng (2019, p.117-122) Expand the learning of information knowledge and adhere to the close integration of subject teaching and information technology Teachers in colleges and universities should continue to pay attention to the new developments in the fields of information science, computer science, statistics, etc., and can continuously apply new knowledge and new technologies such as big data, Python language, RSS subscription, etc. to subject research and classroom teaching practice, and realize information sharing and creation on the basis of accurate information acquisition, evaluation and management. Yang Qirui (2022, p.104) In the era of "Internet + education", a single education and teaching model can no longer meet the needs of contemporary students. As digital natives who are familiar with information technology, students have a strong interest in emerging technologies, a high degree of acceptance, and are generally able to adapt to the changes brought about by information technology, such as MOOCs, micro-lessons, flipped classrooms, etc. In the face of the challenges of the times, college teachers should change the conservatism of their own educational concepts and actively embrace the changes brought by information technology to education and teaching. Only when teachers themselves accept information technology can they feel the changes in teaching methods and teaching methods, so as to improve their own information knowledge. Miao Yanan (2023, p.54) Teachers of vocational colleges can conduct group discussions and exchanges in the process of participating in the competition, learn from them, not only learn more high-quality courseware production skills, but also master the production inspiration and methods related to teaching videos, micro-courses, MOOCs, PPT design, etc., so as to make the teaching design more rich and more attractive.

The Strategy of Supporting Information Ability for improving information literacy strategy development for undergraduate university in Guangxi are suitability and feasibility. Enhanced strategy development is necessary. The purpose of improving the informatization ability of college teachers is to improve the teaching quality and innovation ability of college teachers. The improvement of university teachers' information ability has a positive impact on their own career development and students' all-round development, and the mutual cooperation and exchange among university teachers plays an important role in promoting the development of

university teachers' information ability. Zhu Yi (2017, p.41) Improving education: This level is mainly aimed at training teachers who already have a certain foundation of information skills, not only to improve the basic level of information literacy of university teachers, but also requires the participating teachers to not only be proficient in information technology-related skills, but also integrate their own subject courses with them, and strengthen the integration of information technology and disciplines. Ren Lifan (2022, p.45) International Chinese teachers should improve the professional level of informatization, establish a plan for the learning of informatization teaching knowledge, and reflect on the effectiveness of educational technology application in a timely manner. International Chinese teachers may need to improve their application skills by participating in some information technology training courses for targeted learning and training. Lu Kai, Hou Yidong (2020, p.68-72) In terms of learning, university teachers carry out a team learning model, which is easy for foreign language teachers to learn and improve the level of information ability. In terms of practice, you can participate in the school-level, municipal, provincial and ministerial level educational technology competitions in the form of teams, test the team's information technology level through the competition, and also set up a research group to jointly declare the educational reform and scientific research topics in the direction of educational informatization.

  The Strategy of Supporting Information Ethics for improving information literacy strategy development for undergraduate university in Guangxi are suitability and feasibility. Enhanced strategy development is necessary. Improving the information ethics of university teachers is of far-reaching significance, and plays an important role in promoting their own moral development, protecting students' rights and interests, safeguarding academic integrity, improving teaching quality, promoting social management, and improving information laws and regulations. It is important to integrate information ethics knowledge into teaching and cultivate high-quality talents. Xi Sitian (2020, p.40) Xi Sitian (2020, p.40) University teachers should use information resources correctly and establish a good concept of information ethics. In their teaching work, university teachers must have a correct view of information ethics in order to guide students to use various information correctly and serve as role models

and role models for students. Miao Yanan (2023, p.60) Strategies for Improving Information Ethics: Standardizing Behaviors and Enhancing Information Security and Information Risk Prevention Capabilities. Teachers need to search, obtain, integrate, process, and utilize on the resource platform, and university teachers need to improve their research and judgment ability to select information resources, respect intellectual property rights, and mark the cited parts. University teachers should improve their ability to discriminate, carefully analyze the correctness and error of information, and provide students with scientific, correct and useful information resources. When using these learning resources, university teachers must first establish an awareness of information security and information ethics, abide by their own behavior, and refrain from doing illegal and criminal things, so as to cultivate students' correct awareness of information ethics and information security. Zhu Yi (2017, p.40) Improving and Strengthening the Construction and Publicity of Academic Legal System: From a social perspective, the state should introduce laws and policies related to academic behavior norms, recognition and punishment of academic misconduct, and restrain the occurrence of academic misconduct of university teachers from a legal perspective; From the perspective of schools, relevant departments should be established to supervise teachers' academic misconduct, and strengthen the popularization of relevant moral and legal knowledge, so that teachers can maintain the polestick of academic integrity at all times, and further improve the level of information ethics of school teachers.

Recommendations

Implications

Through research, the researchers have come up with the development strategy of information literacy in Guangxi undergraduate universities, and in order to implement the strategy, it is necessary for all universities to pay enough attention to the information literacy of university teachers. The researchers will disseminate this strategy to relevant departments of universities in Guangxi to provide them with reference for their information literacy training programs for university teachers.

1. Information Awareness Having the most useful and truthful information has always been an important reason for everyone's success. The attitude towards information should not only look at the surface of the information. Information awareness is a kind of perception of information, which is different from the ability of others to obtain information anytime and anywhere, it is to feel the value of information and thus develop the value of information.

2. Information Knowledge. The difficulty in improving information knowledge is to acquire knowledge of new information technology. 1) The information society is developing rapidly, and it is difficult to keep up with the changes in the information age if you do not learn new information technologies in time. 2) We should pay enough attention to information knowledge, because in the information society, as long as university teachers actively learn new information technology, they will gradually master the knowledge of new information technology.

3. Information Ability is a basic quality of the information society, and in order to achieve certain achievements in the information society, it is inseparable from the ability to do so. The new technology of integrating new information technology and subject teaching is a major difficulty for university teachers to improve their information literacy. Making more use and practicing new information technology is an effective measure for enhancing information ability. Teachers from colleges and universities in the same major collectively prepared lessons and discussed the skills and methods of integrating new information technology with subject teaching. Teaching observation classes that integrate new information technology and subject teaching are held regularly.

4. Information Ethics is the laws and regulations that should be observed in the process of finding, using, and creating information. University teachers should pay attention to the role of information ethics. Information ethics is closely related to people's lives, and telecom fraud is one of the manifestations of the lack of information ethics. Intellectual property is an information ethics issue that university teachers are exposed to a lot. The training of information ethics should be explained in the form of cases as much as possible, so that the knowledge of information ethics can be learned from life and examples.

Future Researches

Through the study of the information literacy of university teachers in Guangxi, I have a deep understanding of the current situation of information literacy of university teachers in Guangxi, put forward strategies to improve the information literacy of university teachers in Guangxi, and also found the shortcomings in the research. In the future, we will continue to conduct research on the information literacy of university teachers based on their work and literature search.

1. Information literacy is meta-literacy, and on the basis of information literacy, teachers' media literacy, data literacy, and health literacy can be studied.

2. Information awareness in information literacy plays an important role in enterprises, and the cultivation of information awareness is also a hot topic in information literacy research.

3. With the continuous development of the information society, information knowledge is constantly updated, and how to learn and use this information knowledge is also one of the research topics.

4. Information ability plays an important role in the teaching and scientific research of university teachers, and how to organically combine new information technology with subject teaching and scientific research is also a topic worthy of research.

5. With the rapid development of the information society, the laws and regulations of information ethics have not been updated in a timely manner, so the laws and regulations of information ethics are also a topic worth studying.

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Appendix

Appendix A

List of Specialists and Letters of Specialists Invitation

for IOC Verification

List of Specialists and Letters of Specialists Invitation
for IOC Verification

Serial Number	Name (Title)	The Sample Group
1	Professor Dr.Sun Cunchang	Nanning Normal University
2	Professor Dr.Wang Chenji	Guangxi University
3	Professor Dr.Shen Weiqun	Yulin Normal University
4	Professor Dr.Chen Jianmao	Guangxi Arts University
5	Professor Dr.Li Fangyao	Guilin Medical University

Ref.No. MHESI 0643.14/266

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

22 January 2024

RE: Invitation to validate research instrument

Dear   Professor Dr. Sun Cunchang, Nanning Normal University

　　　　Mrs. Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

　　　　The thesis adversity committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research instrument.

　　　　With your expertise, we would like to ask your permission to validate the attached research instrument. Would like to avail ourselves of this opportunity to express our sincere thanks and appreciation for your help.

Sincerely,

(Assistant Professor Dr.Kanakorn Sawangcharoen)

Dean of Graduate School

Bansomdejchaopraya Rajabhat University

Tel.+662-473-7000

www.bsru.ac.th

E-mail: grad@bsru.ac.th

Ref.No. MHESI 0643.14/267

Bansomdejchaopraya Rajabhat University
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Thonburi Bangkok 10600

22 January 2024

RE: Invitation to validate research instrument

Dear   Professor Dr. Wang Chenjiu, Guangxi University

Mrs. Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

The thesis adversity committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research instrument.

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Thonburi Bangkok 10600

22 January 2024

RE: Invitation to validate research instrument

Dear   Professor Dr. Shen Weiqun, Yulin Normal University

      Mrs. Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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Thonburi Bangkok 10600

22 January 2024

RE: Invitation to validate research instrument

Dear   Professor Dr. Chen Jianmao, Guangxi Arts University

      Mrs. Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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22 January 2024

RE: Invitation to validate research instrument

Dear   Professor Dr. Li Fangyao, Guilin Medical University

　　　　Mrs. Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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Appendix B
Official Letters

Ref.No. MHESI 0643.14/271

Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

22 January 2024

RE: Request for Data Collection

Dear   Guangxi University

   Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

   The thesis adversity committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research. List of universities and colleges according to the attached document.

   With your expertise, we would like to request to collect the data to be used in the research. Would like to avail ourselves of this opportunity to express our sincere thanks and appreciation for your help.

Sincerely,

(Assistant Professor Dr.Kanakorn Sawangcharoen)
Dean of Graduate School

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Ref.No. MHESI 0643.14/272

Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

22 January 2024

RE: Request for Data Collection

Dear   Guilin University of Electronic Technology

      Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

      The thesis adversity committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research. List of universities and colleges according to the attached document.

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Ref.No. MHESI 0643.14/273

Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

22 January 2024

RE: Request for Data Collection

Dear   Guilin Medical University

      Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

      The thesis adversity committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research. List of universities and colleges according to the attached document.

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Thonburi Bangkok 10600

22 January 2024

RE: Request for Data Collection

Dear   Yulin Normal University

       Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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Ref.No. MHESI 0643.14/275

Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

22 January 2024

RE: Request for Data Collection

Dear   Guangxi Arts University

   Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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Ref.No. MHESI 0643.14/276

Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

22 January 2024

RE: Request for Data Collection

Dear   Baise University

   Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

   The thesis adversity committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research. List of universities and colleges according to the attached document.

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Ref.No. MHESI 0643.14/277

Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

22 January 2024

RE: Invitation to Evaluate the guideline

Dear   Professor Dr. Qin Xi, Guangxi University for Nationalities

    Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

    The thesis adversity committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research.

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Ref.No. MHESI 0643.14/278

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee

Thonburi Bangkok 10600

22 January 2024

RE: Invitation to Evaluate the guideline

Dear Professor Dr. He Yongping, Guizhou Normal University

Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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Bansomdejchaopraya Rajabhat University
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Thonburi Bangkok 10600

22 January 2024

RE: Invitation to Evaluate the guideline

Dear   Professor Dr. Yu Tianzhen, Shanghai Open University

Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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Ref.No. MHESI 0643.14/280   Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

22 January 2024

RE: Invitation to Evaluate the guideline

Dear   Professor Dr. Xiao Huayi, Hunan Normal University

   Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

22 January 2024

RE: Invitation to Evaluate the guideline

Dear   Professor Dr. Zhang Yun, Wuzhou Normal University

Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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Ref.No. MHESI 0643.14/282

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

22 January 2024

RE: Invitation to Evaluate the guideline

Dear   Professor Dr. Tang Xihai, Nanning Normal University

        Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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Ref.No. MHESI 0643.14/284

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

22 January 2024

RE: Invitation to Evaluate the guideline

Dear   Professor Dr. Zhang Jinshan, Wuzhou University

      Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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Ref.No. MHESI 0643.14/285

Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

22 January 2024

RE: Invitation to Evaluate the guideline

Dear   Professor Dr. Jiang Caiwu, Guangxi University of Medicine

       Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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Ref.No. MHESI 0643.14/286

Bansomdejchaopraya Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

22 January 2024

RE: Invitation to Evaluate the guideline

Dear Professor Dr. Yangfeng, Guangxi Normal University

Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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Dear   Professor Dr. Li Qijun, Guangxi University for Nationalities

      Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

      The thesis adversity committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research.

      With your expertise, we would like to ask your permission to evaluate the attached guideline. Would like to avail ourselves of this opportunity to express our sincere thanks and appreciation for your help.

Sincerely,

(Assistant Professor Dr.Kanakorn Sawangcharoen)
Dean of Graduate School

Bansomdejchaopraya Rajabhat University
Tel.+662-473-7000
www.bsru.ac.th
E-mail: grad@bsru.ac.th

Ref.No. MHESI 0643.14/284

Bansomdejchaopraya Rajabhat University

1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

22 January 2024

RE: Invitation to Evaluate the guideline

Dear   Professor Dr. Lv Yuejin, Guangxi University

Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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Thonburi Bangkok 10600

22 January 2024

RE: Invitation to Evaluate the guideline

Dear   Professor Dr. Wei Hua, Guangxi University

      Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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Thonburi Bangkok 10600

22 January 2024

RE: Invitation to Evaluate the guideline

Dear   Professor Dr. Tong Zhangfa, Guangxi University

       Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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22 January 2024

RE: Invitation to Evaluate the guideline

Dear   Professor Dr. Li Jiachao, Nanning Normal University

Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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Ref.No. MHESI 0643.14/284

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22 January 2024

RE: Invitation to Evaluate the guideline

Dear   Professor Dr. Ren Chuming, Guangxi Normal University

Mrs.Ou Shangyao is a graduate student in Doctor of Philosophy Program in Educational Administration of Bansomdejchaopraya Rajabhat University. She is undertaking research entitle "Information Literacy Strategy Development for Undergraduate Universities in Guangxi"

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Sincerely,

(Assistant Professor Dr.Kanakorn Sawangcharoen)
Dean of Graduate School

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Appendix C

Research Instruments

1. Survey Questionnaires

Survey Questionnaires on the Information Literacy Strategy
Development for Undergraduate Universities in Guangxi

Dear Sir/Madam:

Hello! Thank you for taking the time out of your busy schedule to fill out this questionnaire, which aims to understand the information literacy of undergraduate University teachers in Guangxi Zhuang Autonomous Region, and the questionnaire data is mainly for the research of teacher information literacy. Please take the time to fill out this questionnaire in your busy schedule, your valuable comments and opinions are very helpful to my research, thank you sincerely for your support, the results of the survey are only for research, there is no right or wrong choice, the questionnaire is conducted anonymously, and will not disclose any of your personal information.

Basic Information

1. Gender:

☐ male

☐ female

2. Age:

☐ 30 years old or younger

☐ 31-45 years old

☐ more than 46 years old

3. Position:

☐ Professor

☐ Associate Professor

☐ The lecturer or Assistant professor

☐ Teaching assistant

4. University teaching experience:

☐ less than 10 years

☐ 10-20 years

☐ more than 20 years

5. Your highest education:

☐ doctoral degree;

☐ master's degree;

☐ Bachelor degree;

☐ others

6. Your school:

☐ Guangxi University

☐ Guilin University of Electronic Technology

☐ C, Guilin Medical University

☐ Yulin Normal University

☐ Guangxi Arts University

☐ Baise University

Second, the survey on the current situation of information literacy of undergraduate University teachers will be investigated from the four aspects of information awareness, information knowledge, information ability, and information ethics (please choose the corresponding answer according to your own situation).

No.	Variable	5	4	3	2	1
	Information awareness					
1	University teachers have a certain degree of information sensitivity and actively seek and use information to improve teaching quality					
2	University teachers understand the importance of information awareness, understand that information					

No.	Variable	5	4	3	2	1
	technology is conducive to innovating educational methods and research directions, and improve the creativity and competitiveness of university teachers					
3	University teachers understand the value of information, can integrate information knowledge in teaching, and improve students' information literacy					
4	University teachers have a strong interest in information and are willing to use information technology to support their teaching and research work.					
5	University teachers believe that information can improve teachers' professional satisfaction and work efficiency.					
6	University teachers actively seek new information resources and tools to enrich teaching content and research fields					
7	University teachers will share best practices in information awareness with colleagues to promote the dissemination and application of information awareness.					
8	University teachers continuously learn and update their information technology knowledge to adapt to the changing educational and research environment					
9	University teachers encourage students to cultivate information awareness and help them make better use of information resources for learning and research					
10	University teachers actively participate in the research and application of information technology in the field of education, and promote the modernization and improvement of education					
	Information knowledge					
1	University teachers have basic knowledge of information, including theoretical knowledge of information, knowledge					

No.	Variable	5	4	3	2	1
	and understanding of information society and its impact on human beings					
2	University teachers have sufficient knowledge in traditional cultural literacy and can integrate traditional culture with the modern information age					
3	University teachers master the knowledge of information retrieval in this major and know how to obtain teaching and scientific research information of this major					
4	University teachers master the knowledge of information evaluation and can make correct evaluations of most of the information of the major					
5	University teachers understand the importance of information transmission knowledge and can use information technology to support teaching and scientific research activities.					
6	University teachers understand the methods of information processing and processing, and can teach them to students in teaching and scientific research activities					
7	University teachers understand the important information sources of the profession and can effectively process and organize information resources					
8	University teachers master the basic skills in searching and can teach the basic skills of retrieval to students in combination with teaching.					
9	University teachers understand the importance of information knowledge, actively seek to learn and update information knowledge, and keep up with the development of the information age.					

No.	Variable	5	4	3	2	1
10	University teachers regularly attend professional development and information literacy training to keep information knowledge and skills up to date					
	Information ability					
1	University teachers have sufficient information acquisition ability and can effectively search academic literature and research resources					
2	University teachers have sufficient information utilization ability and can effectively use information to solve problems in teaching and scientific research					
3	University teachers are able to assess the credibility of information on the Internet and identify reliable and unreliable sources of information					
4	University teachers have sufficient information skills and are proficient in the use of information technology to support teaching and research activities					
5	University teachers have sufficient information ability to explore the potential value of known information and can comprehensively apply it to practice.					
6	University teachers can analyze known information and have the ability to create new knowledge of information					
7	University teachers have sufficient information exchange ability, and often conduct online and offline information exchange, real-time and non-real-time communication in teaching and scientific research activities					
8	University teachers understand the process and principle of information transmission, screen the transmitted information, and cut off the transmission path in time for false information.					
9	University teachers can create new information and new					

No.	Variable	5	4	3	2	1
	knowledge, and can publish new information knowledge to the corresponding media					
10	University teachers can correctly express the new information they create and can promote the dissemination of new information					
11	University teachers regularly participate in professional development and information literacy training, keep their information knowledge and skills updated, and continuously improve their information ability					
	Information ethic					
1	University teachers comply with regulations and guidelines related to information ethics, including provisions on information privacy and intellectual property rights					
2	University teachers should understand that information ethics is essential in teaching and research, and should be emphasized and educated in teaching					
3	University teachers have the right to protect personal information, and student information is not to be prying on for no reason and not to be improperly evaluated					
4	University teachers should protect personal information, student information, computer networks and storage media from viruses or hacker attacks					
5	University teachers should understand the importance of keeping personal and student information confidential to prevent misuse.					
6	When using other people's literature or achievements, university teachers should indicate the source of the literature of others					
7	University teachers should respect intellectual property rights, and must obtain the consent of the data owner					

No.	Variable	5	4	3	2	1
	when using data that has not been disclosed by others.					
8	University teachers believe that information ethics can help them better process information and ensure that information is used safely and reasonably.					
9	University teachers should frequently communicate information literacy with colleagues or students to promote the dissemination and popularization of information ethics knowledge.					
10	University teachers regularly participate in information literacy training to continuously improve their knowledge of information ethics					

Third, please analyze the context of information awareness, information knowledge, information ability, information ethics for undergraduate university in Guangxi.

1) strengths

2) weaknesses

3) opportunities

4) threats

2. Interview Outline

<div align="center">

Structured Interview

Information literacy strategy development for undergraduate

universities in Guangxi

</div>

This questionnaire is divided into two parts:

Part 1: Personal Information

Part 2: The current status of information literacy of undergraduate universities in

Guangxi

Part 1: Personal Information

Interviewer_____ Interview Date_____ Interview Time

Interviewee_____ Gender_____ Age_____years old

Education background_____ Position

Work place

Part 2: The current status of information literacy of undergraduate universities in Guangxi

Instruction: Please provide your opinion on the following statement

1. What is your opinion about the strategy outline of information literacy in information awareness for undergraduate universities in Guangxi?

2. What is your opinion about the strategy outline of information literacy in information knowledge for undergraduate universities in Guangxi?

3. What is your opinion about the strategy outline of information literacy in information ability for undergraduate universities in Guangxi?

4. What is your opinion about the strategy outline of information literacy in information ethics for undergraduate universities in Guangxi?

Interviewee 1

1. What is your opinion about the strategy outline of information literacy in information awareness for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information awareness is suitability, and the follow strategy I think will be add.

1) Information awareness is integrated into subject teaching. Let students imperceptibly accept the education of information awareness in the study of disciplines, and information awareness and majors are closely related and complement each other. 2) The cultivation of information awareness is a long-term process. The cultivation of information awareness is not something that can be completed overnight, and now it is an information society, so the cultivation of information awareness accompanies a person's life. 3) Cultivating information awareness in practice. Universities and enterprises should work together to cultivate information awareness. Because enterprises are very information-aware, they can see business opportunities and value from the latest information, which is what we lack.

2. What is your opinion about the strategy outline of information literacy in information knowledge for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information knowledge is suitability, and the follow strategy I think will be add.

1) Enhancing information knowledge requires frequent exchange. The emergence of new technology will lead to the emergence of new knowledge, and new information technology knowledge is constantly explored and improved. Therefore, it is necessary for teachers to exchange information knowledge with each other and put forward their own opinions to each other in order to have a deeper understanding of the knowledge and use of information technology. 2) University teachers should actively participate in the information knowledge lectures held by learning and institutions to enhance information knowledge, so as to understand and master cutting-edge information knowledge. 3) Universities should encourage teachers to exchange information knowledge to promote the development and dissemination of information knowledge. 4) Develop a set of practical incentive systems for information knowledge learning to increase teachers' motivation to learn information knowledge.

3.What is your opinion about the strategy outline of information literacy in information ability for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ability is suitability, and the follow strategy I think will be add.

1) The training of information ability should be systematic and targeted. It is necessary to update the training framework and knowledge system of information technology in a timely manner, guide teachers to carry out the theory and practice of teaching design, let teachers master the method of integrating information technology and disciplines, so that information technology can be effectively disseminated, teachers use new information technology to disseminate professional skills, and students can also improve their information ability in the classroom. 2) It is difficult to master the educational technology that is deeply integrated with information technology and subject teaching. In order to master this technology, there should be more communication activities, such as teachers preparing lessons collectively and discussing how to deeply integrate information technology with subject teaching.

4.What is your opinion about the strategy outline of information literacy in information ethics for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ethics is suitability, and the follow strategy I think will be add.

1) Universities and competent authorities should regularly conduct information ethics knowledge competitions and give certain rewards to the winners. If it is an ordinary knowledge competition, it cannot mobilize the enthusiasm of university teachers, and it is necessary to give certain rewards to stimulate the enthusiasm of university teachers. 2) The university or the competent department should formulate a complete incentive system.

Interviewee 2

1.What is your opinion about the strategy outline of information literacy in information awareness for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information awareness is suitability, and the follow strategy I think will be add.

1) Universities should organize university teachers to conduct information awareness teaching competitions. It is a difficult question how information awareness is reflected in the teaching of this major. Through the teaching competition, teachers can improve the level of information awareness in the teaching competition. 2) Teachers should pay attention to information awareness, the role of information sensitivity, and understand the importance of information awareness in teaching and scientific research. 3) Managers emphasize the importance of information awareness in various meetings, and let the importance of information awareness be reflected in teaching. For example, we can monitor teachers' classroom conditions to observe whether teachers add new content every year, whether they increase the cutting-edge research results of their majors, and from these survey results, we can determine the level of information awareness of teachers.

2. What is your opinion about the strategy outline of information literacy in information knowledge for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information knowledge is suitability, and the follow strategy I think will be add.

1) University teachers should understand the importance of information knowledge. Understand the importance of learning new information. University teachers with a high level of information knowledge will apply new information knowledge to practice and to teaching and scientific research. Teachers are constantly improving their information knowledge through self-study. 2) Universities should regularly train teachers in information knowledge, especially when new information technologies are born, many teachers do not understand these information technologies, and universities can train teachers in a timely manner. 3) Teachers can learn various information knowledge with the help of various professional authoritative websites and platforms, such as Chinese University MOOC, National Higher Education Smart Education Platform, etc., so as to have more comprehensive and solid information knowledge and enrich the teaching work of their majors. 4) In order to improve the enthusiasm of teachers to learn information awareness, information awareness should be included in the regular assessment, and the assessment system should be continuously improved.

3. What is your opinion about the strategy outline of information literacy in information ability for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ability is suitability, and the follow strategy I think will be add.

1) The university provides a platform for the integration of information technology and subject teaching. With the platform, teachers will take the initiative to learn relevant information technology, combine teaching and information technology, and apply it to the classroom. 2) Universities or faculties should often hold information competence competitions in which all teachers should participate. Mobilize teachers' intrinsic motivation to participate in various competitions and open classes to improve information ability, from these activities, not only can teachers exchange information skills, but also improve teachers' information ability level, improve teachers' ability to integrate information technology and professional knowledge, so as to improve teachers' teaching ability. 3) The university should establish a systematic incentive mechanism to give certain rewards to university teachers with a high level of integration of information technology and subject teaching. 4) The education department should attach importance to the exchange of information ability, and hold seminars and knowledge sharing meetings on information skills among universities. Promote the development of information ability.

4. What is your opinion about the strategy outline of information literacy in information ethics for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ethics is suitability, and the follow strategy I think will be add.

1) Universities should pay attention to cultivating the information ethics level of university teachers. The level of information ethics of teachers is relatively high, but when it comes to computer technology, some university teachers still cannot discover the situation of viruses in computers in time. If the university can regularly send teachers with computer skills, they will serve the whole school for free. In this way, the teacher's computer is maintained in a timely manner, and the protection of students' personal information is very well guaranteed. 2) Regularly conduct information ethics knowledge contests. Organize information ethics knowledge

competitions between universities or within universities, so that teachers can participate in information ethics knowledge competitions, and improve the level of information ethics in the competition, so as to improve the level of information literacy. 3) Teachers should impart the importance of information ethics and knowledge to students in the process of teaching.

Interviewee 3

1. What is your opinion about the strategy outline of information literacy in information awareness for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information awareness is suitability, and the follow strategy I think will be add.

1) From the perspective of teachers themselves, they should pay more attention to information awareness, constantly learn the knowledge of information awareness on their own, and strive to improve their information awareness level. 2) At the university level, the importance of information awareness should be emphasized, and enhancing the importance of information awareness in teaching and scientific research. 3) Teachers are required to embody the teaching of information awareness in the classroom, reflect the importance of information awareness in the teaching objectives and teaching design, and realize the goal of cultivating students' information awareness in the teaching process. 4) At the social level, it is also important to pay attention to the importance of information awareness. 5) All kinds of organizations or institutions should hold various training or competitions on a regular basis to improve the level of information awareness of the whole people.

2. What is your opinion about the strategy outline of information literacy in information knowledge for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information knowledge is suitability, and the follow strategy I think will be add.

1) Information knowledge is closely related to computer technology, and many software belong to information technology, which is difficult for some liberal arts teachers. Therefore, it is necessary to conduct multi-training, systematic and targeted training for such teachers. 2) Pay attention to pre-employment training and on-the-job training. In the face of the advent of new information technology, I believe that

universities should pay attention to the training of teachers in a targeted and systematic manner. 3) Universities or education management departments should formulate a sound evaluation system for teachers' information knowledge to promote teachers' learning of information knowledge. 4) Enhance communication between teachers, learn from each other's strengths, and learn new information technology and new information knowledge. 5) Hold information knowledge competitions to enhance teachers' interest in learning information knowledge.

3. What is your opinion about the strategy outline of information literacy in information ability for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ability is suitability, and the follow strategy I think will be add.

1) The knowledge of self-learning information ability of university teachers. Internal factors are the driving force behind qualitative changes, and only when teachers take the initiative to learn and strive to improve their information ability can they have a steady stream of power to promote teachers to learn new information technology. New information technology and professional knowledge can be effectively integrated and applied to teaching. 2) Mutual communication between teachers can improve teachers' information skills. Each teacher is good at different aspects, and teachers can learn from each other's strengths and weaknesses by learning from each other and improving their information skills. For example, study groups can be set up to discuss with each other on a regular basis how to prepare lessons, how to effectively integrate new information technology with this expertise, and how to design new teaching methods and new teaching methods. Through discussions, we can solve problems that cannot be solved by individuals. 3) It can realize the mode of bringing the old with the new. Young teachers have a strong ability to learn and accept new information technology, and they will be able to learn new information technology very quickly. Younger teachers can mentor older teachers so that older teachers can keep abreast of the latest information technology. Older teachers give guidance to younger teachers on teaching experience and professional knowledge, so that young teachers have a professional depth in the production of

content. The two are combined to complement each other's strengths, thereby promoting the improvement of teachers' information skills.

4. What is your opinion about the strategy outline of information literacy in information ethics for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ethics is suitability, and the follow strategy I think will be add.

1) Teachers have a strong sense of information, information knowledge and information ability, and the level of information ethics is also improved, 2) The university organizes information ethics knowledge competitions, so that teachers can improve their information ethics level in the process of training or participating in competitions. 3) University teachers should often exchange and discuss the knowledge of information ethics.

Interviewee 4

1. What is your opinion about the strategy outline of information literacy in information awareness for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information awareness is suitability, and the follow strategy I think will be add.

1) It is necessary to pay attention to information awareness at the university level, and to train teachers on information awareness frequently, so that teachers can change their concept of information awareness, and let teachers form the awareness of using information technology to change teaching and scientific research. 2) Integrate information awareness into the curriculum. Only by improving teachers' own information awareness can they improve students' information awareness in the teaching process and intercept the erosion of students' learning awareness by bad network information. 3) Universities should often hold competitions for information awareness and knowledge, so that teachers can improve their information awareness in the competition.

2. What is your opinion about the strategy outline of information literacy in information knowledge for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information knowledge is suitability, and the follow strategy I think will be add.

1) It is necessary to develop a system or assessment system for evaluating teachers' information knowledge. The information knowledge of teachers is divided into several levels, and different targeted training programs are designed for teachers at different levels. Teachers are systematically and purposefully trained in information knowledge. 2) As long as teachers have the knowledge of information, the latest teaching methods and teaching methods, they will apply them to teaching after understanding. 3) Teachers should also interact more with students, let students participate in the class, and let students participate in the class with the latest information technology. In the interaction between teaching and learning, students can not only learn professional knowledge and information knowledge, but also improve their own information knowledge and teaching experience in the process of teaching.

3. What is your opinion about the strategy outline of information literacy in information ability for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ability is suitability, and the follow strategy I think will be add.

1) The university needs to do a good job in top-level design, have a clear understanding of the overall level of information ability of university teachers, and have a clear positioning for the level standards that teachers want to achieve. 2) Continuously improve and improve the training system and incentive mechanism of university teachers, improve the information innovation ability of teachers, and carry out targeted batch training for teachers of different disciplines, different ages and different levels. 3) In the process of training, it is necessary to pay attention to the diversification of training programs and training contents, increase teachers' interest in learning, provide more opportunities for teachers, enrich teachers' teaching experience, help them change their inherent teaching methods and teaching methods, and provide a solid backing for them to adapt to the new environment of informatization. 4) Hold an information competency contest. Promote the learning and exchange of teachers' information skills through information ability competitions between universities and among teachers.

4. What is your opinion about the strategy outline of information literacy in information ethics for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ethics is suitability, and the follow strategy I think will be add.

1) It is necessary to incorporate students' information ethics education into the classroom, and require managers to take the improvement of students' information ethics level as one of the teaching purposes when formulating teaching plans. 2) In order to complete classroom teaching and complete teaching goals, university teachers will incorporate the goal of improving students' information ethics into their teaching when teaching design and lesson preparation. 3) In the process of lesson preparation, teachers should naturally master the relevant knowledge of information ethics in order to teach well. 4) The active self-learning of information ethics by university teachers.

Interviewee 5

1. What is your opinion about the strategy outline of information literacy in information awareness for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information awareness is suitability, and the follow strategy I think will be add.

1) To start from the leadership level, we must first change the attitude of information awareness and understand the importance of information awareness. 2) In terms of instructional design, the cultivation goal of information awareness and information literacy should be integrated. 3) Change teachers' view of information awareness and attach importance to information awareness from the heart, so that they can take the initiative to learn information literacy knowledge. 4) Do a good job in the pre-service and in-service information awareness training of teachers' information awareness. 5) Formulate a reasonable incentive system for information awareness to stimulate teachers' enthusiasm for learning information awareness.

2. What is your opinion about the strategy outline of information literacy in information knowledge for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information knowledge is suitability, and the follow strategy I think will be add.

1) University teachers should learn information knowledge on their own. Information knowledge accompanies a person's life, and university teachers use the

Internet to learn information knowledge on their own and learn their weak parts in a targeted manner. 2) Actively participate in lectures or trainings on information literacy training held by universities and libraries. 3) In the face of the emergence of new technologies, university teachers should fully realize the importance of the integration of information technology and subject teaching, optimize their information literacy, pay attention to the development trends of information technology such as computer technology and big data technology, carry out information teaching practice with the help of emerging information technology, update professional and teaching knowledge, and continuously improve the ability of information technology and subject teaching integration, and finally improve information ability. 4) The education management department should encourage the exchange of information knowledge between universities, break down the barriers of regional information knowledge, and promote the balanced development of information knowledge.

3. What is your opinion about the strategy outline of information literacy in information ability for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ability is suitability, and the follow strategy I think will be add.

1) University teachers should master the modern information technology that deeply and effectively integrates information technology with subject teaching. We can divide teachers according to the age structure, which can be divided into three groups, senior teachers (50 years old and above), middle-aged teachers (40-49 years old), and young teachers (under 40 years old). The planning of school-based training courses has clear training themes, diverse training methods, diverse training objects, and flexible time arrangements. 2) The education department should regularly carry out information ability exchange activities between universities, so that university teachers can understand the level of information ability of their universities, so as to promote the learning and development of information ability.

4. What is your opinion about the strategy outline of information literacy in information ethics for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ethics is suitability, and the follow strategy I think will be add.

1) Incorporate the improvement of students' information ethics into the teaching purpose, and let teachers consider improving students' knowledge of information ethics in teaching design. 2) For the behavior of university teachers using cracked software, we should not only educate teachers ideologically, but also stop these behaviors from action. For example, the university came forward with the software company to help teachers buy software in groups, so as to reduce the cost of purchasing software. This eliminates the use of cracked software in the first place. Improving the level of information ethics of university teachers. 3) Universities may hold information ethics knowledge competitions between or within the university to learn information ethics knowledge through competitions.

Interviewee 6

1. What is your opinion about the strategy outline of information literacy in information awareness for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information awareness is suitability, and the follow strategy I think will be add.

1) When universities design teacher training, they should take into account the individual differences of the training objects, such as age, subject category, academic level, information technology level, etc., adopt hierarchical and classified training, and determine the training objectives, framework, content and difficulty at each level in a targeted manner, so that teachers at different levels can gain something. 2) Universities should also establish information literacy training files for teachers at different levels, track and record the training content and results of each teacher for a long time, better promote follow-up training, and ultimately improve the effectiveness of training. 3) Teacher training should increase the practical courses of information technology application to classroom teaching, and use online information ability training methods such as micro-courses, MOOCs, virtual libraries, and mobile libraries to fully develop teachers' fragmented time, and deepen teachers' re-understanding of the essential characteristics of information technology. 4) Carry out practical courses such as teaching design, database use, operation and explanation of information technology tools, retrieval and utilization of electronic resources, etc., encourage teachers to apply information technology to classroom teaching practice, and realize

the normalization of information teaching. 5) Universities and authorities should develop incentives for information awareness to improve teachers' interest in learning information awareness.

2. What is your opinion about the strategy outline of information literacy in information knowledge for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information knowledge is suitability, and the follow strategy I think will be add.

1) Teachers should understand the importance of information knowledge. 2) Improve the information knowledge level of teachers through various trainings. 3) Training can be carried out through expert lectures, teacher seminars, distance learning, self-directed learning, etc. 3) Online or offline information knowledge competitions should be carried out frequently to promote the development of information knowledge. 4) After each training, a certain assessment should be carried out to test the effect of the training, so as to improve the enthusiasm of teachers.

3. What is your opinion about the strategy outline of information literacy in information ability for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ability is suitability, and the follow strategy I think will be add.

1) Training effective methods to improve the information ability of university teachers. For example, various forms of information teaching practice such as MOOC and micro-course are carried out, so that teachers can personally feel the advantages and charm of information technology for easy teaching, and teachers can use information technology to carry out classroom teaching enthusiasm and enthusiasm. 2) In view of the principle of making up for what is missing, university teachers should arrange systematic training in time for information knowledge such as big data analysis, artificial intelligence, cloud computing, etc., so that teachers can grasp the latest information technology knowledge in a timely manner, and then combine these information technologies with professional knowledge and apply them to the classroom. 3) University authorities should promote information competence competitions between universities and teachers, and improve teachers' information competence through competitions. 4) The competent departments of universities

should formulate an incentive system to stimulate the enthusiasm of teachers to improve their information ability.

4. What is your opinion about the strategy outline of information literacy in information ethics for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ethics is suitability, and the follow strategy I think will be add.

1) Universities should pay attention to information ethics and disseminate the importance of information ethics. Teachers grasp the importance of information ethics and form an internal driving force among teachers in undergraduate Universities, and teachers take the initiative to learn the relevant knowledge of information ethics and cultivate their own awareness and ability to protect their personal information. 2) Universities should organize teachers to systematically learn information ethics knowledge and improve teachers' information ethics level. 3) Through school-based training, observation demonstration classes, expert lectures, luncheons, seminars and other forms of training activities. 4) Use interactive methods such as case studies and in-depth experiences to improve teachers' participation, so as to achieve the purpose of improving teachers' information ethics. 5) Teachers should regularly exchange information ethics knowledge to promote the dissemination and development of information ethics knowledge.

Interviewee 7

1. What is your opinion about the strategy outline of information literacy in information awareness for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information awareness is suitability, and the follow strategy I think will be add.

1) In the training, when selecting relevant examples for information awareness education, it is necessary to emphasize the guiding role of information awareness, so that teachers can realize the importance of information awareness, so as to awaken their sleeping information consciousness. 2) The university should organize teachers to communicate with enterprises frequently, and cooperate with enterprises to improve the level of teachers' information awareness. 3) The cultivation of teachers' good information awareness is not a one-step process, but a gradual

process. 4) Teachers' information awareness develops from the state of ignoring information to the state of conscious searching, and then transforms into the state of keen perception, which needs to be explored and trained in learning and practice. 5) Universities should put information awareness in an important position and should be reflected in the routine assessment.

2. What is your opinion about the strategy outline of information literacy in information knowledge for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information knowledge is suitability, and the follow strategy I think will be add.

1) Emphasis on internal factors. University teachers should understand the role of information knowledge in improving their teaching ability and scientific research ability, so as to actively and actively improve their information awareness. 2) Now that we are in the information society, the ways to obtain information knowledge are more diversified, no longer relying on the traditional and limited classroom knowledge content, and it is more suitable for the blended learning mode that combines virtual and real worlds. 3) The education sector should organize experts in information literacy to develop evaluation criteria for information knowledge. 4) When designing training methods, universities and education authorities should adopt an active, inquiry-based, and practical way of training, so that university teachers can not only learn information knowledge, but also know how to use information knowledge.

3. What is your opinion about the strategy outline of information literacy in information ability for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ability is suitability, and the follow strategy I think will be add.

1) The communication between teachers plays an important role in enhancing teachers' information ability, and the exchange of information ability between universities or teachers in universities can promote the development of teachers' information ability. 2) The university should support university teachers to carry out the teaching practice of integrating information technology and subject teaching, and give certain policy support. 3) Universities should understand the current situation of university teachers, understand the teaching needs of university teachers,

and improve targeted and professional school-based training programs for teachers. 4) Incorporate the ability of university teachers to integrate information technology and subject teaching into the regular assessment. 5) The university should formulate corresponding incentive policies to encourage university teachers to actively improve their information ability and teaching ability, and explore new ways of teaching.

4. What is your opinion about the strategy outline of information literacy in information ethics for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ethics is suitability, and the follow strategy I think will be add.

1) University teachers should attach importance to the knowledge of information ethics and take the initiative to learn relevant information ethics knowledge. 2) Teachers of Universities should strictly abide by the bottom line of information ethics, and should abide by relevant laws and regulations when acquiring, using, and disseminating information. 3) Universities should regularly carry out training on information ethics and publicize the importance of information ethics. 4) The education management department should regularly hold information ethics knowledge competitions to promote the development of information ethics.

Interviewee 8

1. What is your opinion about the strategy outline of information literacy in information awareness for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information awareness is suitability, and the follow strategy I think will be add.

1)Universities education authorities should strengthen the importance of publicizing information awareness and incorporate information awareness into routine assessment. 2) Universities regularly conduct online and offline information awareness training for teachers. 3) Pre-service training for university teachers on information awareness, 4) Regularly organize information awareness knowledge competitions and competitions, and give certain rewards to the winners. 5) Develop an incentive mechanism to reward talents with outstanding information awareness who have made contributions.

2. What is your opinion about the strategy outline of information literacy in information knowledge for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information knowledge is suitability, and the follow strategy I think will be add.

1) Universities can establish a teacher training system based on big data analysis, carry out full-staff training and self-study of teachers' information knowledge, and require teachers to complete learning hours and after-school homework. 2) The university should understand the learning progress, difficulty and main problems of teachers, and organize teachers in need to carry out further personalized training. 3) Seminars on information knowledge should be held among universities to promote the exchange of information knowledge among teachers. 4) University teachers should give full play to their subjective initiative and continue to learn information knowledge. 5) The education department should hold information knowledge competitions at all levels and reward the winners.

3. What is your opinion about the strategy outline of information literacy in information ability for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ability is suitability, and the follow strategy I think will be add.

1) Formulate a mandatory information ability training system, take information ability training and corresponding assessment and evaluation as a compulsory business for university teachers, and reasonably associate information ability assessment and evaluation with teaching evaluation, professional title evaluation, and evaluation of excellence, so as to promote university teachers to improve their information ability. 2) Formulate normalized information ability training guidance, and give full play to the advantages of human resources, information resources and venue discount resources of university libraries in information literacy training under the unified deployment of the university. 3) The university library will develop and carry out normalized information ability training for teachers, and carry out continuous, in-depth and extensive information literacy knowledge and skills training with the help of MOOC, WeChat, Weibo, Douyin and other platforms. 4)

Establish a reasonable information ability evaluation system to reasonably evaluate the information ability of university teachers.

4. What is your opinion about the strategy outline of information literacy in information ethics for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ethics is suitability, and the follow strategy I think will be add.

1) University teachers are the soul of universities, and university teachers should pay attention to the cultivation of their own information ethics and strive to improve their own information ethics level. 2) As a teacher, an elder who is responsible for teaching students' knowledge and morality, university teachers should pay more attention to their own information ethics than people in any profession, and lead by example to cultivate students' information ethics. 3) Teachers can improve their information ethics with the help of online and offline training provided by universities. 4) In the process of acquiring, processing, using and disseminating information, university teachers should abide by the laws and regulations of information and abide by the bottom line of morality. 5) Teachers should strive to improve their own knowledge of information ethics and imperceptibly teach students information ethics knowledge in the classroom.

Interviewee 9

1. What is your opinion about the strategy outline of information literacy in information awareness for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information awareness is suitability, and the follow strategy I think will be add.

1) The university should develop a set of information awareness training plan, carry out systematic information awareness training for newly recruited university teachers, and conduct targeted training for in-service teachers, and the training content should be the latest information technology knowledge and application. 2) Universities should pay attention to the importance of information awareness and know how to improve teachers' information awareness. 3) Formulate a set of effective information awareness evaluation standards, evaluate the information awareness of university teachers, and train the information awareness of university teachers at different levels

through evaluation. 4) University authorities should organize information awareness competitions, so that university teachers can improve their information awareness in the competition. 5) Universities or competent departments put information awareness into the routine assessment to promote teachers' learning information awareness.

2. What is your opinion about the strategy outline of information literacy in information knowledge for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information knowledge is suitability, and the follow strategy I think will be add.

1) Universities or school authorities should attach importance to teachers' information knowledge and organize information knowledge training. 2) In the process of training, the training content should stimulate the subjective initiative of teachers and make teachers have a strong interest in information knowledge. 3) Universities should develop a sound information knowledge assessment system to encourage teachers to spend time and energy to learn information knowledge. 4) Universities should develop a sound incentive mechanism to stimulate the interest of university teachers in learning information knowledge.

3. What is your opinion about the strategy outline of information literacy in information ability for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ability is suitability, and the follow strategy I think will be add.

1) Strengthen the construction of smart campuses, empower the training and practice of information ability in universities, and build a smart campus environment in universities, including the construction of hardware environment and software environment. 2) Give full play to the advantages of human resources in university libraries, network information centers and other departments, solve the information technology problems encountered by teachers and students in teaching and scientific research activities in real time, and provide solid intellectual support for teachers and students in universities to carry out teaching and scientific research activities.

4. What is your opinion about the strategy outline of information literacy in information ethics for undergraduate universities in Guangxi?

1) The state or universities should formulate rules and regulations related to information ethics in universities to standardize the information ethics behavior of university teachers2) Universities and their main competent departments should carry out multi-level and colorful training to train university teachers in information ethics knowledge in a targeted manner. 3) The university should organize more information ethics exchange meetings among university teachers, and improve the information ethics level of university teachers through information ethics exchange meetings. 4) Universities should regularly exchange information ethics knowledge and hold information ethics knowledge competitions.

Interviewee 10

1. What is your opinion about the strategy outline of information literacy in information awareness for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information awareness is suitability, and the follow strategy I think will be add.

1) To cultivate the information sensitivity and insight of university teachers, it is necessary to learn the knowledge of information awareness through teachers' own efforts. 2) Universities should pay attention to the cultivation of information awareness and provide information awareness training for university teachers. 3) Universities should exchange and communicate more information awareness, and hold lectures and training on information awareness. 4) Universities should cooperate with enterprises to learn information awareness from enterprises and improve the insight and sensitivity of university teachers. 5) Colleagues communicate frequently and learn from each other, so as to improve the sensitivity and insight of information awareness, and improve the value judgment of information.

2. What is your opinion about the strategy outline of information literacy in information knowledge for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information knowledge is suitability, and the follow strategy I think will be add.

1) University teachers should pay attention to the accumulation of information knowledge, and should actively take the initiative to learn about the emergence of new technologies. 2) University teachers should communicate more with

students, understand students' needs for information knowledge, and adjust the teaching design and course content to teach students the knowledge they need. 3) Actively participate in various training and academic seminars to improve the information knowledge capacity of university teachers.

3. What is your opinion about the strategy outline of information literacy in information ability for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ability is suitability, and the follow strategy I think will be add.

1) In the face of new information technology knowledge, universities and competent departments should carry out training work in a timely manner, so that university teachers can master certain new information technology knowledge, know how to record videos, cut videos and publish videos. 2) In the training design, the university should pay attention to the learning of the practical operation of information technology, so that university teachers can learn the practical operation technology after the training. 3) Colleagues should communicate more with each other and learn from each other about the operation of information technology. 4) Universities and school authorities should pay attention to the cultivation of information ability, and incorporate the information ability of university teachers into the regular assessment.

4. What is your opinion about the strategy outline of information literacy in information ethics for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ethics is suitability, and the follow strategy I think will be add.

1) Improve the relevant laws and regulations on the Internet, and widely publicize and promote the development of information ethics. 2) Upgrade and improve technical means, increase the rectification of illegal websites, and prevent the spread of bad information. 3) Strengthen information ethics training for university teachers' information behavior. 4) Improve the ability of university teachers to protect their own digital information and information self-discipline. 4) The education department may hold online or offline information ethics knowledge competitions to improve teachers' information ethics level.

Interviewee 11

1. What is your opinion about the strategy outline of information literacy in information awareness for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information awareness is suitability, and the follow strategy I think will be add.

1) Universities authorities should pay attention to the importance of information awareness, and set up a special information literacy teaching and research department in the university, so that university teachers can realize the importance of information literacy. 2) The university or relevant state departments should formulate a set of information awareness evaluation system to measure the level of information knowledge of teachers. 3) Through training, improve the information awareness level of university teachers, and enhance the information sensitivity and insight of university teachers. 4) Introduce talents with high information literacy to improve the level of information awareness of university teachers. 5) Universities should provide policy support to promote the exchange of information and awareness among teachers.

2. What is your opinion about the strategy outline of information literacy in information knowledge for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information knowledge is suitability, and the follow strategy I think will be add.

1) University teachers should learn new information technology knowledge in a targeted manner, and strive to integrate new information technology knowledge with professional knowledge to form their own knowledge system. 2) Teachers of universities actively participate in various training and information knowledge exchange meetings, and enrich their information knowledge by exchanging information knowledge with their peers. 3) Universities and competent departments should pay enough attention to information knowledge, and organize university teachers to participate in targeted and systematic information knowledge training in a timely manner.

3. What is your opinion about the strategy outline of information literacy in information ability for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ability is suitability, and the follow strategy I think will be add.

1) In-depth publicity of the importance of information ability to university teachers to complete high-quality education, teaching and scientific research tasks, 2) the level of information ability and the teaching and scientific research work of university teachers are reasonably related, so that university teachers can effectively realize the urgency of improving their information ability, 3) the university regularly holds competitions for the integration and application of information technology and teaching and scientific research, and gives certain rewards to teachers with outstanding information ability in the competition, so as to mobilize the enthusiasm of university teachers to improve their information ability. 4) To carry out systematic training in a hierarchical and classified manner, universities can understand the information ability level of teachers of different ages and disciplines through questionnaires and other forms before making training plans, and make targeted training programs.

4. What is your opinion about the strategy outline of information literacy in information ethics for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ethics is suitability, and the follow strategy I think will be add.

1) The university should strengthen the training of information ethics for university teachers, and conduct targeted and systematic training on information ethics for university teachers. 2) Universities and competent authorities should intensify the publicity of information ethics and improve the ethical level of university teachers. 3) Invite information literacy experts from inside and outside the university to conduct information ethics training for university teachers. 4) Increase the exchange of information ethics knowledge among teachers in various universities.

Interviewee 12

1. What is your opinion about the strategy outline of information literacy in information awareness for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information awareness is suitability, and the follow strategy I think will be add.

1) University teachers should take the initiative to actively learn information awareness and strive to improve their information sensitivity and insight. 2) Universities cooperate with enterprises and other departments to exchange information awareness on a regular basis, or let university teachers regularly work in enterprises for a period of time to improve their information awareness in enterprise practice. 3) Universities and competent departments should carry out information awareness training on a regular basis and ensure the effectiveness of the training. 4) The competent department of education organizes relevant experts to formulate information evaluation standards that are in line with reality.

2. What is your opinion about the strategy outline of information literacy in information knowledge for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information knowledge is suitability, and the follow strategy I think will be add.

1) At the university level, university teachers should be regularly trained in information knowledge, and training should be carried out on emerging information technology knowledge and operation methods. 2) After the training, a certain assessment should be carried out to ensure that the university teachers have mastered the relevant information technology knowledge and information technology operation methods. 3) The university holds an information knowledge contest and actively mobilizes all university teachers to participate in the knowledge contest and learn information knowledge in the process of the competition.

3. What is your opinion about the strategy outline of information literacy in information ability for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ability is suitability, and the follow strategy I think will be add.

1) Universities should understand that teacher training is an important part of the construction of teachers and an important way to promote the professional growth of university teachers. The quality of information ability training for university teachers directly affects the level of information ability of university teachers, and affects the effect of the integration of information technology and course teaching, thereby affecting the level of classroom teaching. 2) Teachers' information ability improvement

is a long-term and dynamic development concept. Therefore, the training of teachers' information competence requires long-term, systematic and targeted training.

3) The improvement of the information ability of university teachers is the result of the joint action of teachers, universities and all aspects of society, which requires the stimulation of internal motivation and the guarantee of external environment. 4) Teacher training should increase the practical courses of information technology applied to classroom teaching, and use micro-courses, MOOCs, and virtual libraries. Online information ability training methods such as mobile libraries fully develop teachers' fragmented time, and assume teachers' re-understanding of the essential characteristics of information technology.

4. What is your opinion about the strategy outline of information literacy in information ethics for undergraduate universities in Guangxi?

I think the strategy outline of information literacy in information ethics is suitability, and the follow strategy I think will be add.

1) University teachers should study the knowledge of information ethics and the laws and regulations of information ethics on their own. 2) Clear laws and regulations on information ethics should be formulated at the university or national level. 3) University teachers should comply with laws and regulations on information ethics when using information technology in teaching. 4) Clearly identify the sources of information used in the teaching process. 5) Universities can often organize teachers to communicate on information ethics, and carry out exchanges of information ethics knowledge through social software such as WeChat or QQ.

3. Assessment Checklist

Assessment checklist of Information Literacy Development Strategy for

Undergraduate Universities in Guangxi

Thank you very much for your busy schedule and participation in the evaluation of this study. Please assess the suitability based on the information literacy for undergraduate universities, with the numbers 5, 4, 3, 2 and 1 corresponding to extra high, high, average, low and extra low.

No	Information Literacy Strategy Development for Undergraduate Universities	Suitability					Feasibility				
		5	4	3	2	1	1	2	3	4	5
Information awareness											
1	Enhancing information awareness competitions										
2	Enhancing to incorporate information awareness into the teaching plan of professional courses										
3	Supporting universities to include information awareness in the regular assessment										
4	Improving information awareness exchanges between university teacher, universities and enterprises										
5	Improving information awareness by training										
6	Solving information awareness incentive system.										

No	Information Literacy Strategy Development for Undergraduate Universities	Suitability					Feasibility				
		5	4	3	2	1	1	2	3	4	5
7	Solving the problem of no information awareness evaluation criteria										
8	Enhancing the importance of information awareness										
Information knowledge											
1	Supporting the information knowledge exchange activities										
2	Supporting to teach themselves information knowledge by various resources										
3	Solving information knowledge by training										
4	Enhancing information knowledge competitions										
5	Improving information knowledge assessment system										
6	Enhancing importance of information knowledge										
Information ability											
1	Supporting: the modern educational technology of deep integration of information technology and subject teaching										
2	Supporting targeted information ability training										

No	Information Literacy Strategy Development for Undergraduate Universities	Suitability					Feasibility				
		5	4	3	2	1	1	2	3	4	5
3	Enhancing regularly information ability competitions										
4	Solving a systematic information ability incentive system										
5	Supporting teachers to communicate, learn, and cooperate with each other										
Information ethics											
1	Solving training problems in information ethics										
2	Enhancing regularly information ethics competitions										
3	Supporting information ethics communication										
4	Supports the integration of information ethics knowledge into teaching										

Appendix D

The Results of the Quality Analysis of Research

Instruments

The index of objective congruence (IOC)

Information literacy strategy development for undergraduate universities in Guangxi

No.	Information Literacy of Undergraduate Universities in Guangxi	Experts					IOC	Valid
		1	2	3	4	5		
Information awareness								
1	University teachers have a certain degree of information sensitivity and actively seek and use information to improve teaching quality	1	1	1	1	1	1	valid
2	University teachers understand the importance of information awareness, understand that information technology is conducive to innovating educational methods and research directions, and improve the creativity and competitiveness of university teachers	1	1	1	1	1	1	valid
3	University teachers understand the value of information, can integrate information knowledge in teaching, and improve students' information literacy	1	1	1	1	1	1	valid
4	University teachers have a strong interest in information and are willing to use information technology to support their teaching and research work.	1	1	1	1	1	1	valid
5	University teachers believe that information can improve teachers' professional satisfaction and work efficiency.	0	1	1	1	1	0.8	valid

No.	Information Literacy of Undergraduate Universities in Guangxi	Experts					IOC	Valid
		1	2	3	4	5		
6	University teachers actively seek new information resources and tools to enrich teaching content and research fields	1	0	1	1	1	0.8	valid
7	University teachers will share best practices in information awareness with colleagues to promote the dissemination and application of information awareness.	1	1	1	1	1	1	Valid
8	University teachers continuously learn and update their information technology knowledge to adapt to the changing educational and research environment	1	1	1	1	1	1	valid
9	University teachers encourage students to cultivate information awareness and help them make better use of information resources for learning and research	1	1	1	0	1	0.8	valid
10	University teachers actively participate in the research and application of information technology in the field of education, and promote the modernization and improvement of education	1	1	1	0	1	0.8	valid
Information knowledge								
1	University teachers have basic knowledge of information, including theoretical knowledge of information, knowledge and understanding of information society and its impact on human beings	1	1	1	1	1	1	valid

No.	Information Literacy of Undergraduate Universities in Guangxi	Experts					IOC	Valid
		1	2	3	4	5		
2	University teachers have sufficient knowledge in traditional cultural literacy and can integrate traditional culture with the modern information age	1	1	1	1	1	1	valid
3	University teachers master the knowledge of information retrieval in this major and know how to obtain teaching and scientific research information of this major	1	1	1	1	1	1	valid
4	University teachers master the knowledge of information evaluation and can make correct evaluations of most of the information of the major	1	1	1	1	1	1	valid
5	University teachers understand the importance of information transmission knowledge and can use information technology to support teaching and scientific research activities.	1	0	1	1	1	0.8	Valid
6	University teachers understand the methods of information processing and processing, and can teach them to students in teaching and scientific research activities	1	1	1	1	1	1	valid
7	University teachers understand the important information sources of the profession and can effectively process and organize information resources	1	1	1	1	1	1	valid
8	University teachers master the basic skills in searching and can teach the basic	1	1	1	1	1	1	valid

No.	Information Literacy of Undergraduate Universities in Guangxi	Experts					IOC	Valid
		1	2	3	4	5		
	skills of retrieval to students in combination with teaching.							
9	University teachers understand the importance of information knowledge, actively seek to learn and update information knowledge, and keep up with the development of the information age.	1	1	1	1	0	0.8	valid
10	University teachers regularly attend professional development and information literacy training to keep information knowledge and skills up to date	1	1	1	1	1	1	valid
Information ability								
1	University teachers have sufficient information acquisition ability and can effectively search academic literature and research resources	1	1	1	1	1	1	valid
2	University teachers have sufficient information utilization ability and can effectively use information to solve problems in teaching and scientific research	1	0	1	1	1	0.8	Valid
3	University teachers are able to assess the credibility of information on the Internet and identify reliable and unreliable sources of information	1	1	1	1	1	1	valid
4	University teachers have sufficient information skills and are proficient in	1	1	1	1	1	1	valid

No.	Information Literacy of Undergraduate Universities in Guangxi	Experts					IOC	Valid
		1	2	3	4	5		
	the use of information technology to support teaching and research activities							
5	University teachers have sufficient information ability to explore the potential value of known information and can comprehensively apply it to practice.	0	1	1	1	1	0.8	valid
6	University teachers can analyze known information and have the ability to create new knowledge of information	1	1	1	1	1	1	valid
7	University teachers have sufficient information exchange ability, and often conduct online and offline information exchange, real-time and non-real-time communication in teaching and scientific research activities	1	0	1	1	1	0.8	valid
8	University teachers understand the process and principle of information transmission, screen the transmitted information, and cut off the transmission path in time for false information.	1	1	1	1	0	0.8	valid
9	University teachers can create new information and new knowledge, and can publish new information knowledge to the corresponding media	1	1	1	1	1	1	Valid
10	University teachers can correctly express the new information they create and can promote the dissemination of new information	1	1	1	1	1	1	valid

No.	Information Literacy of Undergraduate Universities in Guangxi	Experts					IOC	Valid
		1	2	3	4	5		
11	University teachers regularly participate in professional development and information literacy training, keep their information knowledge and skills updated, and continuously improve their information ability	1	1	1	1	1	1	valid
Information ethic								
1	University teachers comply with regulations and guidelines related to information ethics, including provisions on information privacy and intellectual property rights	1	1	1	1	1	1	valid
2	University teachers should understand that information ethics is essential in teaching and research, and should be emphasized and educated in teaching	1	1	1	1	1	1	valid
3	University teachers have the right to protect personal information, and student information is not to be prying on for no reason and not to be improperly evaluated	1	1	1	1	1	1	valid
4	University teachers should protect personal information, student information, computer networks and storage media from viruses or hacker attacks	1	1	1	1	1	1	valid
5	University teachers should understand the importance of keeping personal and	1	1	1	1	0	0.8	valid

No.	Information Literacy of Undergraduate Universities in Guangxi	Experts					IOC	Valid
		1	2	3	4	5		
	student information confidential to prevent misuse.							
6	When using other people's literature or achievements, university teachers should indicate the source of the literature of others	1	1	1	1	1	1	valid
7	University teachers should respect intellectual property rights, and must obtain the consent of the data owner when using data that has not been disclosed by others.	1	1	1	1	1	1	valid
8	University teachers believe that information ethics can help them better process information and ensure that information is used safely and reasonably.	1	1	1	1	1	1	valid
9	University teachers should frequently communicate information literacy with colleagues or students to promote the dissemination and popularization of information ethics knowledge.	1	1	1	1	1	1	valid
10	University teachers regularly participate in information literacy training to continuously improve their knowledge of information ethics	1	1	1	1	1	1	valid

1. Reliability Analysis

Simplified Format of Cronbach's Reliability Analysis		
Number of Items	Sample	Cronbach's Alpha Coefficient
41	375	0.952

From the table above, it can be seen that the reliability coefficient value is 0.952, which is greater than 0.9, indicating that the quality of the research data reliability is high. Regarding the "α coefficient with deleted items," the reliability coefficient does not significantly increase when any item is deleted. Therefore, it indicates that the items should not be deleted. Regarding the "CITC value," the CITC values for all analyzed items are above 0.4, indicating that there is a good correlation between the analyzed items, which also indicates a good reliability level. In summary, the reliability coefficient value of the research data is higher than 0.9, which comprehensively indicates high data reliability quality and can be used for further analysis.

Appendix E

Certificate of English

BSRU BANSOMDEJCHAOPRAYA
RAJABHAT UNIVERSITY

This is to certify that

Mrs.Shangyao Ou

Achieved BSRU English Proficiency Test (BSRU-TEP) level

C2

Given on 3rd October 2020

(Assistant Professor Dr Kulsirin Aphiratvoradej)

Director

Appendix F

The Document for Accept Research

มหาวิทยาลัยมหาจุฬาลงกรณราชวิทยาลัย
วิทยาเขตนครศรีธรรมราช
๓/๓ ม.๕ ต.มะม่วงสองต้น อ.เมือง จ.นครศรีธรรมราช ๘๐๐๐๐
โทร. ๐๗๕-๓๔๒๘๙๔ โทรสาร ๐๗๕-๓๔๕๘๖๒

อว.๘๐๒๗ / ๑๐๗

๘ พฤษภาคม ๒๕๖๗

เรื่อง   รับรองการลงบทความวิจัยเพื่อตีพิมพ์ในวารสารมหาจุฬานาครทรรศน์

เรียน   นางโอว ซ่างเหยา

      ตามที่ **นางโอว ซ่างเหยา และผู้ช่วยศาสตราจารย์ ดร.สรายุทธ์ เศรษฐขจร รองศาสตราจารย์ ดร.นิรันดร์ สุธีนิรันดร์ และผู้ช่วยศาสตราจารย์ ดร.พัชรา เดชโฮม** ได้ส่งบทความวิจัยเรื่อง **"การพัฒนากลยุทธ์ การรู้สารสนเทศสำหรับมหาวิทยาลัยระดับปริญญาตรีในกวางสี"** เพื่อพิจารณาตีพิมพ์ในวารสารมหาจุฬานาครทรรศน์ มหาวิทยาลัยมหาจุฬาลงกรณราชวิทยาลัย วิทยาเขตนครศรีธรรมราช ซึ่งได้รับการคัดเลือกเข้าสู่ ฐานข้อมูล ของศูนย์ดัชนีการอ้างอิงวารสารไทย (ศูนย์ TCI) ได้ถูกจัดกลุ่มคุณภาพวารสารประจำปี พ.ศ.๒๕๖๒ ให้เป็น วารสารที่มีคุณภาพกลุ่มที่ ๒ (TCI ฐาน ๒) และอยู่ในฐานข้อมูล TCI จนถึง ๓๑ ธันวาคม ๒๕๖๗ โดยจะดำเนินการ จัดพิมพ์ในฉบับต่อไปตามระยะเวลาที่ได้กำหนดไว้ และวารสารมหาจุฬานาครทรรศน์ ได้รับบทความวิจัยของท่านเป็นที่ เรียบร้อยแล้วนั้น

      ในการนี้ วารสารมหาจุฬานาครทรรศน์ มหาวิทยาลัยมหาจุฬาลงกรณราชวิทยาลัย วิทยาเขตนครศรีธรรมราช ขอรับรองว่าบทความของท่านได้ผ่านตอบรับเพื่อพิจารณาบทความตีพิมพ์ เผยแพร่ในปีที่ ๑๑ ฉบับที่ ๗ (กรกฎาคม ๒๕๖๗) นี้ ซึ่งภายหลังจากนี้บทความจะผ่านการตรวจสอบ ความถูกต้องทางวิชาการ โดยกองบรรณาธิการวารสารฯ และผู้ทรงคุณวุฒิต่อไป

      จึงเรียนมาเพื่อโปรดทราบและดำเนินการต่อไป

เรียนมาด้วยความเคารพ

(นางสาวปุญญาดา จงละเอียด)
บรรณาธิการวารสารมหาจุฬานาครทรรศน์
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