A Review of Research on Chinese University Foreign Language Teachers' Information Literacy

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Abstract

Information technology has been deeply integrated in and widely applied to various fields of society, including education. The continuous informatization of higher education means that university teachers will face new challenges of information technology. The requirements for a teacher's information literacy imply a higher ability to teach with the aid of information technology. The connotation of information literacy and the improvement of information technology ability of foreign language teachers in Chinese universities have been deeply explored. This article reviews the previous research of the information literacy of foreign language teachers in Chinese universities, points out the limitations of the research, and makes some suggestions for further study.

Keywords: research; information literacy; foreign language teachers; Chinese universities; review

1.Introduction

Information technology represented by the Internet, mobile communication, big data, and artificial intelligence is ubiquitous, deeply affecting various fields of society, especially the field of education. The information age has brought about not only opportunities but also challenges for the foreign language teachers in China. New technologies offer opportunities for the teachers to diversify their educational methods, but they also require the teachers to devote more effort to command the new technologies and teaching modes, which requires teachers to continuously improve their information literacy. There has been in-depth discussion on the definition of information literacy, the necessity and importance of improving the information literacy of foreign language teachers in universities. This article reviews the relevant previous studies, points out the limitations of the research, and provides suggestions for future research.

2. Definition of Information Literacy

The emergence of the term *Information Literacy* is closely related to the popularization and application of information technology. With the development of information society, the connotation and requirements of Information Literacy are evolving, and the concept of Information Literacy is not static but dynamic.

Paul Zurkowski, the late president of American Information Industry Association, proposed the concept of information literacy in 1974. According to Zurkowski, "information literacy refers to the ability of individuals, after training, to master the use of information tools, understand the main sources of information, and solve the real-world problems with these skills" (cited in Wang Cai, 2005). The concept of information literacy attracted the attention of many scholars, whose understanding of the concept was not consistent. In 1989,

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the American Library Association stated that "people who have a clear understanding of their information needs and are able to effectively and accurately search, evaluate, and utilize information resources have information literacy" (ibid). In 1992, Christina Doyle emphasized that "possessing information literacy requires not only making full use of various tools and channels such as computers to obtain information, but also possessing critical thinking, learning to screen favorable information, and applying it to practical situations to solve real-world problems" (ibid). In 2002, Hanno Lore Rader, a librarian in an American university, believed that "information literacy is the comprehensive ability to effectively capture, retrieve, and utilize information in various aspects" (cited in Xiao Xinxiang, 2021). In 2003 and 2005, UNESCO organized two major conferences related to information literacy, the Prague Conference and the Alexander Conference and issued two major declarations. In the Prague Declaration, information literacy is defined as a fundamental human right, a legitimate right. The Alexander Declaration emphasizes that information literacy is of utmost importance for us to learn throughout our lives. In 2014, the Japanese Ministry of Education stipulated in the "Standards for Information Literacy in Higher Education" that "to possess information literacy, one must consciously organize and analyze different information, effectively solve problems, and deliver useful information". In 2015, the Association of College and Research Libraries, a division of the American Library Association published the "Framework of Information Literacy for Higher Education", in which information literacy is defined as "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."

The CNKI database shows that information literacy has been studied since the late 1990s in China. In his book "On Information Literacy" published in 1999, Wang Jiqing argued that the ability to accurately search, obtain, and use information can be developed through education, which involves multiple aspects such as self-awareness and perception, moral ethics, and basic knowledge. Li Kedong (2001), based on the views of foreign scholars, divided information literacy into three basic aspects: the application of information technology, the evaluation and understanding of information content, and the attitudes towards the information society. Chen Weiwei and Li Yi (2002) analyzed information literacy horizontally and vertically. From a horizontal perspective, information literacy includes four aspects: consciousness, ability, knowledge, and morality. But from a vertical perspective, they divide information literacy into levels based on Maslow's Hierarchy of Needs, from basic information literacy to self-satisfying information literacy and then to self-actualizing information literacy. Zhang Yibing and Li Yi (2003) defined information literacy from multiple perspectives. From a technical perspective, information literacy focuses on processing information. From a psychological perspective, information literacy mainly focuses on solving information problems. From a sociological perspective, information literacy emphasizes information communication. From a cultural perspective, the core of information literacy is the ability to construct multiple information cultures. When exploring the qualities of a teacher, Nan Guonong (2013) proposed that information technology literacy includes four factors: information technology awareness, knowledge, ability, and morality.

Although the concept of information literacy has not yet been uniformly defined, it is unanimously believed that information literacy is an integrated ability that is not achieved overnight but gradually.

3.Chinese University Foreign Language Teachers' Information Literacy

The so-called "educational informatization" refers to the application of modern technologies in the field of education in order to promote educational reform and development. Educational informatization has put forward higher requirements for the informatization literacy of teachers, bringing greater challenges, especially to foreign language teachers. The information society has provided more teaching methods, and platforms such as MOOCs, E-Learning, and SPOC have emerged one after another. To effectively utilize these resources, the first step is to improve educational information literacy, develop new teaching ideas, and stimulate foreign language students' enthusiasm to learn the language. (Wang Jianna, 2020)

3.1 Composition of Teachers' Information Literacy

Zhuang Lina et al. (2009) studied the information literacy composition of teachers in various universities, which includes basic theoretical knowledge, six skills, and six information abilities. Weng Guoxiu (2010) pointed out that in the era of informatization, subject teachers should have literacy in information acquisition, analysis, processing, and utilization. Yu Yanhong et al. (2012) divided the information literacy of university teachers into two main parts based on their professional positions and responsibilities: the construction of their own information literacy (basic information literacy, subject information literacy, and scientific research information literacy) and the ability of information education. At the same time, she also proposed several specific requirements for university teachers regarding the content of information literacy: a sense of information, information capabilities, including information acquisition, processing, and profession-oriented skills. Yin Miao et al. (2019) analyzed teacher's information literacy from three dimensions: concept, knowledge, and ability, and compared it with the teacher's literacy required for traditional classroom teaching. Wang Haixiao (2022) took the framework and connotation of teacher's literacy as the starting point and proposed that the main components of information literacy for college English teachers include language and cross-cultural communication, digital resources, teaching, evaluation, empowering learners, and teacher's career development. In addition, Qin Meijuan (2009) explored the connotation of information literacy of college English teachers from the perspectives of awareness and ability, based on the trend of teacher's information literacy in society. Xiao Jing (2022) pointed out that the information literacy of foreign language teachers in the post-pandemic era mainly consists of four parts: information awareness, technology, management, and service literacy.

Although the current research on the teacher's information literacy has different starting points and focuses the teacher's information literacy involves two aspects: understanding and practice. Understanding refers to the teacher's attention to social and educational informatization, while the practice tests the teachers' actual ability to solve real problems.

3.2 Necessity of Improving Teachers' Information Literacy

3.2.1 Historical Background

Digital education means continuous informatization of education and breaking the traditional educational models. The emergence of "Internet+education" has deeply integrated the knowledge and content of teaching and learning with modern technology. The impact of digital education on foreign language teaching is evident, especially during the sudden outbreak of the COVID-19 pandemic. Digital education has evolved from abstract internet communication, artificial intelligence, software development to concrete DingTalk online classrooms, GTP integrated robots, and the use of foreign language translation, reading, speaking and other apps. On the one hand, these applications provide convenience for foreign language teachers and students, promoting diversified learning among students; On the other hand, how to fully utilize these means has become an important issue for foreign language teachers. Overall, teacher informatization is a fundamental requirement for educational informatization.

The development of the information society has promoted the continuous informatization of education. The Ministry of Education of the P.R.C. has issued decrees about education informatization, such as the "Education Informatization 2.0 Action Plan" and "China Education Modernization 2035", which clarify the development direction of information education in the new era and put forward higher requirements for teachers' information literacy, providing policy support for the development of education informatization and teacher informatization. When formulating the language development plans, China emphasizes that the purpose of setting up foreign language courses in universities should be to meet the requirements of national development strategies and contribute to the political, economic, and cultural exchange and development between countries. There is an urgent need for a higher level of foreign language teachers in the new era. Foreign language teachers in various universities should actively respond to policies, improve their teaching literacy, and strive to cultivate high-quality foreign language talents. (Zhang Bowei, Cao Yuexin, 2021)

3.2.2 Social Needs

1) Demand for Diversified Changes in Foreign Language Classrooms

With the continuous expansion of foreign language learning community in the universities, and the continuous influx of new technologies and new thinking, the traditional chalk classroom has fallen behind the development of the new era. In 2007, the Ministry of Education of the P.R.C. issued the "Teaching Requirements for College English Curriculum", which proposed to transform the traditional classroom models with modern technologies, and to offer more courses based on computers to provide better learning conditions for students. From the Internet to Internet Plus, the teaching methods of college English classrooms are constantly changing. Zhao Bing et al. (2016) summarized several changes in college English classroom teaching: 1. The emergence of flipped classrooms, micro courses, and MOOCs; 2. The paradigm of mobile learning in college English classrooms; 3. The application of course management systems such as APP+CMS/MOOC; 4.The emergence of maker teaching methods; 5. The application of evidence-based teaching methods based on big data analysis. From this, the Internet is integrated more closely with education. Foreign language teachers in universities should have a strong awareness of educational reform. Their teaching quality

and information literacy are crucial to the success of foreign language teaching reform in universities.

2) Foreign Language Students' Need for Self-development

College students who grow up in the information age, influenced by the Internet, have more prominent unique characteristics, more diffuse learning thinking, and more prominent innovative consciousness. Therefore, teachers need to improve their teaching literacy, develop personalized teaching methods, and achieve personalized teaching. At the same time, the era of "Internet plus Education" means that the channels for students to learn foreign languages have become more diversified. Students can choose learning places, methods, and contents according to their own needs without mandatory requirements. Diversified and personalized foreign language learning gives students more choices and opportunities. The self-development awareness of foreign language students has also become a driving force for improving the teaching quality of foreign language teachers, requiring teachers to regard providing diverse learning environments for students as their own missions.

3) Demand for High-quality Foreign Language Teachers

In the context of globalization, a good command of a foreign language is becoming increasingly important, and the requirements for foreign language teachers and students are becoming more and more demanding. Qin Qiu (2016) analyzed the relationship between the reform of college English teaching and the improvement of teacher literacy and believed that "the requirement for college English teaching is divided into three levels－－ordinary, high and higher". "The college English curricula, textbooks, teaching content, methods and models are constantly adapted to meet not only the social development but also the diverse needs of students." This means that the task of foreign language teachers is becoming increasingly heavy, and society has higher requirements for the teaching quality. In addition, the universities in China are constantly improving the evaluation systems for foreign language teachers. The focus on teachers is no longer just their teaching and research achievements. From various evaluation dimensions, including proficiency in multimedia usage, students can make a comprehensive evaluation of their foreign language teachers based on their actual performances.

Only by fully balancing and utilizing the teachers' internal self-improvement desires and the society's external educational informatization needs, can we cultivate high-quality foreign language teachers who keep pace with the times.

3.3 Foreign Language Teachers' Information Literacy

The information literacy of foreign language teachers in universities includes four major aspects: consciousness, knowledge, skills, and ethics. Some surveys or interviews have been conducted about the current status of information literacy of foreign language teachers in some provinces or specific universities in China. The findings mainly focus on the following points.

1) In terms of consciousness and ethics

Most research of information literacy began with awareness, because whether teachers themselves have information awareness is an important condition for improving the teachers'

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information literacy. Wei Lan'en, Wu Feng (2022), Li Ying (2015), Wang Jianying, Zhang Hong (2021), Wang Hongmei et al. (2012) found through quantitative research that foreign language teachers in universities in Guangxi, Jilin, Inner Mongolia, and Hebei provinces have a high level of information awareness. When they encounter difficulties in the teaching process, they will first use the Internet to search for information and retrieve information related to the problem. However, the limitation is that teachers rarely draw on foreign information resources, and their understanding of the connotation of information literacy is superficial. Ji Xiaoli et al. (2018), Xi Xuyun et al. (2022), and Peng Fangping et al. (2022) conducted surveys on universities in Jiangsu, Anhui, and Guizhou provinces respectively. Zhang Hui (2017) randomly selected three universities, and their common point is that the survey questions on information awareness mainly focus on teachers' views on the role of information technology in teaching, with most teachers attaching great importance to information technology, and a small number of people lacking sensitivity to the application of information technology, resulting in insufficient utilization of teaching resources. Some scholars have investigated the ethic and safety awareness of teachers. From their conclusions, it can be found that the achievements in the development of teacher ethics and conduct in universities are more obvious, and teachers have a strong sense of information ethics. They obtain information through legitimate channels, transmit positive information, and comply with network norms.

2) In terms of network knowledge and technological application competence

In the context of information technology education, it is necessary for foreign language teachers to have not only information awareness but also information knowledge and skills. The so-called information knowledge refers to practical knowledge on how to use information technology, while information competence refers to the ability to efficiently transform knowledge into the ability to use electronic devices and network resources to obtain, process, and disseminate information. Only by transforming this information consciousness into one's own initiative and transforming theories into practice, can contemporary high-tech be better utilized. By flexibly applying network knowledge, the teachers' technological application competences can be improved, and their teaching efficiency and quality can be enhanced. Some Chinese scholars have conducted surveys and research on the information knowledge and information abilities of foreign language teachers on a provincial basis. According to a survey conducted by Wei Lan'en, Wu Feng (2022), Ji Xiaoli et al. (2018), and Li Ying (2015), most teachers command basic information knowledge and can perform practical operations. However, most of them can use only common teaching software such as PPT, multimedia, and online public course platforms, and have limited access to emerging professional apps such as micro-lecture, animation design software, and media players. Foreign language teachers with a background in humanities generally have an insufficient understanding of computer science and technology, and they need to actively participate in professional training, try new office software, and use information technology to achieve personalized development of foreign language teaching in all aspects.

3) Factors influencing foreign language teachers' information literacy

Based on the general differences in information literacy among foreign language teachers, some scholars have explored the influencing factors. Ji Xiaoli et al. (2018) conducted a survey on foreign language teachers in universities in Jiangsu Province. The foreign language teachers invited to participate in the survey had differences in internal factors such as gender, age, teaching experience, education level, and position. Through interviews and data analysis, it was found that men generally had higher technical and operational abilities than women. The information technology competence is inversely proportional to age, teaching experience, and professional title, and directly proportional to educational background, but the difference is not significant. Wang Hongmei et al. (2012), Peng Fangping et al. (2022) and Zuo Wei, Ma Xin (2023) focused on external factors, mainly on information technology training and investment in school hardware facilities. They unanimously believed that organized information technology training in schools can greatly help improve the technical abilities of foreign language teachers, and surveys show that teachers have a strong willingness to voluntarily participate in training. In addition, Ji Xiaoli et al. (2018) also found that teachers who participate in training have significantly higher technical abilities than those who have not participated. At the same time, the quality of foreign language teachers also needs the support of school hardware facilities. Although smart campuses are common under the promotion of Chinese national policies, the language labs in most Chinese universities have outdated multimedia, which leads to the incompatibility between the outdated hardware and the advanced teaching software, and the teachers' being confined to traditional teaching software and lacking awareness of exploring new teaching solutions. Based on the factors mentioned above, it can be concluded that the influence of teachers' immutable qualities on the cultivation of literacy is not significant. However, the technical reserves and abilities of teachers themselves, as well as the influence of external environment, are highly correlated with foreign language teacher's information literacy.

At present, there are several issues with the information literacy of foreign language teachers in Chinese universities. In terms of consciousness: 1) Teachers have a too simplistic understanding of the concept of information literacy and cannot dynamically understand its connotation; 2) Lack of sensitivity in searching for information sources. In terms of knowledge and ability: 1) Foreign language teachers have insufficient reserves of knowledge about computers and software; 2) Lack of ability to use foreign language teaching facilities and equipment. (Zuo Wei, Ma Xin, 2023)

4. Strategies to Enhance University Foreign Language Teachers' Information Literacy

Improving the information literacy of foreign language teachers in universities is of great significance for the development of teachers and students. Scholars have proposed suggestions on how to improve the teachers' information literacy.

1) Foreign language teachers should understand their professional characteristics, strengthen their information concepts, and acquire information knowledge.

The professional characteristics of foreign language teachers in universities are that they should prioritize teaching, put learners at the center, and have a greater correlation between their work assessment standards and teaching performance than their research abilities. With the continuous updating of college English teaching mode and information technology,

English learners' personal needs are stronger and innovative thinking is more divergent. On the one hand, the teachers' educational concepts should also follow the pace of the times, inject the essence of the times into their teaching concepts, have the awareness of actively using modern technology in their teaching, and actively respond to the challenges of intelligent education. On the other hand, it is required that teachers continuously strengthen their information awareness and accurately grasp the meaning of information literacy while adhering to information ethics and security. Only by deeply understanding information literacy can they realize that the most important for the foreign language teachers in the information age is their comprehensive ability to reserve knowledge and apply information technology. This will motivate foreign language teachers to learn the latest information theory, further promote the deep integration of the Internet and teaching courses, and improve their teaching quality and efficiently complete their own teaching tasks. (Zuo Wei, Ma Xin, 2022)

2) Foreign language information technology teaching should be optimized to provide practical support for teachers' improvement of their information literacy.

Based on the interpretation of some parts of the "Guidelines for College English Teaching", Zhang Wenxia and Li Shujing (2020) studied with a survey questionnaire the problems of and the countermeasures for the management of college English teaching in the new era. Her survey results showed that various universities have made significant improvements in the management of English teachers, but there are still many problems, such as imperfect teaching assessment system, single assessment criteria, inadequate teaching funds, lack of incentive support and relatively low intensity of teacher's technical training. To solve these problems, it is necessary to further update the education management model and strengthen the teaching of foreign language teachers in universities.

Improve the teacher's teaching assessment system and add assessment items. The traditional teaching assessment system characterized by defining the teaching level of teachers according to students' performance is no longer suitable for the information age. The "Internet+Education" era requires that teacher evaluation systems be gradually diversified. The information literacy of teachers should also be covered by the assessment and evaluation system, and information education knowledge should be included in the pre-employment assessment of teachers. The post-employment vocational training should be regularly assessed, comprehensively considering the information awareness and information ability of teachers, and motivating foreign language teachers to fully develop. (Wei Lan'en, Wu Feng, 2022)

Establish a sound incentive mechanism for teacher information literacy and increase investment. Zhang Wenxia and Li Shujing (2020) found through data analysis that college English teachers have heavy teaching work but relatively low pay, resulting in low enthusiasm for teaching. They suggested that universities should actively respond to national education informatization incentive policies, establish and improve school incentive systems, and provide financial support for teachers to carry out informatization education. On the other hand, material rewards are used to encourage teachers to actively participate in lectures organized by the school and various competitions related to information technology teaching. A sound incentive policy is a powerful driving force for teachers to enhance their information

and teaching literacy. The continuous improvement of teachers' enthusiasm is conducive to promoting their efficient completion of information technology teaching tasks, thereby promoting the process of information technology education. (Zuo Wei, Ma Xin, 2022)

Expand channels for foreign language teachers' information literacy training and strengthen the mechanisms of training. The 2020 edition of the College English Teaching Guidelines suggests that universities "establish and improve a training system for college English teachers, and incorporate college English teachers' regular training into the overall planning of the college's teacher and teaching development center; classify teachers into different types and vary the training according to the type of teacher." Wei Lan'en and Wu Feng (2022) suggested that when creating teacher training courses, a university should closely focus on the four aspects of information literacy, and the training content should adapt to the needs of the information society. Schools are not the only training venues, and practical training bases should be continuously expanded. Zhang Bowei and Cao Yuexin (2021) advocated for the construction of a cross-disciplinary information training system, promoting the integration of information technology education into pre-service and post-service training, and provide opinions on the training form, content, and methods. Wang Jianna (2020) and Weng Guoxiu (2010) suggested that to effectively enhance a teacher's information literacy, the first priority is to strengthen training of teaching skills, including knowledge on how to use campus networks and how to perform simple network maintenance. In addition, Zuo Wei and Ma Xin (2022) proposed to regularly hold information technology and skill competitions and discussions to gain experience and make progress through communication.

3)A favorable educational environment and a harmonious and intelligent campus should be created.

Schools should strengthen information technology construction and provide a good environment for foreign language teachers to improve their information literacy. Investment should be increased in the intelligent construction and equipment maintenance of libraries and classrooms. Facilities should be strengthened while building the school's soft power. The school not only needs to achieve full coverage of the campus network, ensuring smooth and fast network, but also needs to expand electronic foreign language teaching resources, so that teachers can use various teaching resources for free and enrich the forms of classes. (Hui Lijun, Jin Guochen, et al., 2020)

Online and offline communication should be integrated to create a harmonious academic atmosphere. On the one hand, schools should pay attention to the development of inter-teacher relationships. When conducting offline communication, foreign language teachers should actively learn from information technology experts and experienced teachers to gain experience. Teachers can also form an information learning community to promote harmonious coexistence among themselves. An online communication platform can be created where teachers are free to share resources of information technology. On the other hand, schools should encourage effective communication between teachers and students. Teachers should improve their professional information literacy and meet the needs of students, while students should learn to cooperate with teachers and improve the classroom learning atmosphere.

5.Conclusion

The existing research on the information literacy of foreign language teachers in Chinese universities mainly focuses on definition of concept, definition of connotation, necessity and importance, and survey of current situation and improvement strategies. The review found the research on the information literacy of foreign language teachers in universities is limited. Information literacy is a comprehensive concept that covers a teacher's information abilities from multiple perspectives. However, most existing literature provides improvement suggestions based on the overall concept and content of information literacy for foreign language teachers, lacking a comprehensive consideration of teachers. The authors believe that we should start with details and provide specific suggestions for improving information literacy by examining the differences in various factors of foreign language teachers.

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