

Integrating Information Literacy Learning in China's Technical Vocational Education: Challenges and Opportunities

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Abstract

Information literacy provides critical skills for professional growth and is a good predictor of vocational college learners' future job success. As a progressive measure, higher vocational schools should focus on the development of competent citizens, highly skilled talent, and entrepreneurs in the information age. Improving the information literacy of vocational college learners and training them to live and study in an information-based society have emerged as important objectives for the talent development of vocational colleges. This review focuses on the concept of information literacy, analyzes the challenges that exist in present information literacy training for vocational college learners, and to offer a mode of information literacy training for vocational college learners, and details the techniques utilized to implement the mode. Colleges should carefully build courses and educational activities around it. The integration model in education approach is proposed, which integrates information literacy education with professional education, the learning scenario with the workplace situation, the learning task with the workplace task, and the learning mode with the working mode.

Keywords: Information Literacy, Career Development, Higher Vocational College Learners, Vocational Colleges, Information Literacy, Improvement Mode

Introduction

There is no comparison between the amount of information available now and what was available in the 17th century (Tewell, 2015). Only those with a solid foundation in information literacy will be able to learn the basics in this setting. The knowledge skills learned

at vocational schools will have far-reaching effects on China's societal progress. Therefore, it is critical to investigate the challenges that have arisen in the current education of information literacy to learners at vocational colleges and to offer an efficient strategy for enhancing learners' information literacy.

The mobile internet age has seen a rise in the digitalization of many aspects of human life, including work, schooling, and leisure, and big data is constantly rewriting human society (LIBRe Foundation, 2016). One of the distinguishing characteristics of people in today's information culture, information literacy has become increasingly important in the workplace, in school, and in everyday life (Zhixian, 2013). For people to find work, advance in their careers, or move to a new city, professionals nowadays need to demonstrate advanced information literacy skills. It is of the utmost importance and urgency to ensure that learners in higher vocational institutions receive education in information literacy as part of both the "general education" goal of producing well-rounded members of the information society and the "occupation" education goal of preparing learners for careers in their chosen fields (Berk, 2022). As a result, universities with a focus on vocational training need to give the interconnected effects of the information technology revolution on the modernization of industry and the professional development of the workforce more consideration. Colleges should also assess and investigate learners' information literacy education from the perspective of career management, learn about the current state of information literacy education in higher vocational colleges, and discover the challenges and

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opportunities that exist in this field, as well as the best method for addressing them (Asian Development Bank, 2021). As a solution to the issues mentioned above, it is important to design the goal and course of information literacy education based on research into the relationship between information literacy and career management, and to expand information literacy education in colleges and universities to the field of vocational ability demand in industries and businesses.

Information Literacy in a Nutshell

Over the course of the last century, researchers who are relevant to the topic of information literacy have discussed the concept at length in the Final Report to National Forum on Information Literacy (Alexandrina, 2005). A person with high information literacy must be aware that they can only rely on complete and accurate information to make correct decisions; they must be able to specify information demand, determine potential information source, and have the aid of a computer and the Internet. The goal of promoting information literacy in the context of vocational college learners is to help learners develop an accurate comprehension of information and the ability to effectively use a computer network to gather and use relevant information for their studies and everyday lives (Fu, 2013).

Existing Issues with Vocational College Learners' Information Literacy Education

Learners at vocational colleges are generally unmotivated and uninterested in learning about information literacy since they do not expect to use it in their future careers. Increasing learners' motivation to learn is essential for fixing this problem. Now, only a minority of learners make autonomous use of online materials. Most learners at vocational colleges have a low information awareness, a low information awareness of getting and utilizing information, a low information desire, and a low information location ability, although this is changing because of information literacy education (Zhang et al., 2022).

Learners' capacity to assimilate, integrate, and transform learned information into their own knowledge and

abilities is a primary manifestation of information literacy's internalization capability; yet this is an area where vocational college learners significantly lack. For instance, in the Basics of Computer Applications professional learning process, educators have pointed out various channels for learners to find information, including library databases, online special data, government websites, and search engines, among others; however, in the practice of information search, when learners encounter problems, the first channel they consider is still search engines, which is concerning. This phenomenon also demonstrates the inability of learners at vocational institutions to acquire the talent of information search and to apply and search knowledge flexibly (Bin et al., 2020).

Learners in vocational programs need to build and develop their information ethics. A student's information aptitude and information awareness are not necessarily tied to lessons in information ethics. A lack of educational activities linked to information morality and information emotion has led to poor levels of information morality and information security awareness among Chinese vocational college learners. There are major concerns over the protection of learners' privacy, intellectual property, and cooperative duties, and the dissemination of misinformation by a small number of learners. Learners are notoriously careless with their private information, especially in the context of rapidly developing digital media; they freely share content from microblogs, use pirate software, and similar behaviors (Xiong, 2011).

Relationship of Career Development and Information Literacy

Humanity has entered the era of big data because of the development of information technology. There is transition occurring in the digital, intelligent catalytic, agricultural, and service sectors. There is a constant emergence of brand-new business sectors and ideas. As a result, there is a morphing of professions. Therefore, to grasp and adapt to the needs of future professional growth, individuals must be capable of screening, detecting, processing, and creatively exploiting massive volumes of data. The success of professionals in the modern workplace depends on their ability to effectively use information in different contexts (Borkovich & Noah, 2014).

The “Meta-Literacy” of Occupational Literacy is Information Literacy

Mackey officially introduced the term “Meta-literacy” in 2011, characterizing information literacy as meta-literacy and expanding on its ramifications (Mackey & Jacobson, 2010). To improve one’s critical thinking and teamwork abilities in the digital age, one must develop meta-literacy, which is defined as a comprehensive framework through which individuals acquire, produce, and share information as information consumers and creators via social media and online communities in a collaborative network environment (Helin, 2015). Literacy that fosters further literacy is called “meta-literacy” (Caie & Sujie, 2015). Therefore, information literacy is not merely a set of abilities that allow people to interact with information; it is also the awareness, knowledge, perspective, and way of thinking that allow people to interact with information, most notably metacognition, or critical self-reflection (Shaohong & Ran, 2016).

The information landscape of the future workplace is complex and ever-changing. To improve one’s position in the system’s ecological niche, one must be able to acquire, comprehend, and apply information about the workplace on a consistent basis; participate in a variety of workplace activities with the appropriate attitude, emotion, code of conduct, and ethics; work effectively with others; and critically reflect on, think creatively about, and share information from a variety of sources. A person’s level of information literacy might be gauged by their professional demeanor. Consequently, information literacy has evolved into a meta-literacy of professional literacy and a foundational “IQ” activity that is internalized by all people (Chopra, 2020).

Information Skills in Career Development

Career acquisition, career adaptation, and career migration are the typical steps in a professional’s upward mobility. To advance in one’s chosen field, one must actively seek out information, examine one’s existing status objectively, determine one’s work goals and preferences, and recognize the benefits and drawbacks of one’s acquired expertise. They should also be aware of the shift in employment prospects brought about by industrial upgrading, analyze, and evaluate their current

work situation and career value objectively, actively seek for employment opportunities, and maintain communication with their care providers (Papathanasiou et al., 2014).

To fulfill these four criteria, individuals must be able to formulate retrieval strategies to collect relevant information; evaluate the authority, value, and context of information; analyze and integrate the collected information; extract useful information from it; and make independent decisions informed by critical and creative thinking (Dwivedi et al., 2021). This is an expert showing off their knowledge in a certain area. Therefore, only those with high levels of information literacy can use information software and analytical technologies to think critically about collected career information, making sound decisions quickly. This increases their flexibility in the job and their ability to switch careers.

The Information Age’s Goal for Higher Vocational College Information Literacy Education

Higher vocational education in the information age, whether it be theoretical or applied, necessitates the development of superior information literacy abilities. Graduates of higher vocational programs should have a meta-literacy in information literate since it has become the general literacy of higher vocational education. Through information literacy education, universities of applied sciences should accomplish three tiers of outcomes: producing information age citizens competent in self-sufficiency; developing talent with professional competitiveness; and producing remarkable entrepreneurs (Diao & Yang, 2021).

Develop Qualified Citizenry Capable of Sustaining Themselves in the Information Era

Competent individuals in today’s information society must possess a solid foundation in information literacy. Citizens of the information age need to be able to find and evaluate information on the Internet, use information technology to process information in our daily lives, study and work with a variety of problems encountered in the code of conduct, and follow the rules set forth by the information society, laws, and regulations (Apuke &

Iyendo, 2018). This indicates that people have the skills necessary to thrive in the modern information society.

Produce Trained Talent with Professional Competitiveness

Since the beginning of the information era, big data and artificial intelligence have become major forces in economic growth, and data information has become the most crucial ingredient in the manufacturing process. In addition to the Internet sector, traditional sectors such as agriculture, manufacturing, and the service sector are also going digital and smart as a result of the information technology revolution. Only those with a deep familiarity with data, the ability to effectively analyze that data, and the creativity to apply technology to a wide range of problems in the workplace will thrive (Bickley et al., 2022). The information literacy skills acquired by learners at the postsecondary vocational level are thus foundational to their future professional success.

Develop Exceptional Entrepreneurs

High-quality products and services may be developed in today's digital world by analyzing massive amounts of data. Big data can help us learn new things and create things of value for ourselves. It is possible to use data to guide the creation of new products and services once people's perceptions have been modified (Schoenberg & Kukyer, 2013). Entrepreneurs will need data awareness, data analysis tools, data analysis abilities, and critical thinking talents to fully realize the opportunities afforded by big data. Education in information literacy at universities of applied science and technology should lead to the development of successful business leaders (Ester, 2020).

The Integration of Information Literacy in Vocational Education

Information literacy is fostered through a learning process that includes the explicit education of information awareness, information knowledge, information skills, and information ethics at the postsecondary vocational level (Stehle & Peters-Burton, 2019). Constructivism is a school of thought that views education as a process of creating new knowledge. For instance, individual

constructivism proposes that, rather than memorizing facts, people learn by actively engaging in the process of knowledge construction via their own experiences (Jia, 2010). According to social constructivism, people acquire knowledge as a result of the mutual influence of their own informational contributions to a given context and the social and cultural exchange that takes place inside that context (Lisa Bolin et al., 2018). Therefore, the most effective method of education is repeated practice in operational contexts. The education scenario should be fused with the workplace scenario, the learning task should be merged with the workplace task, and the learning mode should be combined with the work mode to ensure that learners are well-prepared for success in both their professional and information literacies. Basic to it is the integration of training in both information literacy and professional literacy.

Instructional Content

Although professional educators at universities have begun to pay more attention to information literacy in recent years, libraries are still the primary location where learners may learn the skills necessary to use information effectively. Although more and more scholars have advocated for including lessons on information literacy in professional programs, this has not yet been implemented (Qian Caiping, 2020). However, comprehensive integration has only begun. Training in the development of scientific research skills is the primary focus of library-led information literacy education, with retrieval and integration of scientific literature serving as the central content area, and retrieval software and scientific literature databases serving as the primary techniques and tools for achieving this goal. Professional education, however, which has as its primary purpose the development of occupational competence, best exemplifies the professionalism of higher vocational institutions. Training for vocational competence should be the primary goal of information literacy education in higher vocational colleges, with searching for industrial development, enterprise operation, or workplace knowledge, as well as solving workplace problems, as the primary content and business data analysis and software application as the primary means of education (Findeisen & Wild, 2022). Consequently, institutions of higher vocational education need to combine professional training with education in information literacy, rather than

seeing the two as separate or competing tracks. As a type of meta- or general-literacy, information literacy is a part of the curriculum and is reflected in the learning outcomes for every subject area.

Learning Setting

The capacity to adapt one's approach to information literacy to meet the specific demands of every given circumstance is what distinguishes an information literate individual. Information literacy education at higher vocational schools across disciplines should model the classroom after the learners' expected future professional context. Under the merger of industry and education, today's practice and training courses at higher vocational schools take the shape of actual enterprise practice and virtual simulation training room, providing learners with an environment that is as close as possible to the real world of work (Wrenn & Wrenn, 2009). However, it should not be haphazard and should be planned to teach learners how to effectively use knowledge. Information literacy education scenario design is lacking and should be strengthened. The classroom context is very different from a professional one.

Learning Activities

The job market and potential careers for graduates from various disciplines are different. It is an essential part of the present project-based education reform at vocational institutions, in which learners' learning activities are centered on regular employment and post-work duties and comprise both standalone and cumulative projects (Cleary & Noy, 2014). Each learning task is designed to improve learners' performance on a specific skill or ability in the context of a single workplace or professional problem; these tasks require learners to acquire and integrate information; they provide learners with solutions; and they focus on a single learning outcome. In many cases, the difficulties learners encounter or the abilities they call upon during certain learning tasks are both random and unsystematic. This is not consistent with dynamic action strategy transfer, which requires either abstracting the system or the entire action strategy. Therefore, it is crucial to provide comprehensive, varied, dynamic, and tough assignments for use in the classroom. Learners are typically put through their paces

by presenting them with real-world difficulties in a simulated or real-world business setting. Learners need to learn to think independently and critically to effectively manage uncertainty, create new products, and develop solutions; these skills are just as important as expanding learners' knowledge via study and reflection. Learners will benefit from increased motivation to improve their information literacy and learning capacity, as well as their future employability and mobility, if such an activity is implemented (Harackiewicz et al., 2016).

Learning Mode and Approaches

Learning by doing is a major tenet of vocational education, and this philosophy is strongly supported by these schools. Learners are expected to work together in groups according to their grade level, play games or engage in virtual activities created by educators, or do inquiry-based learning assignments (Chernikova, 2020). Learners are expected to gather information, filter it, evaluate it, and generate a proposal for a solution all on their own when completing these tasks or projects. Teachers, meanwhile, should provide instantaneous feedback to learners on the outcomes of their replies, helping them to summarize the data, draw conclusions, and refine their strategy as needed. This method not only evaluates and trains learners in information literacy, but it also assesses and cultivates learners' capacity to solve problems in the workplace. As part of this process, adjustments should be made to the approach, impact, and final course performance evaluation, with enterprise evaluation components interwoven with information ethics and business culture to enrich learners' work experiences (Selvaraj & Azman, 2020).

Even though higher vocational colleges have been delving more deeply into the study of information literacy education and have been actively engaged in a great deal of creative design in recent years, they have often only explored one of the above four aspects, and there is still a lack of overall thought and design of the above four aspects. Information literacy is seen as the meta literacy of professional literacy, and with integration approach systematically elucidates the integration path of information literacy education and professional literacy education from four perspectives: educational material, educational context, educational activity, and educational

mode. The integration approach encourages the growth of information literacy education from one point to the surface, and then to three dimensions. For the further development of the reform of the talent training technique in higher vocational institutions, it has some guiding importance and reference value.

Pathways for Improving the Information Literacy of Vocational College Learners

Provision of Information Practice Course to Increase Learners' Information Literacy in General Knowledge

To prepare learners for professional information literacy training in later years, they are taught the fundamentals of computing, the components of computer systems, network topology, IP address, and domain name, and how to use the internet to find information (Geladze, 2015). Learners at vocational schools should be required to take both a theory and a practice course on information literacy so that they may learn to utilize common software, decompress files, destroy viruses, and read PDFs, among other skills. There are a variety of educational options available, including specialized lectures. Multimedia technology, information retrieval technology, and network basics are also covered in this hands-on course in addition to the Windows operating system, word processor, spreadsheet, and presentation software. There are several effective ways to instruct learners, including the project-based approach, the case study method, and the task-based approach (Mantiri, 2014). As a result of the current growth of network education, educators have also begun experimenting with network teaching methods, using QQ, Wechat, and other software to aid in education (Zhou & Li, 2020).

Increasing Learners' Professional Information Literacy through Integration of Information Literacy Education in Professional Courses

Common knowledge information literacy serves as the foundation for the development of professional information literacy, which aims to equip learners with the foundational skills necessary to effectively use and exchange information, recombine and create information,

evaluate, and process information, and more generally to become effective members of society (Geary, 2021). The best approach to developing learners' professional information literacy is to combine education in both subject matter expertise and information literacy. "So-called" integration refers to a dynamic and organic process that mirrors the integration of information literacy education components through the use of professional course education. It is possible to integrate information literacy education and professional courses by following these steps: (1) reasonably confirm teaching objectives in accordance with curriculum standards; (2) analyze learners' information literacy status, cognitive structure, and age; and (3) determine the joint point of information literacy education and professional courses, analyze Chinese current curriculum standards, and identify information literacy educative goals. For instance, educators can set up retrieval tasks for learners in the curriculum, and then have learners complete the retrieval task via network retrieval, or use a network platform to assign tasks, and then have learners complete the tasks via network retrieval and submit the task; the educators will correct the completion situation of tasks in the classroom, so learners can know their task performance in a timely manner (Zhao, 2014). With this method, education in information literacy is more likely to have a lasting impact on learners.

Developing Learners' Attitudes, Emotions, and Values through a Variety of Outlets and Contexts

For learners to experience the cultural connotation contained in information technology, it is important to provide continuous opportunities for learners' learning of information technology and encourage learners to connect emotion, attitude, and value view throughout the entire process of cultivating learners' information literacy (Khan et al., 2021). Affection education encompasses teaching about attitudes, values, and emotions; however, the education impact is always negative if we conduct affection education solely through text display and language expression; thus, practice and experience are necessary to achieve a more positive education effect (Ariza-Hernández, 2017). Therefore, it is crucial to pay attention to the development of learners' common knowledge and professional information literacy alongside the growth of learners' emotional, attitude,

and value perspectives. Teachers can actively construct environments that aid learners in conducting scientific inquiry and improve learners' grasp of how to apply information technology to solve issues throughout the course of education. Teachers may make a positive impact on their learners' mental health by fostering a classroom environment that is open, accepting, and collaborative. The vocational colleges can hold a range of cultural activities, such as a speech on living a low-carbon lifestyle, a pioneering competition, and a debating competition; throughout the activities, learners must use the network to collect data, record video, and generate PowerPoint presentations (Ferm, 2021). Without even realizing it, learners' information literacy may improve because of these activities.

Cultivate Information Literacy, Seminars on Knowledge Retrieval

The number of books (both physical and digital) in China's vocational college libraries is growing, and borrowing policies are getting easier, in response to the country's increased emphasis on this type of education (Kang et al., 2022). The acquisition of CNKI China Journal Full-Text Database, Wanfang Data, and other large-scale literature data systems by several vocational college libraries has improved research and teaching circumstances for faculty and learners and provided learners with opportunities to practice literature retrieval (Musser & Atwill, 2021). Library professors will present the distribution of books gathered, as well as the fundamental technique of information search and acquisition, to incoming freshmen in lectures delivered by class unit. However, owing to time limits, learners will not be able to receive in-depth knowledge. It is preferable for the libraries to be responsible for constructing a literature retrieval practice course in the first semester so that first-year learners may gain experience with retrieval methods for book information and literature, as this is not often offered by vocational colleges. It is important to spread fundamental understanding of literature retrieval through means such as lectures and the distribution of user manuals if the construction of a practical course in literature retrieval is not possible due to time or other constraints (Xiao, 2019).

Conclusion

The cultivation of information literacy skills is a crucial priority of the current vocational higher education institutions. Increasing information literacy in the context of economic needs and global competitiveness is a primary focus of competence training in today's vocation institutions. Information literacy instruction at technical institutions is just as challenging and time demanding as it calls for the involvement of several stakeholders. Through the development of an enhancement mode grounded in the integration approach is deemed necessary. The integration model for information literacy, which emphasizes the cultivation of learners' emotions, attitudes, and value views in addition to the development of common knowledge and professional information literacy, could help vocational institutions fill in the gap on students' lack of information literacy competence. By taking into consideration, learners of vocational schools will be equipped with the information literacy skills essential to a wide range of global workplaces and occupations.

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