

# Research on Information Literacy and Professional Development of Teachers in Higher Education

Hui Xiong<sup>1, 2, \*</sup>

<sup>1</sup>Hetao College, Nei Mongol, China

<sup>2</sup>Philippine Christian University Center for International Education, Manila, 1004, Philippines

\* Corresponding author: Hui Xiong (Email:376749892@qq.com)

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**Abstract:** The development and application trends of information technology, the characteristics of learners in the new era, the requirements of relevant national policies and the realistic needs of online teaching during the epidemic have all placed new demands on teachers' ability to apply information technology to teaching. In the new era, teachers must have good information literacy in order to comply with the teaching trend of the information age. In this regard, how to effectively improve teachers' information literacy has become an important and urgent research hotspot. This paper introduces the connotations and concepts of teacher information literacy and teacher professionalism, the relationship between teacher professional development and teacher information literacy, and the path options for teacher professional development.

**Keywords:** Information literacy, Teacher professionalism, University teachers.

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## 1. Introduction

In the information age, multimedia and the Internet have become important means for people to access information, and information technology has become an important symbol of modern human civilization and progress. With the development of information technology, information dissemination is moving forward with unprecedented speed and breadth, and modern information technology is gradually penetrating into all aspects of education, therefore, many countries take information technology in education as a catalyst to meet the challenges of the knowledge economy era and promote education reform. In recent years, China has gradually focused on the issue of "teachers' information literacy", closely combining teachers' "professional development" and "information literacy", based on educational information technology to change. In recent years, China has gradually focused on the issue of 'information literacy', combining teachers' 'professional development' and 'information literacy', based on educational information technology to change learning methods, reflect on teaching behaviours, self-monitoring, self-adaptation, continuous optimization and improvement of teaching behaviours, to improve teaching abilities and standards.

## 2. The Connotation and Conceptual Definition of Teacher Information Literacy and Teacher Professionalism

### 2.1. The connotation and definition of the concept of information literacy for teachers

The essence of "information literacy" is a basic ability that people need to possess in order to be globally informed. In 1974, Paul Zurkowski, President of the American Information Industry Association, pioneered the concept of information literacy and explained it as the skill of using a large number of information tools and key information sources to get

answers to questions. Once introduced, the concept of information literacy has been widely disseminated and used. In 1987, Patricia Bolivia, an information scientist, outlined information literacy as "the ability to understand the systems that provide information and to identify the value of information, to choose the best channels for accessing information, and to understand the value of information. In 1989 the Presidential Commission on Information Literacy of the American Library Association (ALA), in its annual report, recapitulated the meaning of information literacy as follows. "In 1992, Doyle's criteria for an information literate person in the Final Report of the National Forum on Information Literacy: Information literacy includes: Acknowledging that accurate and complete information is the basis for making informed decisions. Information literacy for information literate people include: The ability to systematically articulate problems based on information needs; The ability to identify potential sources of information and to specify successful search strategies; and the ability to retrieve information sources, including the ability to use computer-based information technology or other techniques. The information competencies of information literate people include: the ability to evaluate information; the ability to organize information for practical application; the ability to integrate new information into the existing body of knowledge; and the ability to use information and solve problems using critical thinking. In the context of the specific group of teachers. In the light of the current situation of teachers' information literacy in China, the information literacy of teachers referred to in this paper is specifically manifested as: information awareness, information knowledge, information competence and information ethics.

#### 2.1.1. Information awareness

This refers to the teacher's strong awareness of using information technology to solve practical problems. They are good at finding useful information from a large amount of information; they are good at linking information with practical work, life and learning; they are good at finding the key to solving problems from information; they are good at applying information technology to solve problems quickly;

they are creative in using information technology to solve problems; they know how to learn and can take the initiative to acquire new information and research and learn new information technology, etc.

### **2.1.2. Information Literacy**

This refers to the need for teachers to understand and master the basic theories, knowledge and methods of information technology and the basic knowledge of the development of modern information technology and the integration of subject curricula. Information literacy is the foundation of information literacy education.

### **2.1.3. Information Competence**

This refers to the need for teachers to master the operational skills of commonly used IT equipment and software, to be able to use information sources to obtain information, and to have the ability to transmit information, process information and apply information. They should be able to acquire information quickly, process information and generate expressions.

### **2.1.4. Information ethics**

It refers to the ability of teachers to correctly recognize and understand the cultural, ethical and social issues related to information technology and to use it responsibly. It mainly refers to: being able to recognize the significance of information and information technology and the role and negative impact it plays in social life; understanding and complying with various cultural, legal and ethical issues related to information technology; having strong self-control and being able to resist the temptation and pollution of undesirable information on the Internet; being able to surf the Internet civilly and use information responsibly; having a strong sense of social responsibility and a sense of participation, and usually being able to take the initiative to communicate with They are able to communicate with students through multiple channels and use information technology to provide psychological guidance, extra-curricular counselling and ideological education to students; they actively participate in the creation of an ideal information society and, while acquiring information, are able to actively provide true and reliable useful information, etc.

At the same time, teachers' information literacy also involves the following three levels of connotation: firstly, the knowledge level, i.e. teachers' understanding, sensitivity, desire and concern for information, which is a quality that every educator must have; secondly, the technical level, which means that teachers should have basic information literacy, multimedia literacy and network literacy; thirdly, the application level, i.e. the practical level of literacy, which is teachers' understanding of various The third is the application level, i.e. the practical level of literacy, which is a teacher's ability to understand and use various information technologies, i.e. the ability to collect, understand, analyse, process, handle, create and use information, i.e. teachers are required to be able to evaluate information, integrate information and use information. A teacher with good information literacy is able to rely on his or her own information awareness in the process of education and teaching, to quickly retrieve and analyse the knowledge needed in the vast ocean of information knowledge, and to translate it into education and teaching to promote the development of teachers' professional competence.

## **2.2. The connotation and definition of the concept of teacher professionalism**

Teacher professionalism refers to the process of professional growth in which teachers acquire professional knowledge and skills and improve their teaching quality in their professional practice through specialized training and lifelong learning throughout their careers. It has a two-tier meaning: it refers to the process by which an individual teacher, through pre-service training, gradually grows from a novice to a mature teacher with professional knowledge, skills and attitudes, and to the process by which the teaching profession as a whole progresses from a non-professional or paraprofessional occupation to a professional one. The professional development of teachers is an ongoing, dynamic process, one that is constantly deepening. Teachers' attitudes, values, beliefs, knowledge skills and various behavioural manifestations need to be constantly adjusted, revised, re-examined, assessed, challenged and tested, including, of course, the improvement of teachers' IT literacy.

The main aim of promoting teachers' professional development is to update their subject knowledge and to renew their skills, attitudes and methods in the light of new teaching techniques, teaching objectives, curricula and educational research. To become a mature professional, a teacher needs to expand his or her professional content and improve his or her professionalism through continuous learning and inquiry, so as to reach professional maturity. Expert Ma Li emphasizes that the development of a teacher's professionalism must be accompanied by the development and improvement of professional knowledge levels and professional skills and attitudes, and that merely having an increase in professional knowledge does not represent an overall increase in the quality of a teacher's professionalism; the teaching profession is a profession with strong personal characteristics and self-consciousness, and teachers must have a full sense of self-professional development and must internalize all factors of external influence into personal Teachers' professional skills are formed gradually through experience, reflection and practice, and are the result of perceiving, internalizing and integrating professional knowledge and theory with personal application situations.

## **3. Teacher Professional Development and Teacher Information Literacy**

The rapid development of information technology and the Internet has brought profound changes to education and teachers, and information literacy has become an important part of teachers' professional development, specifically in the following aspects.

In terms of the role of the teacher, the teacher is no longer the main subject of the teaching process in the information age, and has been transformed from a single knowledge transmitter to a builder of learning modules, an organizer of learning activities and a provider of information resources. Teachers should therefore become experts in the acquisition and transmission of modern educational resources, have a strong sensitivity to information, know the effective channels for acquiring information, have a good grasp of the skills of selecting and rejecting information, and be able to discriminate and analyse the information they acquire and evaluate it correctly. The development of information and the updating of knowledge require teachers to be information

literate.

In terms of teachers' professional quality, with the application of multimedia technology in the classroom, the introduction of computer networks into the teaching of subject courses and the widespread use of information technology in the field of education, traditional educational theories and concepts, teaching strategies and modes, teaching methods and means are undergoing profound changes. The teaching mode of "one textbook, one mouth, plus chalk dust", which has been inherited for many years, is slowly disappearing and is being replaced by a new teaching mode in a multimedia network environment. They should also be able to adjust their teaching ideas and strategies according to the latest information on education and teaching, be in a constant state of "negation" in their own education and teaching, so that they can keep up with the times, and have the scientific research skills to adapt to the modern information society.

In terms of the target audience, teachers should pay attention to humanistic care, focus on cultivating students' information literacy, and guide students to make proper use of modern information technology channels such as the Internet, books and magazines, television and other channels for investigation, learning and developing innovative abilities according to their interests, age characteristics and teaching needs. Innovation is the soul of a nation, and talents in the new century must have a sense of innovation, an innovative spirit and the ability to innovate, which is also the basic spirit of quality education. The improvement of students' information literacy is part of the objectives of quality education, and research and independent learning in the online environment also require students to have a certain level of information literacy. Therefore, teachers must first strengthen their own information literacy and have the awareness and ability to innovate in order to better guide their students and to fully implement and promote quality education.

In terms of teachers' focus, the integration of IT with the curriculum implements modular operation and task-driven teaching, which integrates IT into subject teaching and integrates relevant knowledge from other subjects, requiring teachers to use IT as a cognitive tool for acquiring information and solving problems as fluently and naturally as using the blackboard and chalk, so teachers should have the ability to design and produce multimedia courseware. Teachers should therefore have the ability to design and produce multimedia courseware, and are required to produce courseware with strong scientific, artistic and creative qualities; for those contents that are particularly suitable for using modern media to assist teaching, they should take great pains to produce software to achieve the organic integration of information technology and the subject curriculum, and make full use of network technology for teaching, so as to optimize the teaching process and improve teaching efficiency.

#### **4. Path Options for Teachers' Professional Development: Cultivating Teachers' Information Literacy**

In order to be designers and developers of curriculum, researchers of education and learners of new knowledge and technology in the information age, teachers must adapt to the

impact of modern information technology on traditional educational activities, strive to adapt to the requirements of the information age on teachers' information literacy and promote the development of teachers' professionalism. Then, there are several main ways to enhance teachers' own information literacy as follows.

##### **4.1. Enhancing teachers' educational theoretical literacy**

In the education information environment, teachers' theoretical literacy in education needs to be upgraded. On the basis of the traditional teaching model, information technology is actively used to develop and create a new kind of learning-based and student-centred teaching activity. Strengthen teachers' learning of constructivist learning theory, multiple intelligence theory, connectivity learning theory, innovation promotion theory, blended learning theory, and minimal cost and performance theory. With the development of science and technology and the emergence of new things, teachers should keep abreast of the times in the concept of information technology in education, lead the pace of development in the information age and have an awareness of information ahead of time. In the education informatization environment, teachers should constantly strengthen their self-learning, recharge their batteries, create an environment conducive to self-growth, strengthen their educational theoretical literacy, and enhance their own professional development and level.

##### **4.2. Improve teachers' ability to handle information technology**

In the education informatization environment, teachers should constantly improve their academic level, teaching level and information technology processing ability, enrich and broaden their horizons, constantly acquire information, constantly understand, grow, use and update their knowledge, and teachers should actively use the Internet to acquire information resources, constantly enrich and improve the content of education and teaching. In the education information environment, the concept of computer multimedia-assisted teaching has been integrated into the classroom. Most teachers are able to use multimedia courseware such as PPT for teaching in the classroom. With the development of technology and technological advances, the technology of multimedia courseware production is changing day by day. To address the problem of teachers' lack of updated information technology, high-level and in-depth technical training for teachers should be strengthened to enhance the technical content of teachers' multimedia courseware production. Teachers should be trained to use professional multimedia courseware production tools such as Photoshop, Cool Edit, Premiere, Flash, etc.

##### **4.3. To improve teachers' ability to use online teaching and learning**

In the education information technology environment, collaborative, cross-learning, developmental and discussion-based approaches to online teaching can be used to improve teachers' ability to use the Internet for teaching. In the collaborative approach, students are grouped into specific task groups, and specific tasks are discussed on an ongoing basis via email or BBS. In the mutual teaching and learning approach, students can communicate with each other online, discuss problems together and teach each other, continuing

the role of learning partners in the traditional classroom in online teaching. The developmental teaching method is used to make use of the richness and accessibility of online resources to cultivate students' interest in learning and creativity. Through the inspiration and guidance of teachers or the help of other educational resources, students' active spirit of learning and sense of inquiry are stimulated, and students are promoted to draw certain conclusions through a process of collecting information resources, exploring and summarizing problems on their own, which plays a role in transferring and sublimating knowledge. The use of a discussion-based teaching approach, which focuses on heuristic teaching and discussion of problems, facilitates communication and exchange between teachers and students and between students and pupils. In the discussion-based teaching mode on the Internet, teachers can use BBS, chat rooms and email to discuss and answer questions with students.

#### **4.4. Explore models of effective teaching and learning**

Focusing on the needs of students is at the heart of effective teaching. Effective teaching means that students achieve concrete and tangible development and progress after a period of teaching under the guidance of an advanced teaching philosophy. The "teaching" of effective teaching includes three main aspects. The first is to understand what students want to learn and what knowledge and skills they hope to gain, to stimulate students' interest, enthusiasm and initiative in learning and make them willing and willing to learn; the second is to clarify the teaching objectives, so that students know what they want to learn in this course or lesson and to what extent they want to learn it, and to continuously develop and enhance their cognitive, emotional, skills and self-confidence; the third is to adopt diversified and student-friendly teaching methods to enrich and organize teaching and learning activities. In the education information environment, teachers can adopt flipped classroom, independent, exploratory, interactive, research and collaborative teaching methods to stimulate students' curiosity and internal motivation for learning, continuously enrich and expand students' knowledge horizons, promote students' learning efficiency and effectiveness, and enhance the effectiveness of

teaching.

## **5. Conclusion**

The cultivation of teachers' information literacy is conducive to the improvement of teachers' professional quality, the renewal of teachers' educational concepts, the acceptance of cutting-edge educational concepts and educational technology, and the improvement of teachers' educational teaching level; it is conducive to the improvement of teachers' affinity and the establishment of a good teacher-student relationship. Strengthening the training of teachers' information literacy has very important practical significance and far-reaching implications for optimizing the development of teachers' professionalism and promoting the realization of education modernization.

## **References**

- [1] Han Feng . On the influence of teachers' information literacy on teachers' professionalism [J]. Educational Theory and Practice, 2010, (33): 39- 41.
- [2] Jiang Yihong . Multimedia and Internet teaching and teachers' information literacy [J]. Journal of Changzhou Information Vocational Technology College, 2007, (12): 32.
- [3] Chen Wei. The Professionalization of Teachers in Western Universities [M]. Beijing University Press, 2008.
- [4] Cui Xiuming . Research on the professional development of Chinese university teachers and its countermeasures [J]. China Science and Technology Information, 2009, (21): 200-205.
- [5] Nan Guonong . How to understand information technology and its teacher literacy formation[J]. Modern distance education research, 2013, (1): 3-6.
- [6] Chen JK, Kong Fanshi . A comparative study of information technology in Chinese and foreign education [M]. Science Press, 2007,(4): 93-109.
- [7] Ma Xinyan, Zhu Yiming, Xue Feng. Research on the construction and application of teachers' information literacy analysis framework[J]. Open Education Research, 2019, 25(03):92-102.
- [8] Dong Yan,He Jingyu,Xu Sing,Zheng Yafeng.Contextualized analysis and development strategies of STEM teachers' information literacy[J]. China's e-learning,2020(08):70-77.