

Implications of Digital Education Policy -Focused on Basic Act for Digital-based Education-

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Abstract

This study attempted to obtain implications for digital education policy by reviewing the Framework Acts and Enforcement Decrees related to digital education. To this end, the following were explored. First, the concept and components of digital competency were reviewed. Second, the Framework Acts and Enforcement Decrees related to digital education policy were reviewed using the above concepts. Third, the characteristics and implications of the Framework Acts and Enforcement Decrees for digital education were explored. The results are as follows: Korea's digital education policy tried to reflect the categories that digital competency must cover, even its function and dysfunction role. However, to achieve their purpose, it is necessary to maintain consistency with related laws or policies. We identified that amendments to the Basic Act and related articles are essential to effectively enforce the Digital-Based Distance Education Activation Basic Act. A reevaluation of the correlation between Article 10, emphasizing digital media literacy education, and Article 5 of the enforcement decree is necessary. Revision of the enforcement decree to align with Article 10's objectives is vital to ensure proactive measures for promoting digital literacy and competence as mandated by the Basic Act.

Keywords: *Basic Act, ICT Competency, ICT Education Policy, Framework Act on Intelligent Informatization*

1. Introduction

Reflecting the growing roles and integral nature of Information and Communication Technology (ICT) in our lives, the Education 2030 Agenda of the United Nations Educational, Scientific and Cultural Organization (UNESCO) identifies ICT as an essential tool to help achieve inclusive and equitable quality lifelong learning for all. It highlights ICT as a means “to strengthen education systems, knowledge dissemination, information access, quality and effective learning.” The agenda aims to maximize digital technology’s opportunities while minimizing potential threats, fostering a data-driven educational and policy environment. UNESCO has identified digital literacy as one of the critical competencies that adolescents and adults should achieve and monitor by 2030. Additionally, it views digital skills as essential tools for enabling fair and effective lifelong learning. In a world characterized by globalization and a knowledge- and technology-driven environment, UNESCO emphasizes that digital literacy is indispensable for individuals to investigate and thrive confidently [1].

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Emphasizing the importance of digital technology is familiar in Korea's education policy. Since the late 1990s, Korea actively promoted 'ICT-based learning' under the 'Classroom Innovation' slogan. With the widespread adoption of smartphones in the 2000s, the 'Smart Education' concept emerged in reports like 'Towards a Nation of Man Power: A Strategy for Smart Education,' which then disseminated to school environments. 'Smart Education' emphasizes education that utilizes various resources and technologies while promoting self-directed and motivation-driven learning. Furthermore, it was announced that 'Artificial Intelligence (AI) Education' would be introduced starting in 2025 in elementary, middle, and high schools as part of the revised curriculum in 2022 [2]. It reflects the urgency for digital education that aligns with the trends of the times.

The Ministry of Education has established a Big Data Committee to utilize big data in policy-making by analyzing education-related big data. Additionally, it has been announced that by 2025, approximately 5,000 school teachers will undergo training in 'Enhancing AI-Integrated Education Competency' to transition towards education that meets the needs of the digital generation [3]. Thus, while the emphasis has evolved from ICT education to smart education, digital education, and AI education according to the era, they share the commonality of highlighting learning utilizing new technologies. Moreover, amidst the global pandemic, digital technology has significantly expanded as the world seeks interaction through distance learning systems. Consequently, new policies have been introduced to strengthen learning and utilization of digital technology for the education of future generations.

Teaching and utilizing digital technology for digital nomads has become as essential as emphasizing the ability to read and write in the early days of public education. The emphasis on digital literacy and digital education is evident in UNESCO, which sets the global education agenda in most countries worldwide. Many countries are actively formulating policies to enhance their digital capabilities, with education policies at the forefront. Korea is no exception. It has introduced competency-based curricula that include digital skills to prepare future generations for the demands of the digital age.

Therefore, it needs to examine how the essential digital competencies for future generations have been reflected in policies and implemented through legislation. Thus, we review relevant laws and regulations for digital education policies in this work to derive insights for future digital education policies. To achieve this, we have set three tasks:

First, to understand the concept and components of digital competency, we will review UNESCO's proposals outlining the education agenda for future generations.

Second, we will review laws and regulations related to digital education policies.

Third, we will elucidate the nature of laws and regulations regarding digital education policies and identify implications for future policy directions.

2. Concept and Components of Digital Competency

UNESCO divides the digital competencies necessary for future generations into five domains and provides specific sub-elements for each domain [4]. UNESCO's suggestion is a valuable criterion for analyzing the content and nature that should be included in digital education. The domains and components of digital education proposed by UNESCO are as follows:

Table 1. Domain and Component of Digital Competency

Domain	Competencies
Digital Literacy	1. ICT Literacy 2. Information Literacy
Digital Safety and Resilience	1. Understanding Legal rights 2. Personal Data, Privacy and Reputation 3. Promoting and Protecting Health and Well-Being 4. Digital Resilience
Digital Participation and Agency	1. Interacting, Sharing and Collaborating 2. Civic Engagement 3. Netiquette
Digital Emotional Intelligence	1. Self-Awareness 2. Self-Regulation 3. Self-Motivation 4. Interpersonal Skills 5. Empathy
Digital Creativity and Innovation	1. Creative Literacy 2. Expression

These domains and components provide a comprehensive framework for understanding and assessing digital competencies, thereby guiding the development of effective digital education policies.

The digital competency proposed by UNESCO is broadly divided into five domains. The first domain is ‘Digital Literacy,’ which refers to effectively navigating digital tools and information, critically evaluating them, and using them to make informed decisions. The first domain includes ‘ICT Literacy’ and ‘Information Literacy.’ ‘ICT Literacy’ means responsibly managing and operating ICT hardware and software to access, search, and utilize data, information, and content. ‘Information Literacy’ means finding and critically evaluating digital information, and effectively utilizing it to make informed decisions.

The importance of information literacy is being emphasized. Through the pandemic, we have experienced the phenomenon of an infodemic [5-6], where false information spreads rapidly like a contagion, confusing. Therefore, information literacy is essential for critically understanding and assessing the infodemic phenomenon. Suppose the pandemic is directly related to physical health. In that case, the infodemic is also significant as it relates directly to issues such as human rights and dignity, including fake news, hate speech, and various forms of discrimination.

The second domain is ‘Digital Safety and Resilience,’ which refers to the ability to protect oneself and others from risks in the digital space. This domain has been emphasized not only by organizations like Ofcom in the UK, which has long played a role in regulating broadcasting content and advising on media promotion through telecommunications legislation but also by UNESCO. According to Ofcom’s proposals, digital competency should include protecting oneself, one’s family, and neighbors from harmful materials [7]. Therefore, UNESCO has also articulated the significance of this competency by subdividing it into four components: ‘Understanding Rights,’ ‘Issues of Personal Data, Privacy, and Reputation,’ ‘Promoting and Protecting Health and Well-being’ and ‘Digital Resilience.’ In particular, this domain is increasingly crucial due to ‘digital security,’ ‘personal data protection,’ and matters directly related to ‘individual rights’ in the virtual space [8-9]. Hence, the abilities encompassed in this domain warrant even greater attention.

The third domain deals with ‘Digital Participation,’ which refers to the ability to interact and participate in

society somewhat through ICT and to exert positive influence. The third domain includes three sub-elements. Firstly, 'Interacting, Sharing, and Collaborating' followed by 'Citizen Engagement' and 'Netiquette.'

The fourth domain is 'Digital Emotional Intelligence,' which refers to the ability to recognize, explore, and express emotions in digital interactions and address interpersonal or internal issues in digital relationships. This domain encompasses the most sub-elements, totaling five: 'Self-awareness,' 'Self-regulation,' 'Self-motivation,' 'Interpersonal Skills' and 'Empathy.'

The fifth and final domain is 'Digital Creativity and Innovation,' 'Digital creativity and innovation' refers to using ICT tools to create content, express oneself, and explore possibilities. This domain includes two sub-elements: 'Creativity Literacy' and 'Expression.' 'Creativity Literacy' denotes the ability to use tools and technology to create, apply, and select digital content. 'Expression' refers to the ability to use technology to represent one's identity or express oneself creatively.

3. ICT Education Policies and Basic Acts

Digital education policies can be understood more clearly by examining the purpose and content of related legislation. On October 20, 2020, the government introduced a new provision in Article 24, Paragraph 3 of the Elementary and Secondary Education Act. This provision states, "In cases deemed necessary for educational purposes, the principal may conduct the following classes." Subparagraph 1 specifies Distance Learning utilizing broadcasting, information, and communication media [10]. Distance Learning is "any educational activity conducted without temporal or spatial constraints using broadcasting, information, and communication media." During the pandemic, there has been a rapid increase in interest in digital education [11-13]. Of course, even before the pandemic, interest in digital education had been growing alongside discussions on the Fourth Industrial Revolution [14-15]. However, due to COVID-19, implementing ICT education has been emphasized as the only alternative. This has led to the active adoption and utilization of online learning platforms and non-face-to-face educational methods [16-18]. Therefore, establishing legislation and regulations related to this issue is essential for realizing digital-based education. In this context, reviewing laws related to digital education is crucial for understanding the current status of digital education policies pursued as the direction of future education and exploring the implications necessary to prepare for the future.

3.1 Enactment of the Basic Act for the Activation of Digital-based Distance Education

The Basic Act for the Activation of Digital-based Distance Education (Distance Education Act) was enacted on September 24, 2021. Article 3, Paragraph 1 allows the head of an educational institution to operate Distance Education for educational purposes when necessary. Article 4 specifies the duties of the state and local governments [19]. Paragraph 3 explicitly states, "The state and local governments shall make efforts to enhance public awareness of the effectiveness and necessity of digital-based Distance Education in response to future change and to develop digital competencies throughout the lifespan." In Section 1, Article 1 of the Distance Education Act, the purpose behind enacting these laws is elucidated. It states that this law establishes the basic provisions regarding Distance Education and matters about the duties of educational institutions and support from the state concerning Distance Education, thereby ensuring the operation of high-quality Distance Education in educational institutions. Additionally, it declares, the purpose of this law is to support innovation in education based on digital technologies utilizing Distance Education, thereby contributing to leading the change in future education. Notably the newly established Distance Education Act includes provisions related to digital literacy [20]. Article 10 addresses 'Education on Digital Media Literacy' where Paragraph 1 specifies that the leader of schools or educational institutions must conduct education on digital media literacy to enable students to participate autonomously in Distance Education. It further delineates four aspects that should be

included:

Enhancement of access to and utilization skills for digital media.

Improvement of understanding and critical thinking skills regarding digital media.

Enhancement of social participation skills through digital media.

Enhancement of democratic communication skills through digital media.

This legislation is significant in that it concretely operationalizes the first domain of digital competency, ‘Digital Literacy,’ and the third domain, ‘Digital Participation,’ as outlined by UNESCO. Furthermore, by specifying education for the enhancement of democratic communication skills through digital media, it encompasses not only interpersonal issues or internal problems in personal relationships that involve recognizing, exploring, and expressing emotions but also skills necessary for participation processes.

Democratic communication skills entail the ability to interact, share, and collaborate with others to achieve shared goals and require skills such as self-awareness, self-regulation, self-motivation, interpersonal skills, and empathy. Achieving democratic communication in digital contexts necessitates understanding how one's mood emotions affect oneself and others and the ability to engage in introspection. Additionally, the ability to manage one's emotions, moods, and impulses through self-regulation during online participation is essential. Therefore, this legislation holds significance as it encompasses not only the first three domains of digital competency but also extends to the fourth domain, ‘Digital Emotional Intelligence,’ as proposed by UNESCO.

3.2 Amendment of the Basic Act for Intelligent Informationization

In Article 10, Paragraph 2 of the Basic Act for the Activation of Digital-based Distance Education, it is stipulated that the state and local governments may conduct preventive education according to Article 54 of the Basic Act for Intelligent Informationization to prevent students from excessively relying on information and communication media or devices physically or mentally. This provision is significant as it establishes legislation that encompassing the second domain of digital competency, ‘Digital Safety and Resilience,’ as proposed by UNESCO. The current ‘Basic Act for Intelligent Informationization’ was enacted on June 9, 2020, by completely revising the existing ‘Basic Act for National Informatization.’ Although the terminology suggests revision, it effectively functions as newly enacted legislation. The ‘Basic Act for National Informatization’ was established on May 22, 2013, to support successful national informatization efforts. However, with recent revolutionary advancements in cutting-edge technologies such as artificial intelligence, data, and 5G, there has been an emphasis on the paradigm shift towards the Fourth Industrial Revolution based on hyper-connectivity and hyper-intelligence. In response to the anticipated societal and economic changes stemming from this, it was deemed necessary to establish a comprehensive national framework for proactive response and to revise regulatory systems to promote technological innovation. Particularly, recognizing the urgent need to sustain and enhance Korea's competitiveness in the field of information and communication technology, which is globally recognized, it was emphasized that pooling the efforts of the government and the private sector to establish the most efficient execution system is a pressing task [21].

Furthermore, recognizing the challenges of job displacement, deepening polarization, privacy infringements, and social conflicts arising from the Fourth Industrial Revolution, there is a need to establish a social safety net to address potential side effects and enhance national competitiveness while improving citizens’ quality of life. This recognition underscores the reason for the revision, aiming to mitigate social conflicts and enhance

national competitiveness by establishing safeguards against potential side effects that may arise during this transformation [22]. As evidenced by the change in the law's title to the 'Basic Act for Intelligent Informationization,' critical terms related to intelligent informationization, such as information, intelligent information technology, intelligent information services, and hyper-connected intelligent information communication networks, are defined in Article 2. This law emphasizes intelligent informationization and its related concepts within the revised legislation.

This legislation is significant because it provides provisions to address and prevent the adverse effects of intelligent information services. The laws address adverse effects in two main categories: first, the issue of information disparity, and second, the problem of overreliance on intelligent information services. To solve the issue of information disparity, provisions have been established to ensure access to and utilization of intelligent information services for individuals with disabilities and the elderly. Additionally, legislation has been enacted to guarantee the quality of information and communication accessibility for people with disabilities and the elderly. Furthermore, Articles from 45 to 50 have been implemented to develop technologies to bridge information disparities and promote the distribution and support of intelligent information products. Furthermore, the legislation has been elaborated and enacted to address the issue of overreliance on intelligent information services. Article 51 pertains to establishing a plan to prevent and address overreliance on intelligent information services. Article 52 addresses establishing and operating centers to respond to overreliance on intelligent information services. Article 53 concerns the training of professionals to address issues related to overreliance on intelligent information services. Article 54 deals with education related to overreliance on intelligent information services.

Particularly noteworthy is Article 54, Paragraph 2, which stipulates the implementation of differentiated education to prevent and resolve overreliance on intelligent information services, with the results to be submitted to the Minister of Science, Technology, and Information Communications. In essence, enacting legislation mandating education for addressing overreliance issues across all institutions has been codified as a necessary measure. Therefore, daycare centers and kindergartens must conduct such education at least once a year, primary and secondary educational institutions at least once per semester, higher educational institutions at least once a year, and other public institutions designated by presidential decree at least once a year [23].

Furthermore, legislation has been enacted to ensure the safety and reliability of intelligent information technology and services. These articles include provisions for developing information security policies, guidelines for information security systems, enhancements to the safety and reliability of ultra-connected intelligent information communication infrastructure, safety protection measures, privacy protection design, ethical considerations in intelligent information society, and protection of user rights.

Especially at the national level, there is a need to integrate and manage each student's personal information, as well as parents' and teachers', through platform development. Therefore, information security and accountability issues have become more critical than before [24]. Consequently, it is highly significant that legislation has been established to promote and strengthen policies aimed at establishing ethical principles in an intelligent information society, which respect human dignity and values and encompass principles such as publicness, accountability, control, and transparency through education, research, and support when providing or utilizing intelligent information services.

4. Discussion and Implications

Reviewing the legislation related to digital education has provided insights into the direction of digital education policy and the necessary implications for its implementation. Firstly, the guiding principles of digital education policy can be found in the reasons behind the enacting new laws. These reasons can be broadly categorized into two main points. Firstly, there was a need to ensure learners' right to education and enhance learning effectiveness, especially during disasters such as the global pandemic, aiming to mitigate learning disparities [25]. This urgency stemmed from the repeated challenges raised since the beginning of Distance learning when schools closed due to the pandemic, highlighting the pressing need to address such issues. Secondly, there was a recognition of the necessity to actively respond to changes in future society by enhancing digital literacy. Moreover, it is evident that the policy aimed to reflect the acquisition of new technologies and the ability to use them correctly by incorporating both aspects into the legislation.

In the context of the post-pandemic situation, the enactment of relevant provisions in the Elementary and Secondary Education Act is primarily aimed at addressing the issues of the right to education and learning disparities. This legislation serves a supplementary role with a strong emphasis on remediation. On the other hand, the Digital-Based Distance Education Activation Basic Act, enacted on September 24, 2021, responds to the policy necessity to promote digital education while activity complementing the existing legal framework. While the previous National Information Technology Basic Act focused on technological development and promotion for transitioning to an information society, the complete revision to the Intelligent Informationization Basic Act reflects a recognition of the need to anticipate and prevent potential adverse effects associated with the transition to an information society, as well as the necessity for corresponding education.

Therefore, enacting and revising these laws to reflect awareness and address these needs are significant. The specification of literacy in the Digital Media Literacy Education and other relevant provisions in the Digital-Based Distance Education Activation Basic Act signifies a progressive step in advancing related policies. The Digital-Based Distance Education Activation Basic Act enforcement decree was promulgated on March 25, 2022. This enforcement decree's purpose is to stipulate matters delegated by the Basic Act and necessary for its enforcement. For instance, Article 4, Paragraph 2 of the Basic Act states that the President shall ensure that students from vulnerable groups designated by Presidential Decree participate in Distance Education, is elaborated in detail in the enforcement decree.

Specifically, Article 2 of the enforcement decree specifies that 'students from remote education vulnerable groups' referred to in Article 4, Paragraph 2 of the Basic Act shall mean the following students enrolled in educational institutions. Then, it lists six types of students to whom this provision applies. By providing detailed specifications for each type of student as required by the Basic Act, the enforcement decree facilitates the smooth implementation and institutionalization of the law.

However, there is a significant difference in approach between the Digital-Based Distance Education Activation Basic Act Enforcement Decree and the example provided above. While Article 10 of the Basic Act outlines the necessary domains and presents them in four categories concerning digital media literacy education and others the current enforcement decree falls short by merely describing the two items that must be complied with. The first item emphasizes maintaining political neutrality, while the second item advises against using it to of benefit or harm specific organizations or individuals [26].

These articles cannot be considered to establish the necessary provisions to enforce the Digital-Based Distance Education Activation Basic Act. In other words, these provisions are separate from fulfilling each item necessary for executing the Basic Act. Therefore, a reassessment of the relationship between Article 10, which pertains to "digital media literacy education and others," and Article 5 of the enforcement decree regarding digital media literacy education is needed. As indicated in the purpose of the enforcement decree, it must be revised to reflect the spirit of Article 10 of the Digital-Based Distance Education Activation Basic Act. Instead of merely specifying what not to do, the enforcement decree should be revised to actively consider how to incorporate the items of the Basic Act necessary for fostering digital literacy and digital competence,

ensuring that each item is met.

5. Conclusion

A comprehensive approach that encompasses both the process of learning digital skills and the process of learning through digital technology would be practical when considering digital competence. For instance, in learning digital skills, such as coding or theories of artificial intelligence, educational programs can be designed to enable individuals to acquire new technologies. In learning through digital technology, it is essential to consider both the positive and negative aspects that inevitably arise during utilization, and supplement legislation to facilitate learning in policy implementation. Korea's digital education policy aims to encompass not only the categories that digital competence should cover but also its positive and negative aspects. However, to achieve these goals, it is important to maintain consistency from the development of relevant legislation or policies to the concrete implementation of the required competencies as institutionalized measures. We identified that Basic Act and related articles must provide the necessary measures to enforce the Digital-Based Distance Education Activation Basic Act effectively. A reevaluation of the relationship between Article 10, focusing on digital media literacy education, and Article 5 of the enforcement decree is required. The enforcement decree should be revised to align with the objectives of Article 10, ensuring proactive measures are taken to promote digital literacy and competence as outlined in the Basic Act.

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