Rethinking Teacher Education Policy in ICT: Lessons from Emergency Remote Teaching (ERT) during the COVID-19 Pandemic Period in Korea

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Abstract: This paper examines ICT policy in education with a particular focus on teachers’ engagement in emergent remote teaching (ERT) during the initial COVID-19 school closure in South Korea. It involves a documentary analysis of newspaper articles on “starting school online” from the highest read daily newspapers published in South Korea, through which three issues regarding teachers and teaching are identified: teachers’ digital competency, teachers’ sense of professional identity, and the revalorisation of the teacher role. Discussion of the three issues points to the need to reflect on and rethink the government’s policies for ICT in education. This paper provides an overview of the ICT policies to show their overall inadequacy with respect to providing teachers with the necessary training and framework for technology-related professional development. It highlights the need to understand the changing nature of teaching and learning in a digital education environment and it suggests a possible redesign of the education and training provisions to teachers to support their professional competency in the digital age.

Keywords: teachers’ digital competency; teacher education; ICT policy; emergency remote teaching; COVID-19

1. Introduction

The COVID-19 pandemic in 2020 led to severe challenges for educational systems around the world, and the Republic of Korea (hereafter South Korea) has been no exception. For example, the beginning of the new school year, which was originally scheduled on 2 March 2020, was delayed for five weeks until 9 April when schools opened online. On 27 March, the Ministry of Education published the Online Schooling Framework, which specified the purpose and methods of the new system. It defined online schooling as teaching–learning activities that occur in different times and places during the COVID-19 pandemic, and it outlined four types of learning: (1) live two-way classes; (2) recorded content-led classes; (3) task-performing classes; and (4) others decided by local education authorities and schools [1]. Schools and teachers were free to decide upon the types of teaching-learning activities, but they were asked to consistently communicate with all the students and to monitor their engagement in learning, and to administer online assessments until schools reopened [1].

With the sudden onset of the global pandemic, schools and teachers had only two weeks to devise and deliver online classes; students and parents were also not ready to adjust to the new form of unexpected online home schooling. While the Online Schooling Framework is focused on ensuring a continuity of learning for students by facilitating full-scale online schooling, it also indicates that teachers are facing unprecedented challenges in adapting to online teaching with little preparation, which is termed “emergency remote teaching” [2]. However, little attention has been paid to the impact the abrupt shift to remote teaching had on teachers.
A few studies have reported some of the challenges that teachers have experienced in relation to ERT. Low familiarity with online teaching has been reported to be one of the predominant elements overwhelming teachers, at least in the initial stage of ERT [3–6]. In the process of moving their whole work practice online, many teachers found that all job functions became more challenging [6], not only in terms of the increased workload relating to teaching preparation but also in terms of engaging students and assessing student learning outcomes [7]. This is exacerbated by students’ varying levels of access to technology in many countries [8].

In addition to the difficulties related to teaching online, some additional elements affecting teachers have also been identified. For example, teachers have become more sharply aware of their responsibilities towards the vulnerable [9,10], and they have experienced distress over their disrupted relationships with students [10].

In this study, we examined the issues affecting Korean teachers in elementary schools, middle schools and high schools who engaged in ERT. We examined newspaper coverage of online schooling in the major Korean newspapers during the initial period of school closure while, in particular, looking for evidence of teacher-related issues. Our interest lies in compiling diverse voices—i.e., responses to and comments on online schooling from teachers, parents, students, and educational experts—rather than interpreting how they are framed by the media, to identify a range of issues related to teachers that require further examination in Korean public education in general. Then, we examined the general framework of Korean education policy on digital education, in light of the issues we identified through analysis of the news articles. This study aims to inform research design for comprehensive examinations of teachers’ experiences during the pandemic, and to guide policy reformulation and teacher education in relation to educational changes in the future for the post-COVID era.

2. Selection of Newspaper Articles

The COVID-19 crisis created an unprecedented situation that brought increased scrutiny to how teachers deal with teaching and other responsibilities involved in remote education particularly in Korea. In addition to being the main channels via which measures taken by the Ministry of Education were relayed to the public, the newspapers provided daily reports on the issues of online schooling, incorporating the diverse voices of people associated with schooling—parents, students, educational specialists, community members, etc. After the school year began online on 9 April 2020, newspapers began to provide regular reports on actual experiences and evaluations of online schooling by those who were directly engaged in it from both inside and outside the school system. Although news articles published in such a short span of time can be superficial in terms of providing any analytical insight, they represent a good collection of responses to the situation not only from teachers, students, and parents, but also from a variety of other sectors of society. The immediacy and intensity of public participation can influence education policymaking in the post-COVID-19 era, where remote teaching is expected to an essential part of schooling.

Because of the volatile situation regarding COVID-19, daily briefings from the government and the Korean CDC have attracted national attention, as have the media, as the source of the most up to the minute news and information. Since the outbreak of COVID-19, news intake has increased and news organisations remain the most important source of information. In a survey examining how people accessed news and information about COVID-19 in six countries, Korea showed the highest use of news organisations as the primary source [11]. Further, Koreans also showed the highest level of trust in news from news organisations [11].

The five mainstream newspapers we selected for this study were Chosun Ilbo (C.I.), JoongAng Ilbo (J.I.), Dong-A Ilbo (D.I.), Kyunghyang Shinmun (K.S.), and Hangyoreh (H.G.). The criterion for our selection is firstly based on the report of the Korea Press Foundation (2019) on reading ratio, which measures the newspaper which has been read the most over each week, regardless of where and how the newspaper was accessed.
According to the report, the top three most read newspapers are Chosun-Ilbo (3.3%), Dong-A Ilbo (2.6%), and JoongAng Ilbo (2.3%), followed in order by Maeil Kyungje (1.3%), Kyunghyang Shinmun (0.8%), and Hangyoreh (0.7%); Maeil Kyungje was excluded, as it specialises in reporting business and financial news, leaving the other five newspapers for analysis.

Whilst Chosun Ilbo, Dong-A Ilbo, and JoongAng Ilbo were also found to be the top three newspapers in terms of paid circulation, Hangyoreh and Kyunghyang Shinmun ranked seventh and tenth in circulation, respectively, as well as sixth and seventh among non-specialist newspapers, respectively [12]. However, considering that the newspaper subscription ratio has drastically dropped over the past decade [13] and that the majority of people (80%) read news online via various digital devices [14], reading ratio is a more reliable indicator than paid circulation for the significance of newspapers in terms of framing public discourse.

To select the newspaper articles, the publication timeframe between 9 April 2020 when schools opened online, and 19 May 2020, just before schools were asked to re-open, was set and used as a search limit. The search term “starting school online” in Korean was used to compile a list of news articles, opinions, and columns posted on the website of each newspaper. This yielded 291 articles, including news reports, columns, and editorials. Once these news articles were imported into a Microsoft Excel spreadsheet, inclusion and exclusion criterion were applied. Only newspaper articles that contained comments, stories, statements, or reported experiences on teacher and teaching were included in the analysis. As a result, 82 articles were retained. Through repeated review and discussion, we identified three issues that we believed should be considered in relation to the Korean ICT (information and communication technologies) policies on education. We transcribed comments and statements relating to teachers and teaching from the articles. Details for each news article, including date of publication, source and key issues were then recorded in the Microsoft Excel spreadsheet.

Our first issue involves the discontent with the quality of online lessons expressed by all parties involved, including parents, students, and teachers, which is often presented whilst questioning teachers’ ability to manage ERT. We discuss this in terms of teachers’ digital competency. Our second issue relates to teachers’ statements that appear to be self-reflective and self-questioning. These statements show teachers’ frustration over not being able to be in full control of pedagogic practice in the fully technological teaching environment, and we understand this as an issue concerning their sense of professional identity. Finally, we discuss the issue of the revalorisation of the teacher role in relation to the comments and statements on the changing roles of teachers made by teachers, students, and parents alike.

These three issues underline the need to examine ICT policy in education programmes which have implemented technology within the existing educational structure, and which have failed to meet the expectations during ERT in every aspect. This investigation will draw our attention to the re-formulation of the ICT policies in digitising the education setting in the future.

3. Discussion of Critical Issues
3.1. Teachers’ Digital Competency

One of the issues that stands out in our reading of the selected newspapers is the quality of the online lessons delivered by teachers. Many parents who have monitored their children while taking lessons online have expressed discontent with the lessons. For example, a high school in Kyong-Ki province reported having received calls from parents complaining about the quality of the online lessons prepared by teachers and demanding they be replaced with EBS (Korea Educational Broadcasting System) content (HG 10/4, This number indicates the date of publication of the article—date/month—from which the example is extracted. This citation system is used throughout this article). It has also been reported that students are not happy with the online lessons (CI 9/4; HG 25/4; JI
It has been reported that many teachers simply put the materials they would have delivered in the physical classroom online. One article reported that since schools started online, more students have relied on private academies to complement their learning (JI 24/4). There is a concern that, should school closure continue, more students will look to private tutoring for additional assistance, which will ultimately widen the educational gap in achievement between pupils from different socioeconomic backgrounds. One parent stated that they were considering sending their child to a private academy if there were no improvements in the online classes (CI 11/4).

Teachers also share concerns over the quality of the online lessons. They are well aware that the lessons being provided online fall short of the quality demanded by parents and students, especially those who are familiar with the high-quality online content produced by EBS and private sector education institutes. Teachers are overwhelmed with the preparation time required for online teaching (HG 5/5; CI 9/4). Some teachers say that it is simply impossible for them to produce online content of higher quality than that of EBS. They declare that state education cannot compete with EBS or private sector education institutes in an online educational setting, mainly because they cannot afford to use the same amounts of time and resources (CI 11/4). Some teachers say they should use EBS contents, since they see little point in attempting to make their own. In fact, according to the “Progress report after a month of remote teaching” by the Ministry of Education, only 33% of teachers made their own materials for online classes (CI 13/5).

These widely acknowledged concerns regarding the quality of online lessons provided by in-service teachers in the ERT situation have clearly pointed to an issue with the digital competency of teachers. Since the lessons are prepared by each individual teacher, the quality of the lessons primarily depends on the level of digital literacy and skills the teacher has in producing online content and teaching online lessons. However, it is evident that many teachers are not sufficiently technologically competent to effectively make use of the necessary technology in teaching in an online environment. One teacher was quoted as saying, “even a veteran teacher with a good reputation for quality lessons had to utilise EBS contents because he was not competent enough to use digital equipment to produce his own online content” (JI 19/5).

One survey that asked 340 teachers about their experience with the abrupt shift to online teaching showed that 60% of the respondents had no experience with online teaching. They faced difficulties with a range of activities that required a good level of digital competency, such as making video materials, delivering live online lessons, and interacting with students online. The survey showed that even some teachers in their 20s and 30s lacked sufficient confidence to utilise digital technology to prepare and deliver lessons online, and they believed that training and support should be made available to teachers to help them use digital tools and resources [15].

This issue points to the general lack of support given to teachers in schools to achieve the necessary digital skills and produce adequate online lesson content.

3.2. Teachers’ Sense of Professional Identity

Whilst issues regarding the importance of teachers’ digital competency have been widely recognised in preceding studies examining the shift to online schooling [16,17], our examination of news articles about ERT in South Korean schools reveals several points that have been under-scrutinised in the preceding studies: one of them is teachers’ experience of disruption in their sense of professional identity and the consequent move to redefine and revalorise their role.

Having to move to an online setting and use different tools with which they are not fully competent in for teaching led to some teachers reflecting on both their pedagogy and their sense of who they are as teachers. A number of newspaper articles have highlighted this issue when presenting teachers’ accounts of their experiences with online teaching.

Some teachers have expressed a sense of fear about putting their lessons and teaching in the online environment, as this opens them up to the scrutiny of students and parents.
In an article with the headline “Parents Saying ‘Let’s See How Good the Teacher Is’ … Teachers in Trepidation About Teaching Online”, one teacher is quoted as saying, “I feel like having open classes with parents every day. I’m worried and stressed a lot knowing that my teaching can be subject to criticism at any time” (CI 11/4). The stressful situation is delineated in another article detailing a particular episode involving a teacher who had a confrontation with a parent. According to the report, the teacher, who works at an elementary school, was asked by the student’s mother to modify their feedback on the student’s homework, as the student’s mother thought the teacher’s comment was discouraging to her child. The teacher ultimately had to change their comment.

That news article also presented teachers’ concerns over parents becoming overly involved in their children’s homework and even intervening in teachers’ individual conversations with their children. One teacher reported feeling as though they were being watched by parents all the time (CI 20/4). This sense of vulnerability teachers feel towards the judgements of various actors, particularly those outside the school gates such as parents and media, is aggravated by the awareness that their teaching is now open to comparison with lesson materials and instructions offered by private academies and EBS. Vulnerability is an essential element that affects teachers’ sense of professional identity [18]. Thus, coping with this vulnerability is an important part of establishing a positive sense of identity to maintain “commitment to and a passion for teaching” [19] (p. 604).

Teachers’ accounts of their experience with online teaching reveal substantial concerns over (re)gaining their sense of professional identity. This is, first of all, dealt with by teachers’ distinguishing themselves from instructors of EBS and private academies in terms of their role and responsibility towards students. Whereas teachers consider instructors of EBS and private academies as only being good at a rote style of teaching that may help students acquire high scores on exams, they regard their effort and ability to understand and communicate with individual students as one of their strongest teaching attributes (HG 21/4).

Teachers’ accounts of their role and responsibility in public is a way of coping with their sense of vulnerability, which is a “political action” to regain the social recognition of their professional self [18]; they also do this to maintain the value of public education against the private and for-profit education sector, which has grown even more since the first school closure. However, further examination of teachers’ accounts suggests that their sense of vulnerability needs to be understood in more fundamental terms, as it relates to a particular point identified in our reading: teachers’ sense of identity is firmly interlocked with the traditional face-to-face learning environment.

As teachers distinguish their identity from that of “mediagenic” instructors, they place increased emphasis on the importance of face-to-face interactions with students. They maintain that face-to-face interaction/offline education achieves far more than the learning objectives stated in the curriculum. One teacher emphasised, “In the face-to-face teaching, something greater than learning objectives is achieved through improvising responses to various situations, interaction and collaboration among students” (JI 9/4). Another teacher said,

I don’t think students will have difficulties with digital devices. I’m rather concerned with how their motivation to learn will be promoted and maintained. In the off-line setting, teachers and parents can provide necessary assistance through interaction. But there is a limit to such interaction in the online setting. (JI 9/4).

This implies that having to move to an online setting created a barrier that would not readily allow teachers to create the environment they would normally create in face-to-face settings. As a result, this also implies that their pedagogical activities are deeply interrelated with the nature of the setting and the severance from the original setting that has caused teachers to experience disruption in their teaching identities.

Their pedagogy is intertwined with the face-to-face environment to the extent that their agency is severely limited in the online environment. Teachers say that their role is reduced and restricted to that of a knowledge transmitter in the online educational setting.
where face-to-face interaction with students is absent, causing their performance to be solely judged in terms of how effectively they deliver the necessary knowledge (CI 11/4). Further, teachers comment that the inability to establish rapport with students even affects their performance as a knowledge deliverer (HG 21/4). One year three teacher said that, as there were no opportunities to build rapport with students through face-to-face interactions (as the new academic year started online, students have not met their teachers in person), they are reluctant to engage in interactions with them even on the phone (JI15/5).

The dilemmas experienced by teachers as they were coping with the ERT indicates that their comfort zones are still framed within the traditional face-to-face classroom setting and that their pedagogy might be at odds with the online environment. As their accounts reveal, this is related to their particular view of technology integration. Their view of online learning, or “technology-enabled learning”, is rather limited; they believe that the online environment is only instrumental to instructional delivery, and that pedagogic activities are inherent to the off-line environment. Whilst technology-enabled learning should be understood in terms of the relationship between technology and pedagogy that encompasses the learning process and student-centred pedagogies altogether [20], teachers’ understanding of technology integration shows that technology has been used for the simple delivery of content without the adequate development of a pedagogic orientation.

The shift towards technology-enabled learning or the meaningful integration of technology requires a shift in pedagogical belief or pedagogical orientation [21]. Teachers’ sense of fear of having their autonomy and agency weakened in an online environment can be interpreted in relation to the situation in which they are still in a teacher-centred paradigm: their sense of teacher agency is at odds with the student-centred paradigm enabled by the integration of technology. The teacher’s agency does not change simply with the inclusion of technology in the classroom. The change occurs only to the extent to which a shift of responsibility to the learner occurs, i.e., the extent to which a shift in pedagogic orientation occurs. Therefore, without a shift in pedagogic orientation, a shift in the learning environment cannot occur.

In addition to the firm teacher-centred belief as a primary explanation for teachers’ reluctance to use technology, studies have shown that a personal fear of technology is also an important element that makes teachers concerned about how technology could diminish their authority [22]. One survey showed that 56% of participating teachers had negative feelings about incorporating remote teaching after the COVID-19 crisis eventually ends (CI 8/5). This shows that many teachers feel uncomfortable with remote teaching. Recent studies on South Korean teachers’ beliefs or attitudes towards technology corroborate the idea that many teachers still hold a negative view of technology [23]. For example, Leem and Sung’s research [24] showed that teachers’ negative beliefs concerning smart mobile devices, such as the idea that SMDs are “unstable and uncomfortable”, can be the primary barrier to the integration of technology in the classroom. In addition to the positive beliefs concerning technology, a student-centred belief was found to be vital for teachers to utilise technology in teaching [25].

Our reading of the news articles focusing on teachers’ accounts suggests more points to be considered to reflect on the ways in which online learning using digital technologies has been implemented as well as its future directions, particularly in the post-COVID-19 era. First, bringing teachers’ experiences into the public eye reminds us that at the centre of schooling lie real teachers with complex professional selves. Then, to conceptualise effective pedagogies in the digital environment, the shift towards a new learning environment should entail a greater understanding of the ways in which teachers develop their pedagogy over time and how they conceptualise the relationship between technology and pedagogy [21]. It also leads to questions about whether online learning has placed emphasis on technology integration as an end goal, rather than the learning process and student-centred pedagogies; what can be done to promote a pedagogical orientation that extends beyond a simplistic view of the relationship between technologies and teacher roles.
3.3. Revalorisation of Teacher Role

Whilst teachers’ experience of a disruption of their sense of professional identity points to a need to reconsider teacher roles in the technology-enabled environment, our reading of the news articles identified a line of discourse which does exactly that. The experience of full-scale online schooling made not only teachers, but also students and parents, reflect on the roles and responsibility of teachers. In light of thinking about the future of education, where it is expected that technology-enabled and student-centred learning will be the norm, many have brought up issues about how the teacher role should be changed.

A member of the editorial staff at the Hangyoreh newspaper, who is a mother of an elementary school child, writes in her editorial comment titled “What the closed schools teach us”:

Watching my elementary school daughter attending online classes, I began to think of the essence of education. Without the physical space of the classroom, which involves the teacher’s control and the watching eyes of classmates, my daughter was constantly distracted and unfocused [... ] I deeply realized that children go to school to learn sociality—how to listen, be considerate and be disciplined—rather than to learn a curriculum. Parents [... ] realized the significance of teacher’s role. We got the lesson that there is value to public education that can never be replaced by any private sector education. (HG 21/4)

A teacher’s role as someone who helps students focus on learning rather than delivering knowledge is even more important in online schooling. A teacher’s role is recognised as someone who creates a learning environment wherein students are active participants and encouraged to collaborate and explore.

This point is elaborated upon and extended by an educational specialist who emphasizes that a teacher’s role in online schooling specifically is that of a “facilitator who helps students organise their off-line lives so that they focus on online learning. For instance, it is more important to make sure that disadvantaged students are properly fed and have access to the online schooling than to read the third line of a social studies textbook online” (CI 18/4). The role of a “facilitator” here extends to that of a caring practitioner who is held responsible for addressing students’ needs beyond the learning space.

Teachers are also perceived to be responsible for students’ emotional and personality education. Another article points out that the primary role of the teacher should be that of someone who fosters the social and emotional skills of students, particularly when learning is to occur in an online setting in which students can feel social isolation. One teacher is quoted as saying that:

A student learns social skills through the experience of resolving conflicts with other students and talking with teachers [... ] The more efficient the remote learning becomes, the greater the importance of teacher role as someone who help students to develop their social skills (CI 11/5).

This view is also aligned with the students’ comments. Teachers are perceived as significant adults in students’ lives, where they play a role in shaping students’ future plans and aspiration. One high school student said, “ [... having taken lessons online, I (re)realised the importance of learning environment. I think teachers should be a co-learner and a companion who gives you guidance and support” (DI 28/4)

The teacher, no longer the dominant information feeder, is instead a “manager of information” who is also responsible for moral leadership [26]. Terms such as “facilitator”, “coach”, “designer”, and “guide” have been used to describe the new role of teachers in association with the technology-enabled learning (for example, see [27–29]), and its importance has been argued in various studies. Hannafin and Savenye [30] maintained that the more responsibility and freedom given to the students, the greater the shift in the teacher’s role. Kimber, Pillay, and Richards [31] pointed out that “the current concept of student-centred learning tends to cloak one fundamental fact—the teachers are
instrumental in the creation of student-centred learning environments (159),” and went on to say that:

Teacher definition is not diminished, although considerable knowledge and creativity are required in the new role as facilitator of learning. Re-emphasising the teacher role as central to creating the learning environment—through designing rich tasks capable of facilitating higher order thinking and learning—could help recover the teacher’s sense of agency [31] (p. 159).

When the entire schooling is carried out via distance learning, then the change in the teacher’s role is fundamentally important.

The demand for the shift in the teacher role corresponding to the shift in the learning paradigm—from teacher-centred to student-centred—is a public one beyond the teachers’ personal need to reclaim their professional identity. Voices from diverse sectors across society concerning the teacher role have suggested that online learning will eventually be an integral component of schooling, thus necessitating research into whether and how the government’s ICT policies have addressed the issue and how they should be reconsidered. Defining and reinforcing the range of teachers’ roles that suits the technology-enabled learning environment should be a part of the central concern of the process of (re)formulating the ICT policies.

4. Reflection on Education and Technology Policy

Our analysis of the newspaper articles highlighted three issues concerning teachers engaging in ERT: a need to develop teachers’ digital competency and a need to re-establish both teachers’ sense of professional identity and their role in the technology-enabled learning environment. Considering the stable and well-prepared ICT infrastructure in education [32], these concerns regarding teachers and teaching raised questions about the adequacy of the government’s past policies on technology for education regarding teacher training. We will examine key ICT policies for education which have influenced the development and the improvement of teachers’ digital competences.

In Korea, the first national master plan for ICT in education policy was initiated in 1996, followed by a series of five-year strategic master plans which led the development of ICT in education [33]. During the first (1996–2000) phase, the basic ICT infrastructure was built. Key institutions were established, such as the Korea Education and Research Information Service and the Learning Foundation. Specifically, the Korea Education and Research Information Service, which began as a multimedia education research centre in 1996 under the Korean Educational Development Institution, opened its first comprehensive education information service, EDUNET, as a national teaching-learning centre. Starting in 1999, it was expanded and enacted as the Korea Education and Research Information Service, and it has since played a leading role in the development of ICT policies for education. The second (2001–2005) phase expanded the ICT infrastructure and supported the development of human resources, thus raising the social awareness of e-learning. During the third (2006–2010) phase, the e-learning system was expanded by integrating education and technology and providing information services to all educational institutions and schools. One of the key policies during this period was the initiation of digital textbooks policy in 2007. The development of digital textbooks was an advanced form of curriculum integration with ICT, and it included various learning contents and materials such as movies, animation, and virtual reality in textbooks [34–37]. The government merged science and technology into education, renaming the education and human resource department as the Ministry of Education and Science Technology (2008–2012), and during the fourth (2010–2014) phase, it focused on building a digital learning-research eco system that linked the production, distribution, and utilisation of information. Specifically, a plan of the SMART Education in 2011, which stands for the self-directed, motivated, adaptive, resource enriched, and technology-embedded education, was an innovative proposal to create a new education system on a digital platform [38]. The fifth (2014–2018) phase upgraded the infrastructure and expanded information services into all levels of schools.
and workplace to form a “demand-oriented digital education” system for lifelong learning. The latest master plan, for 2019–2023, proceeded with the vision of “implementing a person-centred future intelligent education environment” [33].

Overall, the government’s dedication to long-term investment, along with the national efforts to participate in expanding the global economy, have been the major forces promoting ICT policy for education and its achievement. One of the key rationales behind the policies followed over the last few decades was the enhancement of education competitive power in an increasingly globalising world. For example, the introduction of the 1995 education reform, which promoted excellence in education through freedom and competition, was expected to further boost national development [39]. Therefore, the launching of the first master plan for ICT in education in 1996 was one of the active investments in education to support both the quality improvement of the education system itself and national development. The rapidly advancing mobile technology and expanding wireless network of the country also had a positive impact on policy development, along with strong political will, which was highlighted by Chun and Kyu [40] as one of the success factors in the construction of the ICT infrastructure for education. The National Education Information System, new teacher training programmes and a teacher competency indicator, the ICT Skill Standard for Teachers, and media labs at schools were formed, and ICT-applied school management and school website were also implemented by 2008 [36]. Thus, the government’s commitment to ICT in education over the past 25 years has contributed to the successful installation and upgrading of ICT infrastructure at schools and institutions.

Another ground for ICT education was that the government has advocated policies that produced clear outcomes and achievements, such as the construction of ICT infrastructure. The ICT infrastructure features desktop computers, mobile devices, broadband, deployment of equipment in classrooms, etc. Indeed, the long-term promotion of ICT infrastructure in schools has been supportive for improving teachers’ and students’ access to ICT at school, as well as the creation of new measures and management systems. Nevertheless, there have been few policies concerning ICT-based activities organised by teachers and students, such as the types and frequency of activities, and the digital resources and contents used. There has also been little discussion about teachers’ digital competency and ICT use at the whole school level. For example, the government was able to initiate new ideas, such as digital textbooks in 2007 and the SMART Education plan in 2011, based on a stable infrastructure and preparing national education provisions of digital technology for the future. It was expected that schools could support students to learn better by employing various learning contents and resources beyond the classroom by using digital textbooks, and by installing innovated educational contents, pedagogy, assessment, and environment based on the SMART Education network [38]. The new education system based on digital technology aimed to support students flourishing and becoming global leaders within their own fields [38]. Building an ICT infrastructure is the only basic condition for education in the digital age; however, the government has paid little attention to elaborating the digital competencies that enable teachers to deliver what the SMART plan promised to achieve, thus providing divers learning opportunities for individual students with different talents and needs in the information age. In fact, few policies have targeted teachers’ digital competency and training in the main outcomes and strategic tasks in each phase of ICT in education. Only one out of 27 key tasks from 1996–2013 involved improving teachers’ digital competency. In most cases, it was mentioned in a very latent manner, such as providing training to use digital textbooks for teachers and school managers [34] and developing teacher training classes for smart teaching and employing smart learning advisers [38]. Thus, there were fewer specific policies for the development of ICT competencies among teachers than those for building ICT infrastructure.

The lack of concern about teachers’ digital competency is partly due to the government’s policy position on teacher training, which has supported universities and colleges in improving the quality of teacher training curricula and the overall operating system of
teacher training [41]. Along with the improvement of ICT infrastructure, some issues have been raised regarding the SMART Education plan, particularly regarding some discussion about the changing role of teachers and its relation to students in a digital education setting [42], as well as the need to reflect practical skills to use digital devices and a new pedagogy for teachers’ professional development [16]. A positive improvement from the discussion was that the government’s proposal for teacher training for 2012–2015 began to accommodate different levels of learning needs of teachers in ICT [38]. Nevertheless, the overall level of ICT training on the policy proposal was still basic and fell short of providing new educational contents or pedagogy that teachers could use in their classrooms. Unfortunately, the idea of building an education system on a digital framework was lost and was not reflected in the latest national curriculum in 2015, which was overtaken by the political rhetoric involving the “creativity” of the new government. It scaled down the use of digital textbooks, whilst concentrating solely on key subjects in selected schools. However, the introduction of the compulsory software/coding classes in primary (from 2017) and secondary (from 2018) schools increased the actual number of teacher training sessions in preparing for the change. The launching of additional training courses both online and on-site (in schools) by Korea Education and the Research Information Service from 2017 also encouraged teachers’ engagement in improving their digital competences. Nonetheless, the 2014–2018 strategy failed to serve the changing needs of teachers’ digital competence [41]. The latest proposal, the 2020 Master Plan for Education Informatization, focuses more on meeting the different needs in the teachers’ career cycles but less on teachers’ digital literacy [43–45].

In addition to the government’s distant position on teacher training, the Korean government did not appear to comprehend the full scale of the use of newly developed digital technology in education and its impact on teaching and learning practices. For example, in the discussion of the SMART Education plan, the government stressed that it would bring a new paradigm in the organisation of education [38], but it did not present the full details of changing teaching and learning activities and the key roles of teachers in the new education setting. Instead, it highlighted the improvement effects, such as the findings that learning could be improved by using digital textbooks and that online classes could enhance students’ choice in learning and narrow the learning gap among students from different social backgrounds [38]. In this way, the government undermined the initial grand idea of the SMART plan and treated it as supplementary to the existing education system. The limited understanding about digital devices led the government to overlook the vitality of new educational contents, pedagogy, and assessment as well as the need to update the training for teachers in a relevant manner. For the success of smart education, Zhu et al. [46] explained that there are three important elements of smart learning that need to be fully explored: smart learning environments, smart pedagogies, and smart learners. Nonetheless, as pointed out by Budhrani et al., ‘smartness’ in Korea mainly refers to the smart learning environment, and this has been discussed as the dominant element in the Korean literature, outweighing smart pedagogy and smart learners [47](p.14). With this narrow understanding, the government missed out on the initial purpose of using technology in education, such as offering personalised and adaptive learning using smart technology, which requires the substantial advancement of pedagogical knowledge and skills appropriate for new digital settings. Without a full understanding of smart learning environments, smart pedagogies, and smart learners, the government was not able to define what teachers’ digital pedagogy should be, and it was therefore not able to design a relevant teacher training programme; our newspaper reading also indicated that this is the case. When teachers moved to remote teaching, they lost their confidence in teaching, as they felt isolated from students and lost direct face-to-face control over their students’ learning processes. Therefore, it is vital for the government to define new knowledge contents as well as a new pedagogy for teaching and learning in the digital setting, and to suggest improved teacher training provision. Otherwise, it would be difficult to uphold teachers’ professional confidence in the future.
In many ways, it is a challenging task for the government to present a clear and solid definition of digital competence for educators, as we are living through an age of continually evolving digital technology [48–51]. However, considering the growing digitalisation and its impact on society, it is crucial to guide teachers who are expected to support students to learn the right set of skills to live and work in the digitalising society. First, teachers’ digital confidence and professional authority need to be refined. The difficulty is that the growing discussion from different disciplines is contributing to elucidating the varied social contexts of emerging digital technology, but it is still hard for a government with a certain political belief about key skills for the future to draw a consensus on the definition of digital competence [51]. In this sense, it is not just the Korean government that needs to refine the concept of digital competence in education and update teacher training provision to improve the level of teachers’ digital competence accordingly. For example, when the Swedish government launched the national strategy for the digitalisation of school system in 2017, which promoted “adequate” digital competences among students and teachers, attention was paid to what might be an “adequate” level in practice [48]. However, the remote teaching experience during the COVID-19 school closure in Korea has created a rare opportunity for the government, schools, and teachers to narrow the gap between the policy and practice. Competence is defined as “adequate skills, capability and authority” [52](p.44), and the government can now listen to schools’ and teachers’ practical comments about the proper set of digital skills required in online teaching environment and reflect them to improve teacher education provision. This will be the right step to boost teachers’ digital confidence and uphold their professional authority.

Secondly, the Korean government needs to understand the changing role of teachers in the online teaching environment. It is not a new idea for the government, but it has instead been overlooked many times in implementing ICT policies in the past. European countries’ suggestion of six areas of different aspects of educators’ digital competence—(1) professional engagement, (2) digital resources, (3) teaching and learning, (4) assessment, (5) empowering learners, and (6) facilitating learners’ digital competence [53]—can be a useful barometer for the Korean government to redefine the role of teachers, particularly in relation to teachers’ pedagogical digital competences. Redecker and Punie [53] explained that the core of educators’ digital competence is more than the efficient use of digital technologies in planning, implementing, assessing, and teaching and learning. This should enable learners to actively participate in learning, and eventually in life and work in a digital age [53]. Here, the challenging task for teachers is that they need to improve not only their digital competences, which all citizens need, but also master specific digital competences in order to effectively use digital technology for teaching [48,53]. In an attempt to define the concept of pedagogical digital competence, From also pointed out that it relates “to knowledge, skills, attitudes and approaches in relation to digital technology, learning theory, subject, context, and relationships between these” [52](p.48). Thus, teachers’ digital training needs to be organised around actual teaching skills in Korea. Lim et al.’s survey showed that the digital gap among Korean teachers was smaller than expected, and that it was the teachers’ participation in training to use digital textbooks and digital resources that ultimately affected teachers’ digital competence [23]. Thus, one way of enhancing teachers’ ability to use digital devices is by integrating teachers’ pedagogical skills into digital knowledge when forming a teacher training programme while promoting “pedagogical digital competence” [23] (p.25). Another way of enhancing teachers’ digital competence is to improve student teachers’ experience in learning on digital platforms in colleges and universities [49]. Amhag et al.’s work on the self-reported use of ICT showed that teacher educators in two Swedish universities use ICT for teaching, communication, administration, and research, but the least for teaching. University teachers are role models for student teachers, which is another useful tip for Korean universities and colleges to keep in mind.

Altogether, creating a positive supporting cycle for teachers is important to remember, as Han and Lee’s survey suggested that “teachers who were confident about their ability
to use technology exhibited more positive perceptions about computer-based teaching and learning in schools”, and that teachers demonstrated the willingness and ability to use technology in their teaching, while paying attention to individual student’s learning processes and understanding more about the educational benefits of student-led learning [25]. The positive supporting group among teachers would also be useful, considering the newly rising version of “teaching identities” in the digital age. As pointed out by Miles and Mikulec [54], we need to understand the changing “teaching identities” in the online classroom and how it makes a difference in teaching, as they noted that, in the process of teaching and guiding students online, teachers find it difficult to intervene promptly, so they need to compromise their power to control their students’ learning. The awareness of being watched and the sense of isolation from physical distance created by the online situation affect teachers’ identity discursively.

As the COVID-19 pandemic continues, the Korean government, schools, and teachers are still learning to adapt to the online teaching environment. Our newspaper reading highlights that understanding the unknown difficulties faced by teachers within the online classroom, along with the new set of pedagogical skills to use digital devices, is vital for researchers and governments to develop an appropriate training programme for teachers before we ask them to run online classes in a competent manner.

5. Further Directions and Implications for Teacher Education Policy on ICT

The government response to the COVID-19 school closure was prompt, and teachers’ devotion to teaching demonstrated their professional responsibilities towards their students. However, our examination of newspaper articles reveals that teachers’ devotion and strong sense of responsibility were not enough to make ERT a satisfying experience for both teachers and students. Firstly, it highlighted the issue of teachers’ digital competency, showing that many teachers felt inadequate in using digital technologies for teaching. Secondly, it raised the issue of teachers’ experience of disruption in their sense of professional identity, mainly related to their less-than-successful adoption to an online teaching environment. Lastly, it identified a line of discourse that calls for reconsideration and revalorization of teacher roles in the technology-enabled environment. Based on these findings, we reviewed ICT policy for education to identify insights to form an improved policy fit for the post-COVID era.

The government’s ICT policy over the past 25 years has been built on the existing education structure to support traditional teaching and learning practice. As a result, the primary focus has been on the development of infrastructure, establishment of a digital network and information system, development of digital textbooks and course materials, and efficient delivery of teaching and learning to improve the quality of overall education by employing new technology in education systems. However, the ERT experience points out that it is important for the government to recognise the difference between using technology as a supplementary activity (as has happened in the past) and employing ICT at the centre of education. In other words, the government needs to reshape education structures to be based on technology, including the classroom setting, curriculum, methods of teaching and learning and evaluation system first, and then implement a new approach in using technology for education. The ERT experience also demonstrates that teachers’ ability to utilise well-equipped technologies is as important as the national ability to build technological infrastructure to maximise the benefit of technology-based education. The digital competency that combines both pedagogical knowledge and practical skills to effectively deal with digital devices is one of the key competencies for teachers today.

Unfortunately, the Korean government failed to transform the ICT policy that focuses on physical infrastructure and network into a policy that emphasises human factors, such as teachers’ ICT competency over time. Despite the long-term investment in ICT for education, the government missed opportunities to create a new education structure, as it employed the latest digital technology for the emerging digital age. Nonetheless, the emergent transition to online teaching due to the COVID-19 outbreak brought about the
right conditions for the government to value ERT experiences and reflect on how to improve ICT policies for teachers. First, this paper suggests that the government clarify the purpose of using technology in the currently changing education system, which is embedded in both traditional and digital settings. This will help teachers understand new forms of teaching and learning, and accordingly identify newly defined roles. The ERT demonstrates the changing priority in the roles of teachers in the digital environments; a teacher is not simply a knowledge deliverer, but a facilitator to stimulate students’ motivation, and is responsible for social, emotional, and personal education. We need to understand the changing roles of teachers and re-think the professional identity of teachers in the digital age, while considering the human side of digital technologies. Secondly, this paper proposes that the government re-designs education provision and professional development programmes for teachers. The old provisions for traditional education settings do not offer a proper set of knowledge and skills in the digital education environment. Thus, the training for digital competency should not only focus on general technology knowledge, but also provide more practical experiences to utilise digital devices as well as hands-on training to deal with online teaching and learning devices. In addition, new attitudes around using technology, such as adaptability and responsiveness to external environments, as demonstrated by unexpected circumstances such as the current COVID-19 outbreak, need to be included in the digital competencies of teachers.

Author Contributions: Conceptualization and research design, S.-Y.C. and H.C.; first draft preparation, S.-Y.C. and H.C.; review and final draft, S.-Y.C., H.C. and J.K.; editing of the final draft, J.K.; review and revision of the final draft, S.-Y.C., H.C. and J.K. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

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