Evolutionary Characteristics of Japanese Information Ethics Education in Digital Citizenship

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Abstract: The development of information and communication technology is continuously reshaping the methods of teaching and learning in the digital age. A review of the changes in Japanese information ethics education reveals that a transformation is taking place in the education of information ethics literacy, primarily focused on network etiquette and moral constraints. Digital technology has created a second identity for citizens in virtual society and has also shifted information ethics education from self-protection to a form of digital citizenship education with critical thinking. This transformation is positively influenced by the digital society's impact on citizen identity, making its development inevitable and set to revolutionize the methods and content of citizenship education globally.

1. Introduction

In the 1960s, due to concerns about the proliferation of information generated by computers, information crimes, privacy violations, information leaks, copyright infringements, and a series of social issues, the Japanese academic community formed the theory of information pollution, which later became the foundation for the development of Japanese information ethics education. The relatively closed and conservative campus culture of Japanese primary and secondary schools provided fertile ground for the development of information ethics education, gradually leading to a self-protective and restrained use of the Internet. On one hand, this awareness negatively impacts the application of digital information, hindering free and collaborative learning in digital society. On the other hand, the internet information dissemination under algorithmic thinking offers an efficient and convenient channel for false, incorrect, and malicious information, disrupting the health quotient of digital society and not adapting to the need for free and comprehensive development of individuals in the digital era[1-2].

2. Developmental Stages of Information Ethics Education in Japan

2.1. Emergence of Theories on Information Ethics Education in Japan

In the late 1960s, Japanese society's research on information pollution drew the attention of the educational sector. In 1987, the National Council for Educational Reform in Japan mentioned in its third report the section "Responding to Informationalization Reform", suggesting the establishment of information ethics education to build an environment centered on self-protection and moral constraints [3]. This marked the beginning of information ethics in Japanese educational policy. However, research and practical implementation of information ethics education stagnated in the following decade. According to Cinii, there were fewer than ten scholarly works on information ethics education. At that time, it was commonly believed in Japanese society that information ethics literacy was only necessary for professionals involved in information dissemination, editing, and processing[4].

After the mid-1990s, with the development of the internet and the popularization of personal computers in Japan, more and more Japanese teenagers became users of internet terminals. The

urgency and importance of information ethics education were quickly recognized by educational authorities and schools. In 1994, Japan's Ministry of International Trade and Industry (now Ministry of Economy, Trade, and Industry) and the Ministry of Education (now Ministry of Education, Culture, Sports, Science and Technology) jointly launched the "Internet Utilization Environment Project Support for 100 Schools Plan", connecting over a hundred primary and secondary schools to the internet [5]. To guide students in better internet usage, Chiba Arts High School in Japan introduced an internet etiquette guide in 1995, which has been continuously updated and used to this day, making it one of the earliest secondary schools in Japan to implement information ethics education. Teaching students certain internet etiquette became a significant characteristic of early information ethics education in Japan [6].

2.2. Exploration of Information Ethics Education Policies in Japan

In 1996, the Central Council for Education's "Vision for Japanese Education in the 21st Century (First Response)" summarized information literacy education as encompassing three aspects: practical ability to utilize information, scientific understanding of information, and attitude towards participating in the information society. In 1998, Japan's Ministry of Education introduced the "Comprehensive Learning Time" course in primary schools, incorporating content related to information ethics. Middle schools' "Technology and Home Economics" courses also included teachings on personal information and copyright protection. In March 1999, Japan issued new guidelines for high school learning, establishing the compulsory course "Information" and emphasizing information ethics education to foster students' attitudes towards participating in the information society. Since then, Japan implemented comprehensive coverage of information ethics education from primary to high school, retaining related content in policy practices thereafter [7-8].

2.3. Japanese Information Ethics Education Curriculum Standards

In 2002, the Ministry of Education, Culture, Sports, Science and Technology revised the "Guidelines for Educational Informatization" for the second time, defining information ethics as "the basic way of thinking and attitude in conducting activities in the information society." In addition to teaching rules and etiquette on the internet, teachers in primary and secondary schools started to introduce topics like "how to avoid online dangers" and "how to protect personal privacy", broadening the scope of information ethics literacy education [9]. However, the focus during this period remained limited to moral constraints in online social behaviors, emphasizing the "prohibitive" nature of personal online actions and reducing students' exposure to the internet.

In 2004, a murder incident triggered by cyberbullying occurred at a primary school in Sasebo, Nagasaki Prefecture, drawing widespread attention to information ethics education. Consequently, from 2005, the Ministry of Education, Culture, Sports, Science and Technology implemented the "Information Ethics Support Project" for three consecutive years, strongly supporting the practice of information ethics curriculum in primary and secondary schools. In 2007, the Ministry summarized the practical outcomes and released a demonstration curriculum for information ethics teaching. This curriculum aimed to cultivate students' attitudes towards participating in the information society, providing systematic guidance on information ethics teaching content from primary to high school. However, the demonstration curriculum was not mandatory and was only a reference for information curriculum teachers.

In 2008, Japan's Central Education Council revised and published new guidelines for primary and secondary school learning, with explanatory texts on information ethics education appearing in the general rules and various subjects. The subject "Morals" officially incorporated information ethics into the curriculum. However, due to teachers' lack of personal information ethics literacy, insufficient teaching experience, and lack of teaching cases, most teachers treated information ethics teaching merely as a part of students' life guidance classes.

2.4. Legislation and Textbook Support for Information Ethics Education in Japan

In 2009, the Japanese government implemented the "Act on the Safe and Secure Internet Use for Young People," requiring internet regulatory bodies to filter online information through software. In

2010, the Ministry of Education, Culture, Sports, Science, and Technology revised the "Guidelines for Education Informatization" for the third time, specifying the necessity and specific guidelines for information ethics education at different stages of schooling. In 2013, the "Personal Information Protection Act" was revised, mandating anonymous processing of personal information when used. In 2015, the Ministry collected and compiled national cases of information ethics teaching practices, divided into three parts: for educators, students, and the community, for use by schools nationwide. It also released a series of digital teaching materials.

2.5. Integration and Development of Information Ethics Education and Digital Communication Technology in Japan

With the widespread use of smartphones and tablets, the Ministry of Education, Culture, Sports, Science, and Technology updated digital teaching materials on smart devices and social media after 2018. However, the content primarily focused on "what should not be done on the internet" and "how such actions can affect others." In 2017, the Ministry revised and published new learning guidelines, further clarifying the information ethics content for each stage of schooling. The primary school guidelines require teachers to help students understand how to make correct judgments as information receivers and bear responsibility as information senders, actively considering the impact of information dissemination on daily life and social development. Middle school mathematics requires students to critically think and judge online information. Middle school music requires understanding of copyright and respect for others' creations. Middle school social studies require students to use independent research and learning methods on the internet. High school public subjects require students to make reasonable and correct judgments based on the validity and reliability of online information. These revisions, not exhaustive, reflect the Japanese government's intention to strengthen students' ability to correctly assess information through new information ethics education.

In 2019, the Ministry of Education, Culture, Sports, Science, and Technology revised the "Guidelines for Education Informatization" for the fourth time. The focus at the primary school level is on understanding personal privacy and copyright, at the middle school level on using the internet at appropriate times and places, and guiding students to publish and disseminate internet information responsibly. At the high school level, emphasis is placed on understanding the adverse effects on others and society from personal privacy, copyright protection, cyberbullying, and public opinion, especially noting these effects can occur unknowingly, hence the need to learn self-protection and improve judgment against harmful online information. The same year, the Ministry proposed an education action plan to enhance students' survival skills in the digital society － the "GIGA School" concept. This plan aims to equip each primary and secondary school student with a digital device and develop high-speed, high-capacity communication networks to provide services for independent and collaborative learning online. However, there are concerns among teachers and parents that learning with digital devices could harm students' physical and mental health, particularly the adverse effects of incorrect, false, and malicious information on the internet on young people.

3. Transformations in Japanese Information Ethics Education from the Perspective of Digital Citizenship

In today's society, which is in the midst of a rising trend in digital technology development, the empowering role of digital technology is demonstrating remarkable creativity and influence across various industries. During the COVID-19 pandemic, the application of digital technology in the field of education accelerated rapidly, and the remote online learning model has significantly enhanced students' ability to utilize digital technology. The use of digital technology has raised concerns about digital security and data privacy worldwide, highlighting the lack of awareness of identity safety and participation capability in digital society among citizens. The need for digital citizenship literacy education has become apparent. UNESCO defines a digital citizen as someone who has "the ability to effectively find, access, use, and create information; the ability to interact positively, critically, cautiously, and ethically with other users and content; and the ability to engage in safe and responsible behavior [10]." The Asia-Pacific Economic Cooperation, in its report "Children's Education in the

21st Century: Emotional Health in the Digital Age" [10], suggests that children's digital citizenship literacy should be emphasized, including teaching children to use digital technology, cultivating their digital social and emotional skills, and enhancing their digital citizenship literacy.

3.1. Policy Exploration of Digital Citizenship Literacy Education in Japan

In June 2021, Japan's Cabinet Office updated and released the 5th edition of the "Basic Plan for Improving the Online Environment for Young People" [11]. The plan's basic policy includes five aspects: ① Promoting educational enlightenment to enable young people to use the internet independently and autonomously; ② Conducting educational activities to help parents manage their children's reasonable use of the internet; ③ Promoting the development of internet enterprises and preventing young people from accessing harmful information; ④ Actively creating a healthy communication atmosphere that cares for young people in the whole society; ⑤ Building an effective PDCA (Plan-Do-Check-Act) cycle based on internet technological innovation, solving new problems caused by the internet, and helping young people to respond positively. The most significant change is the active guidance of young people to use the internet independently and responsibly, being responsible digital citizens.

Digital citizenship literacy education is also reflected in some local policies. For instance, in December 2020, the Suita City Board of Education in Japan proposed advancing digital citizen education, creating an educational environment for children living in digital society, and cultivating their abilities to acquire, select, and utilize valuable information with the correct values and a responsible attitude. In April 2021, the Musashino City Board of Education in Japan issued a regional educational reform guidance plan, incorporating "Advancing Digital Citizen Education," aiming to enable children and adolescents to use computers and the internet autonomously and creatively through new educational reforms. In August 2021, the Gifu City Board of Education, Gifu Shotoku Gakuen University, and Gifu Shotoku Gakuen Junior College signed a cooperation agreement to promote digital citizen education in Gifu City, marking the first time a Japanese local government collaborated with a university to jointly promote digital citizen education. In Hiroshima Prefecture, local primary and secondary schools have already started using specialized digital citizenship education materials, "Digital Citizenship: Learning to be a Good User in the Information Age" [12].

3.2. A Practical Study on Digital Citizenship

Researchers such as Keita Sasaki and Yoichi Miyagawa [13] conducted a practical study on the cognitive awareness of digital citizenship among elementary school students. The study examined the effectiveness of information ethics education from the perspective of digital citizenship in four aspects: "understanding what it means to be a digital citizen," "learning as a digital citizen," "pause-think-discuss method of information evaluation," and "sharing digital technology learning outcomes with family members." The results showed that guiding elementary school information ethics courses from the perspective of digital citizenship is positive, helping students better use digital communication technology, promptly identify false, incorrect, and malicious information on the internet, and effectively enhance their information evaluation and judgment abilities.

4. Conclusion

Traditional Japanese information ethics education, being closed and conservative, has to some extent hindered the application of digital communication technology in education. The OECD's Programme for International Student Assessment (PISA 2022) included a survey on the participation in inquiry-based education using digital communication technology [14]. The results showed that Japanese schools' use of digital communication technology was significantly behind the global average among the 29 participating countries, which is inconsistent with Japan's proposed "Society 5.0." Examining the changes in Japanese information ethics education from the perspective of digital citizenship, it is evident that policymakers have started to focus on digital citizenship literacy, and paradigms with digital citizenship literacy education are taking shape. Primary and secondary school students are developing the ability to evaluate information and critical thinking as digital citizens.

"Schools, families, and communities" as providers of knowledge and skills, will play an important role in the future of digital citizenship literacy education.

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