Educational Responses to the COVID-19 Outbreak in South Korea

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Abstract. *This paper investigates South Korean educational responses to school closures amid the COVID-19 pandemic, viewed with a risk and resilience framework. The COVID-19 crisis emerged and worsened right before the beginning of the new school year (March 2) in South Korea, and immediately led to students' limited access to educational facilities. Well-established IT infrastructure and national curriculum facilitated the adoption of distance learning in South Korean schools. However, educational inequality due to family influences, and financial instabilities in early care and education settings disrupted students' optimal learning during the changes. The situation brought both benefits and challenges to South Korean education system. The adoption of distance learning potentially downgraded overall educational quality, but it also provided opportunities to improve educational content and professional development for teachers, and to promote individualized learning for students. Despite some challenges, distance learning was an effective alternative for South Korean schools during the COVID-19 crisis. More practical and research efforts are needed in order to reduce educational inequality and maximize the effectiveness of distance learning.*

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THE COVID-19 crisis emerged during the winter break in South Korea. It was just before the beginning of the new school year, which is typically March 2. The official first COVID-19 case in South Korea was identified on January 20. The situation rapidly worsened after February 18, which was the beginning of the community-level mass infection, involving approximately 10,000 additional cases over the following month.

In the initial stage, most schools did not experience any serious learning disruption. Only a few schools that had scheduled graduation ceremonies in late February had to modify their plans. All early care and education (ECE) centers were operating full-time. As the beginning of the new school year approached, however, South Korean educational authorities had to make a series of difficult decisions to deal with the increasing health crisis. The winter break became longer for primary and secondary schoolers. Young children were suddenly taken out of ECE centers where they used to spend most of the day. The COVID-19 pandemic brought an unprecedented educational challenge to schools and ECE centers in South Korea.

This paper investigates South Korean educational responses to school closure amid the COVID-19 pandemic, viewed within a resilience framework. In the face of adversity, organizations should demonstrate resilience for survival, not only to rebound from the negative influences of the adversity, but also to use the situation as an opportunity for advancement and transformation (Lengnick-Hall et al., 2011). This study reviews the detailed process of educational responses to school closure in South Korea, assessing risk and protective factors associated with the educational challenge. Then we analyze positive and negative consequences of the educational responses, and provide practical and research implications for South Korean schools and ECE centers based on the findings.

School Closure and Reopening in South Korea

The increased health risks associated with the COVID-19 pandemic immediately led to students' limited access to educational facilities. Due to the strong contagiousness, high fatality rate, and the lack of a vaccine for the new coronavirus, school buildings were closed to prevent school-based mass infections. The Ministry of Education (MOE; 2020a) delayed the beginning of the school year for 5 weeks. Students were offered online self-directive learning materials during the period. Teachers provided individualized social and emotional support to students and parents via electronic methods such as online learning platforms, phone calls, or SMS messages. Meanwhile, MOE prepared for full-scale online schooling, collaborating with wireless service providers to expand web server capacity and traffic capacity of government-operated online learning platforms (Park, 2020). Starting on April 9 and gradually increasing until April 20, full-scale online schooling officially began for primary and secondary schools, starting late for the first time in South Korean education history (MOE, 2020a). During the period of school closure and online schooling, elementary schools offered emergency care services to children of working parents.

MOE had suggested that schools would physically open when daily new cases were maintained under 50 for more than 7 consecutive days (Oh, 2020). However, MOE waited until early May, when there were fewer than 50 new cases per day for almost a month, to officially announce a plan for physical reopening of schools. This initial plan was postponed for an additional week because small-sized community-level infections emerged locally right after a long holiday weekend in early May, involving more than 250 new cases. The official reopening of school buildings, although it was a partial opening, was phased in grade by grade from May 20 to June 8 (MOE, 2020b).

MOE (2020d) only recommended 12th graders to come to school daily, and suggested reduced services to all other grades. Only small schools with enough space could accommodate all students to come to school every day. Each school surveyed parents to make decisions about how many days and hours students would physically come to school. In most schools, students were divided into multiple groups and each group alternately came to school for one to three days per week, or bi-weekly. Distance learning was continued for the rest of the days.

Elementary schools seemed to be efficiently managing social distancing. Schools implemented multiple preventive measures to keep children away from each other, from the school gate to the classroom.

> *"We don't let them go to the restroom together. We only give them a 5-minute break, and even for the 5 minutes, we provide them individual activities to prevent them from playing with each other. We have partitions between each seat, and have foot stickers to keep the distance when children are lining up. We have thermal imaging cameras, hand sanitizers, and wet tissues in school, and encourage students to bring personal water bottles." (A personal conversation with an elementary school teacher, June 15, 2020)*

Similar efforts were going on in secondary schools, but older students who spent longer time in school reported difficulties in keeping the social distancing (e.g. Lee, 2020).

> *"...during the break, students walk arm in arm, chat without wearing masks, and fool around with each other, and teachers gave up on discipline." (A newspaper column of a teacher; Choi, 2020)"*

Unlike primary and secondary schools, most ECE centers in South Korea were operating full-time when they encountered the COVID-19 outbreak, because most centers only have a 1-week winter break at the end of December. South Korean ECE centers can be categorized into daycare centers and kindergartens. Daycare centers serve children of ages 0 to 5, and are under the administration of the Ministry of Health and Welfare (MHW). Kindergartens serve children of ages 3 to 5, equivalent to preschools in the United States, and are under MOE's administration. Beginning in March 2020,

both daycare centers and kindergartens are following a unified national ECE curriculum emphasizing play-based learning. However, because daycare centers and kindergarten are governed by different governmental institutions, their responses toward the COVID-19 crisis varied slightly as well.

Following MOE's guidelines, kindergartens were closed on March 2, and reo-pened on May 27. Daycare centers were officially closed on February 23 by MHW's order (MHW, 2020a). The closure officially continued until the end of May, when MHW gave autonomy for local governments to decide whether they would extend the closure or reopen daycare centers. Both kindergartens and daycare centers, however, provided emergency care services during the period of closure, and were not permitted to refuse children who requested the services. No distance learning contents were of-fered to preschool aged children at the national level. Some kindergartens shared educa-tional videos and learning packages with children, but many young children had to ei-ther stay at home without any official educational support, or attend ECE centers using emergency care services with increased risks of infection. The attendance rate for ECE centers' emergency care services were 10% right after the closure, but it gradually in-creased and reached close to 70% in mid-May (Choi, 2020; MHW, 2020b).

Social distancing is almost impossible in ECE settings. There are not enough physical spaces to keep 1-meter distances in most ECE centers in South Korea, and more fundamentally, young children are not developmentally mature enough to follow instructions for social distancing (Weber, 2020). During the emergency care services, ECE centers in South Korea could only utilize limited options to prevent infections, such as making children wear masks all day, and not accepting children with respiratory symptoms.

> *"My daughters have to wear masks for the entire period that they stay in the center, from the moment that they step in until I pick them up. I feel sorry about this."* (A personal conversation with a parent of young children, April 20, 2020)

> *"My son's ECE center is very sensitive about coughing or sneezing. When kids are coughing, the center refuses them even though they don't have a fever. Once, I went to the center to drop off my son in the morn-ing, and the teacher refused to take him right in front of the door be-cause he was coughing. I had to take him back home."* (A personal con-versation with a parent of a young child, June 30, 2020)

Educational Responses Associated with Risk and Protective Factors

Assets for Distance Learning

Distance learning was in the center of educational responses to the COVID-19 crisis in South Korean primary and secondary schools. Relying on distance learning, schools in South Korea were expected to prevent school-based mass infection without compromising students' academic learning. Two key assets enabled the relatively smooth implementation of full-scale online schooling in South Korea. First, the country benefited from its well-established IT infrastructure. Most regions in South Korea are accessible to a highspeed Wi-Fi network, and devices for digital learning are widely utilized (e.g., Silver, 2019). The digital learning platform used for online schooling was based on cloud servers. Therefore, capacity could be rapidly scaled up just in nine days by increasing the number of cloud servers, so that they could handle the sudden surge of users (Lee, 2020). Access to smart devices was also not a problem for most schools. During the COVID-19 crisis, only 0.2 million among 5.5 million students in primary and secondary schools reported that they needed to get devices for distance learning, and schools and local governments could easily rent their own devices to those students because they were equipped with more devices than they needed (Lee, 2020).

> *"For students, most already have electronic equipment such as a smartphone, laptop, desktop, or tablet. In my school, all 1,000 students have an electronic device for online learning and teaching." (A blog post of a high school English teacher; Hwang, 2020)*

Second, having a national common core curriculum allowed the entire student population to easily transfer to online schooling. Under a centralized education system, South Korean schools have used a national curriculum for almost 70 years, since the end of the Korean War (Seth, 2002). As all schools are following the same curriculum, distance learning contents had already been developed and provided by the Korea Educational Broadcasting System (EBS) for many years, based on the national curriculum. Schools and students have been encouraged to actively engage with these distance learning contents, and to facilitate the engagement, Korean college admission tests have intentionally incorporated those contents. Based on the high-quality digital learning contents and know-how that have been accumulated for decades, South Korean schools could deliver timely distance learning lessons despite the unprecedented COVID-19 health challenges (Shin, 2020).

Televising services and contents of EBS even enabled varying educational approaches depending on the ages of children to provide developmentally appropriate instruction. First and second graders were believed to be too immature to effectively engage in virtual communications, and were recommended not to be exposed to digital devices for long periods. Most schools allowed these young children to take distance learning classes through EBS, without interacting with computers or smart devices (MOE, 2020c), although some schools provided virtual learning opportunities to these children as well (Lee, 2020). First and second graders also received physical learning packages to enable them to learn without accessing digital learning platform (Lee, 2020).

> *"Teachers shared the broadcasting schedule of EBS with parents so that they could turn on the television and show relevant lessons to children. Parents of first and second graders could either access the EBS contents online or show them on television."* (A personal conversation with an elementary school teacher, June 15, 2020)

Challenges from Family Influences and Financial Instability

Although the assets and resources in education system and the society enabled quick implementation of large-scale online learning, schools and ECE centers went through diverse risks for successful adjustment to the changes due to the COVID-19 crisis, such as variabilities in family influences and financial instability in ECE centers.

Variabilities in Family Influences

South Korean educational responses to the COVID-19 crisis inevitably brought fundamental problems associated with family backgrounds. In South Korea, the culture of 'work from home' is not settled yet, thus, only about 60% of workers could at least partially work from home even in the peak of the pandemic (Shin, 2020). Therefore, when schools were closed, working parents who were financially unable to hire a nanny, or find a family member who could take care of children, had to use emergency care services offered by schools or ECE centers, potentially increasing the risk of COVID-19 infection for their children (Kim, 2020).

Moving toward partial school reopening, working parents had to worry about not being able to use emergency care services during distance learning days (Lee & Shin, 2020).

> *"Children go to school once a week and continue online schooling for the rest of the days, so if there are no emergency care services, working parents have to quit their jobs. Emergency care services need to continue even after school reopening."* (An interview with a parent in a newspaper article; Lee & Shin, 2020)

On the other hand, some stay-at-home parents complained about opening schools too early, and a few of them even chose to keep their children at home after school reopening to avoid possibilities of infection (Kim, May 27 2020; Yoo, 2020).

> *"Can you understand that, among two children living in the same place, one goes to school every day while another goes to school once in a couple of days? How can we keep children healthy amid school reopening determined by majority rule? Why do you enforce school reopening in this ridiculous way while COVID-19 is ongoing and there's no remedy for it? Please don't forget what the most important thing is. School reopening should be postponed until either a vaccine or a remedy be-*

comes available for public." (A petition for the Blue House by a parent, May 26, 2020, https://www1.president.go.kr/petitions/589251)

The COVID-19 crisis uncovered a stark contrast of experiences between students from different family backgrounds. Some were kept safe from every possible source of infection while some were forced to go to schools for emergency care services, dealing with increased health risks, during the period that they were not allowed to go to school.

Online schooling itself also created environments that magnified the function of families in students' care and education, which enlarged the educational gap between high- and low-income students (Hwang, 2020). For instance, for distance learning, students had to follow a series of processes requiring strong IT literacies, such as setting up computers, installing relevant software programs, accessing course websites, downloading resources, and submitting assignments. Students with stay-at-home parents who were familiar with technology could easily follow these steps and adjust to the transition to distance learning. However, low-income students with limited access to digital technology, or students raised by grandparents who were more likely to be IT-illiterate, experienced challenges in each of these processes (Ju & Lee, 2020).

"As schools are reopening, I requested for a computer at the community center and received one to install at home. But the community center said that they can't set it up, and I also couldn't do that. So, it's just sitting there (without being set up). … I can't help her (=granddaughter) (because I don't know anything). She's sitting in front of the computer all day long, but I have no idea whether she's studying or just surfing the web." (An interview with a grandparent raising a sixth grader in a newspaper article; Ju & Lee, 2020)

Once students and families overcame all the initial barriers, they still had to be self-directive to efficiently manage time and schedules. Taking classes per se only took several hours per day, but students then had to deal with long assignments (Kang, 2020). Without the physical presence of teachers, primary caregivers who can stay at home, or families who have financial capability to hire tutors to manage students' efficient online learning, provide higher quality education to students (Hwang, 2020). According to a recent survey, the average daily learning hours during online schooling was reduced to half of those in the regular school years (Kang, 2020). However, many students, particularly those from middle class homes, individually received private education to make up the educational gap (Kang et al., 2020).

Like many countries, South Korea has long suffered from income-based educational gaps (Byun & Kim, 2010). In particular, widespread private education has functioned to worsen the educational inequality due to differential family influences. According to the Korea National Statistical Office (2020), about 75% of students participated in private education in 2019, and the gap in receiving and expending on private

education between low- and high-income families has been growing for the past several years. While at least some types of private education are found to have positive associations with improved academic achievement (e.g. Byun, 2014), differential access to private education depending on family socioeconomic status already has been a critical contributor to educational inequality in South Korea (Choi & Park, 2016). Dealing with increased family responsibilities for care and education due to the COVID-19 crisis, and with families' greater reliance on private education using differential financial and social resources, the current situation is exacerbating this chronic challenge.

Financial Instability in ECE Centers

South Korea provides universal preschool education to all children. Primary caregivers can decide whether they will keep their children home and receive childcare subsidies, or send children to ECE centers and let the government pay the base tuition. ECE centers can charge additional costs from parents but the maximum amount is limited by the government. Public ECE centers tend to be financially stable under this financial structure because they receive government support to cover key expenses including teacher salary and facility repairs. Private ECE centers, however, have to take care of the key expenses by themselves, while the maximum costs that they can charge from parents are limited. Therefore, without financial flexibility, losing children immediately results in financial burdens in private ECE centers (Lee & Chung, 2016).

For the first one or two months after the COVID-19 outbreak, most parents chose to keep children at home. Some parents cancelled the enrollment of their children at ECE centers so that they could receive the childcare subsidies from the government (Choi, 2020; Kim, 2020). This caused a severe financial crisis in private ECE centers, particularly in home-based childcare centers (small-sized daycare centers operating in an apartment unit or in a single home, usually having a maximum capacity of 21 children) which have the least financial flexibility among private ECE centers.

> *"Home-based childcare centers are facing the most difficulties. As many children cancelled enrolment, classes were dissolved, and teachers lost jobs." (From a discussion among educational professionals; p.243, Kang et al., 2020)*

Even though parents kept children enrolled in ECE programs, many complained that the government was paying ECE centers instead of families, while families were taking care of children. Some refused to pay the monthly costs that they had to pay in addition to the base tuition paid by the government (Choi, 2020). Meanwhile, ECE centers had to pay teacher salaries and rent because they were operating as usual to serve children using emergency care services. As a result, ECE centers, particularly private kindergartens whose additional monthly costs are the greatest in general, encountered severe financial challenges due to the COVID-19 crisis (Kim, 2020).

> *"There really can be a riot among parents in April. They complain, 'How can I pay anything when I never sent my child to your facility? My child never set foot in your classes.'" (An interview with an ECE program director on television news; Han, 2020)*

Consequences of the Educational Responses

Dealing with school closure due to the COVID-19 crisis, South Korean schools and ECE centers utilized assets and resources in the education system and the society to quickly adjust to the sudden changes in educational environment. However, some of the educational responses in South Korea produced undesirable consequences in schools. One of the most prominent challenges was differential and downgraded educational quality.

Adopting distance learning, primary and secondary schools could choose whether to offer live classes, recorded classes, or assignment-based classes for distance learning. Some teachers offered least partial live classes while some only provided recorded classes. Even with the recorded classes, teachers who have relevant IT skills and knowledge recorded their own lectures, while many only shared the EBS learning contents (Shin, 2020). Teachers expressed concerns about the quality of contents and instruction because of the short period of preparation and limitations in the means of instruction.

> *"Teachers couldn't be prepared enough because we were told to provide online learning classes in only one week." (From a discussion among educational professionals; p.68, Kang et al., 2020)*

> *"Most teachers don't have experiences in online classes. ... (Authorities) say that we can easily offer live classes using a smartphone, but if we do it without enough infrastructure or experience, and fail to meet students' expectations, it can generate distrust in education in general." (An interview with a high school teacher in a newspaper article; Shin, J., 2020)*

> *"There was a tendency for downward leveling to keep everyone on the same pace in online classes." (From a discussion among educational professionals; p.23, Kang et al., 2020)*

Students also expressed negative impressions about online classes. According to Oh (April 23, 2020), in a survey of high school students, almost 70% of 12th graders and more than 55% of 10th and 11th graders reported that they felt negatively about online learning classes. About 40% of them said that the quality of education was much lower in online classes, and they were more difficult to focus on. More than 25% said that they experienced technological difficulties, and more than 15% said that there were limitations in assignments and evaluations (Oh, April 23, 2020).

> *"If I only watch 60% of EBS contents, I'm marked as attended. ... Actually, I sometimes take a nap or do other things while EBS videos are being played. Some of my friends studied for the college entrance tests during classes." (An interview with a 12th grader in a newspaper article; Shin, Y., 2020)*

Parents were concerned about the varying quality of learning depending on teachers. Some parents were disappointed about the low quality of classes recorded by teachers, and some complained about teachers who only shared EBS contents, saying that those teachers were not doing their jobs (Jeon, 2020; News1, 2020). Because many students attended classes at home, parents who have multiple children could easily observe the classes and compare classes offered by different teachers and schools.

> *"My younger child's school has live classes, and shares videos recorded by teachers. But my older child's school only plays EBS videos. As a parent, I naturally compare the two schools and teachers." (An interview with a parent in a newspaper article; News1, 2020)*

Despite the challenges, schools and ECE centers in South Korea also identified positive aspects of the changes associated with the COVID-19 crisis, which can provide practical and research implications for potential advancement and transformation of the field of education in the future.

First, some teachers felt that the new educational setting due to the COVID-19 crisis provided increased opportunities for teachers to utilize more diverse resources in classes, and to spend more time for the improvement of learning contents and instructional quality, because of the flexibilities in time and schedule (Lee, 2020).

> *"There were improvements in preparation for classes and the quality of classes due to online schooling." (An email communication with a teacher, May 30, 2020)*

In particular, teachers in ECE settings felt that they benefited from the changes due to the COVID-19 crisis. Both kindergartens and daycare centers were transferring to a newly implemented play-based curriculum since March 2020, and the reduced classroom capacity provided opportunities for teachers to test and practice the new curriculum in more comfortable settings.

> *"(Daycare) teachers actually liked the situation that less children came to the center. They'd been worried about the transition to a play-based curriculum, and this situation allowed them to practice the new curriculum in the smaller classroom that they could handle more easily." (A personal conversation with an early childhood researcher, May 18, 2020)*

Second, distance learning also enabled more effective individualized learning for students. Students had increased flexibility because they could choose the best time to take the recorded classes and to work on assignments. Teachers also had more flexibility time-wise so they could provide more individualized feedback to promote children's learning.

> *"Online classes are good for students' individualized learning. It is good that students can adjust the pace of the lecture, or take the same class repeatedly." (An email communication with a teacher, May 30, 2020)*

> *"I feel that I never have given one-on-one feedback as deeply as what I'm doing these days. ... I can see each of 27 children's notebooks in detail, and can provide individualized responses. For the first time, the individualized learning became possible. When we were in the classroom altogether, this was impossible." (From a discussion among educational professionals; p.21, Kang et al., 2020)*

Implications

School closure and full-scale online schooling provided unexpected natural experiments in the field of education in South Korea. It is too early to evaluate the effects of the educational responses to the COVID-19 crisis in South Korea. However, initial statistics show that at least online schooling was successful in providing learning opportunities to a broader range of students than was typical in normal schooling settings, even though it also increased family-based learning gap. Online attendance rates reached up to 98.8%, which is higher than 93%, the usual attendance rates in the beginning of regular school years (Nam, 2020; Oh, April 22, 2020). Jeon (2020) suggests that easy access to classes and increased flexibility in timing and format could have encouraged more students to attend classes. Or, it could also be the case that teachers utilized more channels to encourage students' participation in classes (Jeon, 2020; Oh, April 22, 2020).

> *"Students are marked as 'attended' if they cover more than 60% of the content. But many students do not take online classes on time, so their academic progress rates in the distance learning system often appear to be much lower than where they should be. Teachers pester parents by texting, messaging, and calling, to make children take the classes so that they can be marked as attended. I think there are more difficulties among children to participate in distance learning classes, and more disruptions in learning." (A personal conversation with an elementary school teacher, June 15, 2020)*

The reliance on distance learning probably will continue for a while. Even after the reopening, many schools are being closed daily due to new COVID-19 cases rising in the neighborhood or within the school. Whenever schools feel that the health of students and teachers are threatened due to the novel coronavirus, they can easily transfer back to full-time online schooling until the situation is relieved. The pandemic is expected to come back (Wan & Johnson, 2020), and it is not clear when the partial school reopening will be scaled up to full-scale physical schooling. The distance learning infrastructure that South Korean schools has established this time will continuously enable schools to prioritize students' health without compromising academic learning.

Moreover, as the quality of online learning classes rapidly improved over time, and after students and teachers experienced unexpected challenges in face-to-face schooling, public opinion is leaning toward online schooling. According to S. Kim (2020), a recent survey showed that approximately 55% of students who experienced face-to-face schooling after online schooling expressed a preference for online schooling.

> *"Although I ask questions, students don't answer that much. ... Since we're all wearing masks, students sitting far from the teacher can't hear the teacher's voice well, and the teachers are affected because they have to speak loudly. ... I'm not sure whether face-to-face classes are offering higher quality learning experiences to students than online classes." (An interview with an elementary school teacher in a newspaper article; Kim, 2020)*

> *"After children came back to school, we are actually controlling children more. ... To be honest, school reopening is causing high stress for schools. However, we're not sure whether having children in the school building with all these efforts will be more effective than online schooling. Children who are coming to school only come once a week. Even when they are in the school, they are not allowed to work together. Parents who don't want to send kids to school are still keeping children at home." (A personal conversation with an elementary school teacher, June 15, 2020)*

With the mixed messages about online schooling and physical school reopening in the midst of the COVID-19 crisis, and without scientific evidence on the effectiveness of both schooling methods, it is hard to make decisions on the best strategy to provide the most optimal education for children. However, based on some of the positive consequences of online schooling in the midst of the health crisis, distance learning can become an alternative strategy to increase access to high-quality education. Rather than merely pointing out negative outcomes of online schooling, it may be the time to welcome the new era of education, and to concentrate research efforts to counteract educational inequality.

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