SDG 4 Midterm Review

Monitoring Implementation of SDG 4 Target 4.1. ~ 4.c. in Rep. of Korea

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This report presents the compiled work from the National Consultative Group and Working Groups on Education 2030, Rep. of Korea

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Monitoring SDG 4 Target 4.1.

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1. Introduction

The detailed goals for primary and secondary education in SDG 4 target 4.1 mean that school education is the most important factor in guaranteeing equity in education and building a better future for the next generation. SDG 4 target 4.1 by UNESCO is "By 2030, to ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes". The Korean government is making various efforts to realize policies to ensure basic education for all children and emphasize school accountability. It is considered that the general environment for providing quality education to Korean students is well prepared according to the 2021 OECD education indicators. For example, the school enrollment rate by age was higher for 3~5 year olds than the OECD average, and the number of students per secondary school teacher has slightly decreased compared to the previous year.

However, one of the most striking changes in Korean society has been the continuous low birth rate which has led to the decline in the school-age population of primary and secondary schools. According to Statistics Korea (2023a), the school-age population in 2023 is only 83% of that in 2015, and the school-age population in 2030 is expected to decline to 64% compared to that in 2015.

Since 2014, the Korean government has made efforts to improve primary and secondary school students' basic learning skills (SDG 4.1.1). For instance, the municipal and provincial offices of education, in cooperation with the Korea Institute for Curriculum and Evaluation, have run so-called 'Do-Dream Schools' focusing on helping individual students improve their learning skills in collaboration with a group of teachers (Korea Institute for Curriculum and Evaluation, 2023). In addition, policies for improving basic learning skills have been reinforced with the law so-called 'The Rights to Basic Learning Skills' which was enacted in 2021. Concerning indicator SDG 4.1.2 and SDG 4.1.4, the Ministry of Education has continuously made and implemented plans for preventing dropouts and supporting out-of-school students since the first implementation in 2013 (Ministry of Education, 2013).

2. Adaptation and Monitoring of SDG 4 Target 4.1 and Indicators

SDG 4 target 4.1 emphasizes the necessity of providing an optimal educational environment for every student under the goal 'By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes'. National SDG 4 target 4.1 Midterm Review focuses on SDG 4.1.1, SDG 4.1.2, and SDG 4.1.4 as target 4.1's global benchmark indicators (UNESCO, 2022). The Trends in International Mathematics and Science Study (henceforth, TIMSS) and the Programme for International Student Assessment (henceforth, PISA) were adopted as international assessments for SDG 4.1.1, while the National Assessment of Educational Achievement (henceforth, NAEA) was additionally analyzed as a national assessment for SDG 4.1.1. Data for TIMSS and PISA was retrieved from the UNESCO Institute for Statistics (2023), and data for NAEA was drawn from Statistics Korea (2023b). In addition, all data for SDG 4.1.2 and SDG 4.1.4 was also gained from the archive of the UNESCO Institute for Statistics (2023).

SDG 4 Target 4.1 Goal

By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.

SDG 4 Target 4.1 Indicator

SDG 4.1.1	Proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex
SDG 4.1.2	Completion rate (primary education, lower secondary education, upper secondary education)
SDG 4.1.4	Out-of-school rate (primary, primary education, lower secondary education, upper secondary education)

3. Monitoring Progress of SDG 4 Target 4.1.

1) Progress toward Indicator SDG 4.1.1

SDG 4.1.1 is the indicator that measures the proportion of children and young people in Grade 2 or 3 of primary education, at the end of primary education, and at the end of lower secondary education achieving at least a minimum proficiency level in reading and mathematics by sex. In Korea, this indicator is calculated with data from TIMSS conducted at the fourth-grade level of primary school in mathematics. For students at the end of lower secondary school, reading and mathematics assessments are analyzed from PISA.

$$\frac{\textit{(Number of children and young people achieving an MPL in respective domains)}}{\textit{(Number of children and young peiple in all proficiency levels in respective domains)}} * 100^{1}$$

** segregated by domain (reading and mathematics) and sex*

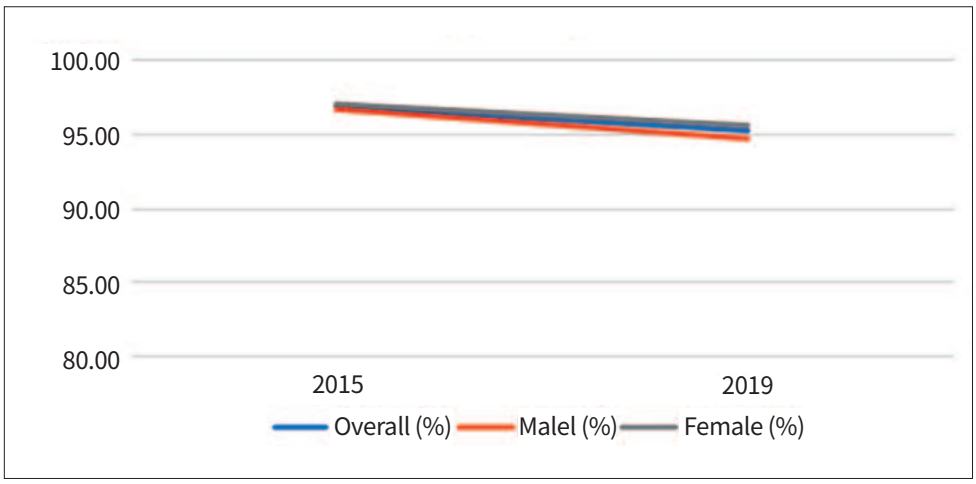
TIMSS and PISA have measurement cycles of four years and three years, respectively. Due to this measurement frequency and measurement delay

1 For detailed computation, visit SDG Goal 4: Quality Education — UNICEF DATA from https://data.unicef.org/sdgs/goal-4-quality-education.

caused by the COVID-19 pandemic, there are only two data points available over seven years. To picture trends more precisely on an annual assessment basis, it is meaningful to refer to a national-level assessment of educational achievement such as NAEA that Korea conducts every year.

Figure 1[2] illustrates a decrease in the proportion of elementary school students achieving at least a minimum proficiency level in mathematics, as indicated in the TIMSS data for the years 2015 and 2019. The proportion of primary school students achieving at least a minimum proficiency level in mathematics was 96.85% in 2015 and slightly decreased to 95.18% in 2019 compared to that in 2015. However, considering the proportions of the global average were 45.22% in 2015 and 44.22% in 2019, Korean primary school students performed way better in math than international students. In addition, it is also shown that the proportion of female students was slightly larger than that of male students in both 2015 and 2019.

<Figure 1> *Proportion of primary school students achieving at least a minimum proficiency level in math*

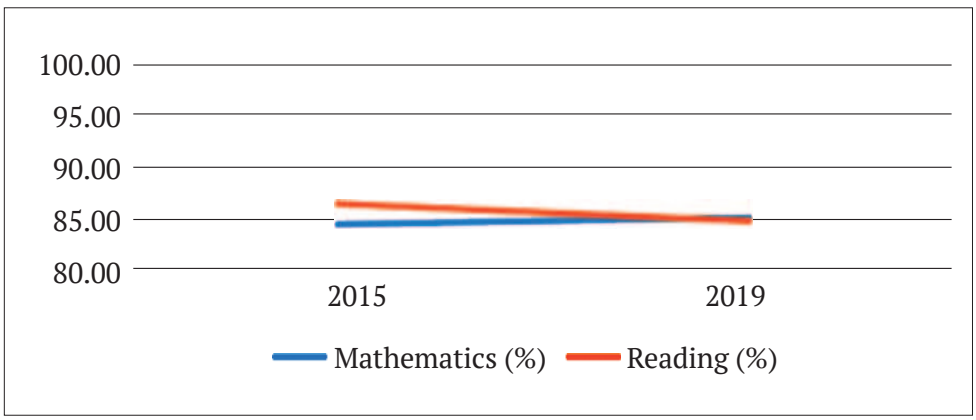


2 Source: from SDG 4 September 2023 Release available at sdg 4-data.uis.unesco.org. (last accessed on September 10th, 2023)

For secondary school students, results were drawn from assessments in 2015 and 2018 as shown in Figure 2[3]. For students at the end of lower secondary school, reading and mathematics assessments are analyzed from PISA. The COVID-19 pandemic was a cause to postpone the PISA 2021 assessment to 2022 whose results are yet to be reported.

The proportion of lower secondary school students achieving at least a minimum proficiency level in mathematics slightly increased from 84.54% in 2015 to 85% in 2018, while their reading proficiency decreased from 86.34% to 84.89%. Considering that the proportions in 2012 were 90.87% in mathematics and 92.35% in reading, proficiency levels both in mathematics and reading since 2015 are shown to have not been recovered to the proficiency level in 2012. However, considering the proportions of the global average in mathematics were 50.06% in 2015 and 50.79% in 2019 and those in reading were 63.27% in 2015 and 63.52% in 2019, it is understood that Korean lower secondary school students performed much better in both mathematics and reading than international students.

<Figure 2> *Proportion of lower secondary students achieving at least a minimum proficiency level in mathematics and reading*

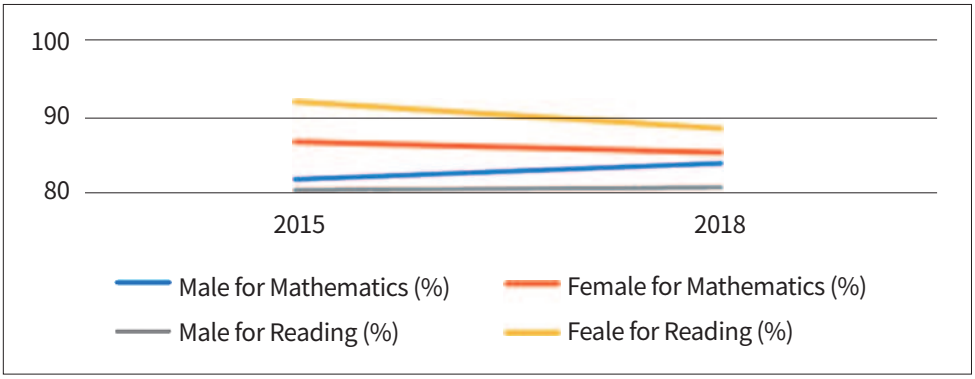


3 Source: from SDG 4 September 2023 Release available at sdg 4-data.uis.unesco.org. (last accessed on September 10th, 2023)

In addition, as manifested in Figure 3[4], it is also shown that the proportions of male students reaching at least a minimum proficiency level in mathematics were 82.25% in 2015 and 84.43% in 2018 while those of female students were 87.04% in 2015 and 85.63% in 2018. In the results the proportion of male students achieving at least a minimum proficiency level in mathematics was upwards from 2015 to 2018 while the reverse was true of that of female students.

As for reading, 80.87% of male students in 2015 and 81.30% in 2018 achieved at least a minimum proficiency level in reading while 92.36% of female students in 2015 and 88.85% in 2018 reached the level. As a result, the proportion of male students slightly increased, and yet the proportion of male students significantly decreased.

<Figure 3> *Proportion of lower secondary students achieving at least a minimum proficiency level in mathematics and reading by sex*

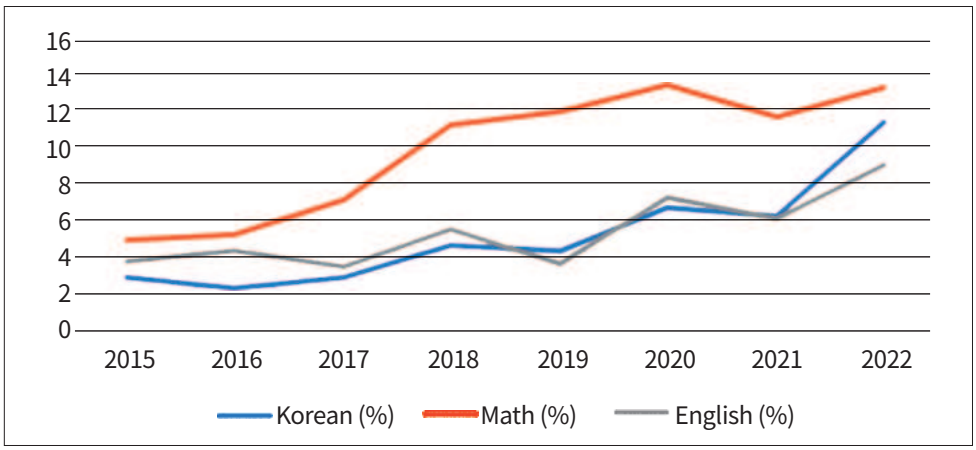


The National Assessment of Educational Achievement (NAEA) evaluates students' educational achievement in Korean, mathematics, and English. The assessment targets students in grade three in lower secondary school and grade two in upper secondary school. The Ministry of Education provides the proportion of students in the below-basic level group and the basic or above level groups.

4 Source: from SDG 4 September 2023 Release available at sdg 4-data.uis.unesco.org. (last accessed on September 10th, 2023)

From 2015 to 2021, NAEA data shown in Figure 4[5] indicates a consistent increase in the number of students of the below-basic level group in all subjects. However, the proportions fortunately decreased from the year 2020 to 2021. Since the COVID-19 pandemic occurred in 2019, the Ministry of Education (2020a, 2020b) prepared and implemented plans for normalization of school education in 2020 and for reinforcement of support for student learning based on the results of NAEA in 2020. The assumption is that these actions might have been effective in lowering the proportions of the number of students of the below-basic level group in all subjects. Despite the policies, the proportions unfortunately increased from the year 2021 to 2022. These results can be understood in that the number of people infected with the COVID-19 pandemic reached its peak in 2022.

<Figure 4> *Proportion of the lower secondary school students in the below-basic level in NAEA*



In addition, concerning educational achievements by gender based on TIMSS, PISA, and NAEA data, female students consistently exhibit higher levels of achievement than male students. This trend is evident not only in international student assessments, TIMSS and PISA but also in the national-level assessment, NAEA. Furthermore, regardless of school levels or subjects, female

5 Source: from Results of the National Assessment of Educational Achievement available at https://www.index.go.kr/unity/potal/main/EachDtlPageDetail.do?idx_cd=1539. (last accessed on July 25th, 2023).

students consistently outperform their male counterparts. In the most recent data from NAEA in 2022, differences in the proportions of male students and female students in the below-basic level group are significantly higher across all subjects than ever.

In summary, the proportions of the students reaching the minimum achievement in reading and mathematics showed a decline based on TIMSS and PISA since 2015 while the proportions of the students in the below-basic level of NAEA consistently increased. Additionally, female students have performed better than male students in national and international student assessments. These trends reflect no progress or improvement in educational achievement against the objectives of SDGs. Therefore, it is necessary to make and implement more effective and efficient educational support policies to reverse the trends in educational achievement.

2) Progress toward Indicator SDG 4.1.2

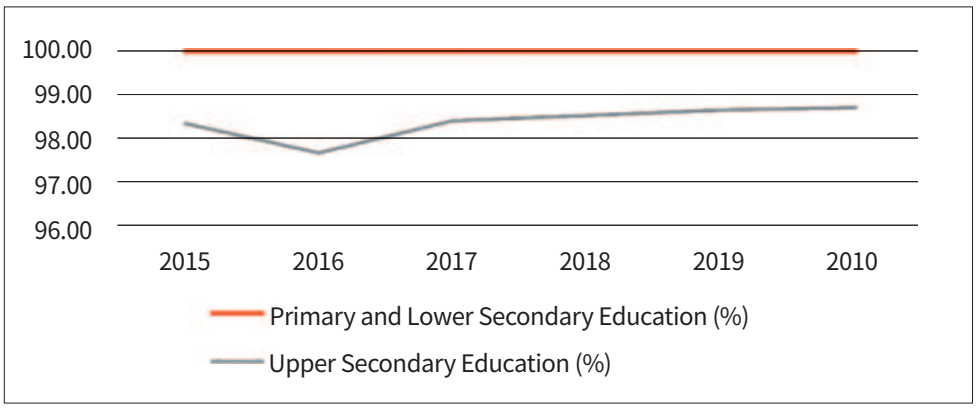
SDG 4.1.2 refers to the cohort rate of children and adolescents in the final grade of each school level who have completed the education cycle. It signifies that students, upon entering the school at an appropriate age, participate in classes for a suitable duration, achieve the required academic standards for each grade, and successfully progress to the next level of education. This indicator demonstrates not only the completion of grades but also the attainment of appropriate and effective learning outcomes.

$$\frac{\textit{(Number of persons in the relevant age group who have completed the last grade of a given level of education)}}{\textit{(Total population of the same age group)}} * 100$$ [6]

6 For detailed computation, visit SDG Goal 4: Quality Education — UNICEF DATA from https://data.unicef.org/sdgs/goal-4-quality-education.

Considering the completion rates of the global average ranging from 53.30% to 86.70%, Korea's completion rates are exceptionally high as indicated in Figure 5[7]. From 2015 to 2020, both elementary and middle schools achieved a 100% completion rate. The high school completion rate has been maintained at around 98%. Considering the global completion rates and the fact that the average high school completion rate in OECD countries is around 80%, Korea's high school completion rate is notably high. The numerical values of completion rates have also continued to grow over the past years except for the year 2016. These trends indicate that students are successfully progressing through the education cycle without any significant barriers.

<Figure 5> *Completion rate of primary and secondary education (2015-2020)*



Moreover, there is no significant difference in completion rates between sexes at each school level. This suggests that male and female students are experiencing similar levels of educational success. Except that of upper secondary education in 2016, where male students had a completion rate of 95.76% compared to 99.17% for female students, the slight difference in completion rates between sexes has been consistently within a very narrow range of 0.5%, rendering any claim of sexes disparity unsubstantiated.

The high completion rates signify that entry barriers to schools are low, students receive appropriate education at the required age, dropout rates

7 Source: from SDG 4 September 2023 Release available at sdg 4-data.uis.unesco.org. (last accessed on September 10th, 2023)

are minimal, and students are progressing through grades without repeating years before graduation. This high achievement in graduation is attributed to Korea's policy of mandating education up to lower secondary education, which safeguards students' access to education and ensures timely completion. Additionally, the social and cultural contexts in Korea contribute to a strong sense of consensus on the importance of school graduation.

Despite Korea's high completion rates in primary and secondary education, it is necessary to find causes of and solutions to non-completion in upper secondary education under the overarching SDG principle of 'Leave No One Behind.'

3) Progress toward Indicator SDG 4.1.4

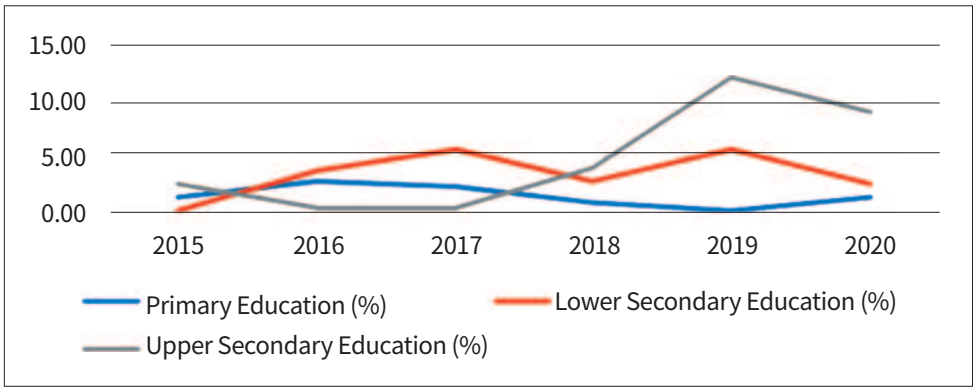
SDG 4.1.4 pertains to the out-of-school rate, which measures the proportion of students of eligible school age who are not enrolled in primary, lower secondary, or upper secondary education. As shown in Figure 6[8], from 2015 to 2020, the out-of-school rates in primary and secondary education range from 0.11% to 9.10%, and they are significantly lower than the global averages of 9.22% to 32.74%, indicating a notably low proportion of Korean students outside the school system.

However, the out-of-school rate in upper secondary education has more than doubled and has been larger than those in primary and lower secondary education since 2018.

The out-of-school rates tend to be lower among younger age groups and higher among upper secondary school students since 2018. Furthermore, the discrepancy in rates is more pronounced between lower secondary and upper secondary school levels than between primary and lower secondary levels. This demonstrates that the proportion of students leaving the school system increases as they progress to higher levels of education.

8 Source: from SDG 4 September 2023 Release available at sdg 4-data.uis.unesco.org. (last accessed on September 10th, 2023)

<Figure 6> *Out-of-school rate of primary and secondary education (2015-2020)*



The composition of out-of-school youths in Korea involves various groups including, for example, dropouts, immigrants to foreign countries, those preparing for graduation equivalency tests or seeking jobs, and others with diseases. Especially in the case of upper secondary education, it is necessary to lower the proportion of the out-of-school rate by strengthening public education even though upper secondary education is not compulsory unlike primary and lower secondary education.

4. Current Status and Issues

The high completion rate in Korea implies two significant aspects. First, it suggests that efforts should prioritize achieving other interconnected indicators such as SDG 4.1.1 and SDG 4.1.4 instead of focusing solely on education completion rates, with a focus on ensuring "equitable access to quality primary and secondary education completion". Given that social norms and policy systems already guarantee high completion rates, additional efforts should be directed towards other areas. Particularly, improving students' achievement of minimal proficiency levels as mentioned earlier and reducing out-of-school rates are more crucial in achieving target 4.1 in Korea than just focusing on completion rates. These considerations are related not only to policies but also to the quality of education within schools, such as improving the quality

of education, enhancing relationships between teachers and students, and improving the learning environment.

5. Future Tasks

As shown in Figure 4, the results of the NAEA during the period of 2020 to 2022 show that the proportions of students in the below-basic level were higher than prior years. Many of the students in the same period were infected with the COVID-19 pandemic. To prevent the spread of the COVID-19 pandemic schools had no choice but to open online classes, which led to the less chances of teachers' direct and close instructions on student learning. In addition, both teachers and students were not fully prepared for online classes because the pandemic came as a surprise. Therefore, under the circumstances learning loss inevitably occurred across the country.

In 2021, the Ministry of Education has promoted the "comprehensive education recovery plan" to cope with learning, psychological, and social crises after the COVID-19 outbreak. In addition, the law so-called 'The Basic Academic Achievement Guarantee Act was enacted and a five-year comprehensive plan guaranteeing basic academic ability has been implemented by the law. The efforts should be centered around schools and must be achieved through cooperation with the community and families to provide student-tailored support.

From the target 4.1 perspective, customized multidimensional support must be provided to students based on the psychological and emotional diagnosis. The government must develop in-depth diagnostic tools that measure the students' psychological, emotional, social, physical and mental health and provide links between education programs, counseling and parent education for customized guidance and support. With the help of technology, an AI-based diagnosis system for learning can be explored for close support for basic academic competency.

6. Conclusion

As the number of students in the below-basic level of educational achievement has consistently increased and the learning loss was considerable due to the COVID-19 pandemic, the Korean government took full-fledged actions to minimize the learning loss. It has implemented a wide variety of policies to help Korean students recover from their learning loss and bridge the education gap caused by the COVID-19 pandemic. For example, the Ministry of Education (2021) has continuously supported schools in implementing diverse education programs, including supplementary classes in and after school, various learning consultation programs, and mental clinics. In addition, under the law so-called 'The rights to Basic Learning Skills,' the Ministry of Education (2022) pronounced the first comprehensive plans for improvement of basic learning skills 2023-2027. For instance, students in primary and secondary school students are given chances to diagnose their educational achievement with the so-called 'Customized Assessment of Educational Achievement (CAEA)' based on individual school academic calendars. In addition, the CAEA will be advanced as a computer adaptive test (CAT), and the results of CAEA are linked with the outcomes of the existing Diagnosis-Supplement System for Basic Learning Skills, which provides an in-depth individualized diagnosis for basic learning skills followed by a wide variety of learning and teaching supports.

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Annex. *Relevant regulatory document, references and stakeholders and their responsibilities by SDG 4.1 Target and indicators*

SDG 4 target	SDG 4 indicator	Name and hyperlink of the relevant policy, strategy, other regulation	Key references in the policy/strategy/regulation which address the target/ indicator	Responsible stakeholder	Type of responsibility	Key achievement	Data sources
4.1	4.1.1	Act on The Rights to Basic Learning Skills	Article 7 (diagnosis for basic learning skills) Article 10 (Support Center for Basic Learning Skills)	Ministry of Education/ Korea Institute for Curriculum and Evaluation	diagnosis for basic learning skills Installation and Conduct of the Support Center for Basic Learning Skills	Support for Students below basic achievement level	The Korean Law Information Center https://www.law.go.kr
		Elementary and Secondary Education Act	Article 9 (Assessment of Students, Institutions, and Schools)	Ministry of Education/ Korea Institute for Curriculum and Evaluation	Development and administration of National Assessment of Educational Achievement	Support for students' academic growth	The Korean Law Information Center https://www.law.go.kr
	4.1.2	Elementary and Secondary Education Act	Article 13 (Obligation of School Enrollment)	Ministry of Education/ Schools	Enrollment and graduation	Improvement of Enrollment and Graduation	The Korean Law Information Center https://www.law.go.kr
	1.1.4	Act on the Support for Out-of-school Youth	Article 5 (Plans to Support Out-of-School Youth) Article 6 (Fact-Finding Surveys) Article 9 (Educational Support)s	Ministry of Gender Equality and Family	Fact-finding survey on out-of-school youth/ Support for out-of-school youth	Ascertaining the status and conditions of out-of-school youth/ Educational support	The Korean Law Information Center https://www.law.go.kr

Monitoring SDG 4 Target 4.2.

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1. Introduction

The second target of Sustainable Development Goal 4 (henceforth, SDG 4) is 'Quality Early Childhood Care and Education for All.' SDG 4 target 4.2 arises from the recognition that early childhood is the most fundamental and critical catalyst for global development and reform. Korea has continually strived to enhance and invest in early childhood care and education (henceforth, ECCE) due to increasing awareness of the importance of early childhood based on research findings on early brain development and cost-benefit analysis as well as emphasis on the right to education for young children and increasing women's labor participation.

Korea's policy aspiration and efforts in ECCE have been focused on ensuring equity from the beginning of life, reducing various disparities in early childhood, improving the quality of ECCE services, enhancing the implementation quality of the national Nuri Curriculum, supporting the most disadvantaged children, and strengthening support for parental child-rearing toward the 'realization of full national accountability for early childhood care and education.'

However, the implementation of SDGs has faced significant challenges and setbacks due to the COVID-19 pandemic. Worldwide, the pandemic has threatened the progress made in various areas and presented a range of challenges.

The pandemic has exacerbated inequalities in access to various social services, such as ECCE, beyond compulsory education, with social distancing measures and economic downturn intensifying disparities. In particular, reduced parental income was likely to decrease children's participation in early childhood services and to lead to potential declines in service quality.

In addition to global issues such as climate change and digital transformation, Korea is grappling with a severely low birth rate, which significantly impacts the early childhood sector. The population of children aged 0-5 decreased significantly over the past seven years, from 3,179,803 in 2015 to 2,295,053 in 2022, with an estimated further decline to 1,814,972 by 2030. This represents a reduction of approximately 1.4 million children compared to 2015. Consequently, the number of kindergartens and daycare centers is also decreasing rapidly, with expectations of further declines.

2. Adaptation and Monitoring of SDG 4 Target 4.2 and Indicators

SDG 4 target 4.2 is to 'ensure that by 2030, all boys and girls have access to quality early childhood development, care, and pre-primary education so that they are ready for primary education.' The target emphasizes the importance of 'quality' early childhood services, 'accessibility,' and 'school readiness.' It seeks to enhance equity, quality, and inclusiveness in early childhood education (Moon, 2018).

To monitor the implementation of SDG 4 target 4.2 (Quality Early Childhood Education for All), two global indicators and three thematic indicators have been established as below:

<Table 1> *Global and Thematic Indicators of the SDG 4 Target 4.2*

Global Indicators (2)	4.2.1 Proportion of children from 24 to 59 months of age who are developmentally on track in health, learning and psychosocial well-being (by sex)
	4.2.2. Participation rate of children in organized learning (one year before the official primary entry age (by sex).
Thematic Indicators (3)	4.2.3. Percentage of children under 5 years of age experiencing positive and stimulating home learning environments
	4.2.4. Gross pre-primary enrollment ratio
	4.2.5. Number of years of (i) free and (ii) compulsory pre-primary education guaranteed in legal frameworks

In 2018, Korea configured the K-SDG 4.2 indicators to reflect the national contexts by adding 'participation rates of public ECCE services.' This reflects the government's intention to enhance the public nature of ECCE and to promote the use of public services over private ones. It aims to alleviate the burden on parents who would otherwise have to bear higher costs for private kindergartens and childcare centers. Besides, as part of SDG 4.c (teacher qualification) implementation instruments, the minimum qualification standards for childcare teachers are included in K-SDG 4.2 to raise from high school graduate diplomas (ISCED level 3) to junior college graduates specialized in ECCE (ISCED level 5). It seeks to enhance early childhood educators' professionalism and, ultimately, improve the quality of early childhood education and care.

3. Monitoring Progress of SDG 4 Target 4.2.

1) Progress toward Indicator SDG 4.2.1. (Development and well-being of young children)

Regarding SDG 4.2.1 related to the physical health, learning, and socio-psychological well-being of young children, UNICEF (2021) developed the Early Childhood Development Index (ECDI 2030) recently to measure developmental indicators for children aged 24 to 59 months. Validation and

standardization of the ECDI for domestic use have not yet been undertaken, and unfortunately, there is no tool developed by the Republic of Korea (henceforth, ROK) for measuring the implementation of SDG 4.2.1.

For the measurement of the implementation of SDG 4.2.1, the current status of children with special needs entering elementary school can be used as a proxy indicator. The number of children with special needs has been on the rise annually, with an increase from 11,701 in 2015 to 15,290 in 2022, representing a growth of approximately 3,589 children (about 30.7% p). Looking at age groups, in the 0-3 age range, the number of children with special needs decreased from 2015 to 2022. In contrast, the number of children with special needs in the 4-6 age range increased significantly (46.3% for 5-year-olds and 69.2% for 6-year-olds during the past seven years). When examining children by types of disabilities, language disorders and autism take up the highest proportions among all children with special needs, accounting for 11.89% and 11.41%, respectively. The number of children with autism (4,290 children) is the highest, followed by cerebral palsy (3,211 children), cognitive disabilities (3,204 children), and language disorders (2,776 children) (National Statistical Forum, 2022).

<Table 2> *Number of Children with Special Needs at Age of 0 to 6 (2010~2022)*

(Unit: person)

Classification	2010	2011	2012	s2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total	11,965	11,138	10,950	11,093	11,018	**11,701**	12,808	13,620	14,040	14,337	14,515	15,283	**15,290**
Under 1 yr	36	37	33	29	31	**26**	46	46	41	43	36	28	**20**
1yr	493	401	508	437	446	**459**	521	517	482	483	381	409	**354**
2yrs	1,170	1,023	1,097	1,088	1,067	**1,066**	1,047	1,157	1,066	1,014	916	801	**729**
3yrs	1,880	1,569	1,473	1,549	1,583	**1,566**	1,583	1,640	1,804	1,721	1,614	1,599	**1,320**
4yrs	2,122	2,322	1,967	1,908	2,032	**2,196**	2,293	2,313	2,482	2,898	2,825	2,734	**2,701**
5yrs	2,747	2,581	2,808	2,431	2,498	**2,809**	3,108	3,310	3,300	3,520	3,957	4,121	**4,110**
6yrs	3,517	3,205	3,064	3,651	3,361	**3,579**	4,210	4,637	4,865	4,658	4,786	5,591	**6,056**

Source: KOSIS (Korean Statistical Information Service). Welfare. Disabled Individuals Status. Nationwide Registered Disabled Individuals by Age. Retrieved from: https://kosis.kr/statHtml/statHtml.do?orgId=117&tblId=DT _11761_N003&conn_path=I2 (Accessed on: May 22, 2023).

Korea Institute of Child Care and Education (2023). 2022 Key Statistics on Children at age 0 to 5, p.12.

<Table 3> *Number of Children at Age 0 to 6 by Types of Special Needs (2022)*

(Unit: person, %)

Classification	Total	No. of Children 0 to 6	Under 1 yr.	1yr	2yrs	3yrs	4yrs	5yrs	6yrs	%
Total	2,652,860	**15,290**	20	354	729	1,320	2,701	4,110	6,056	0.58
Developmentally delayed	1,176,291	372	3	21	40	54	65	86	103	0.03
Visionary	250,767	219	0	8	22	25	51	52	61	0.09
Audio	425,224	983	16	103	138	167	181	178	200	0.23
Language	23,349	**2,776**	0	0	1	164	630	931	1,050	11.89
Cognitive	225,708	**3,204**	0	0	27	129	448	847	1,753	1.42
Cerebral palsy	245,477	**3,211**	0	206	467	560	638	690	650	1.31
Autism	37,603	**4,290**	0	0	7	179	653	1,274	2,177	11.41
Mental	104,424	0	0	0	0	0	0	0	0	0.00
Kidney	105,842	24	0	4	2	4	5	4	5	0.02
Heart	5,078	49	0	3	8	8	10	9	11	0.96
Respiratory	11,451	5	0	0	0	2	0	0	3	0.04
Liver	15,066	82	1	6	12	12	13	19	19	0.54
Facial	2,725	3	0	0	0	0	2	1	0	0.11
Incontinence, Dysuria	16,779	36	0	1	3	8	3	12	9	0.21
Epilepsy	7,076	36	0	2	2	8	2	7	15	0.51

Source: KOSIS (Korean Statistical Information Service). Welfare. Disabled Individuals Status. Nationwide Registered Disabled Individuals by Age. Retrieved from: https://kosis.kr/statHtml/statHtml.do?orgId=117&tblId=DT_11761_N003&conn_path=I2.(Accessed on: May 22, 2023).

Korea Institute of Child Care and Education (2023). 2022 Key Statistics on Children at age 0 to 5, p.12.

2) Progress toward Indicator SDG 4.2.2. (Participation rate of children in organized learning, one year before the official primary entry age)

The Nuri curriculum and subsidy policy initiated in 2012/2013 have led to a consistent participation rate of around 90% for children aged 3 to 5. Therefore, the second global indicator (SDG 4.2.2) can be considered as having already been achieved since 2012.

<Table 4> *Participation rates in ECCE by age of children (2022)*

(Unit: person, %)

Classification	Population[1] (A)	Childcare Centres (B)	Kindergartens (C)	Total (B+C)	Participation rates in CC (B/A)	Participation rates in KG (C/A)	Total rates (B+C)/A
Under 1 yr[2]	509,038	126,606		126,606	24.9		**24.9**
1yr	277,529	239,157		239,157	86.2		**86.2**
2yrs	307,975	285,937		285,937	92.8		**92.8**
0~2yrs	1,094,542	651,700		651,700	59.5		**59.5**
3yrs	333,048	165,335	132,496	297,831	49.6	39.8	**89.4**
4yrs	364,198	135,413	189,748	325,161	37.2	52.1	**89.3**
5yrs	413,162	138,322	230,375	368,697	33.5	55.8	**89.2**
3~5yrs	1,110,408	439,070	552,619	991,689	39.5	49.8	**89.3**
0~5yrs	2,204,950	1,090,770	552,619	1,643,389	49.5	25.1	**74.5**

Source: 1) Korea Educational Development Institute (2022). Educational Statistics Yearbook.
2) Ministry of Health and Welfare (2022). Childcare Statistics (As of December 2022).
3) Ministry of the Interior and Safety (2022). Resident Registration Population Statistics.

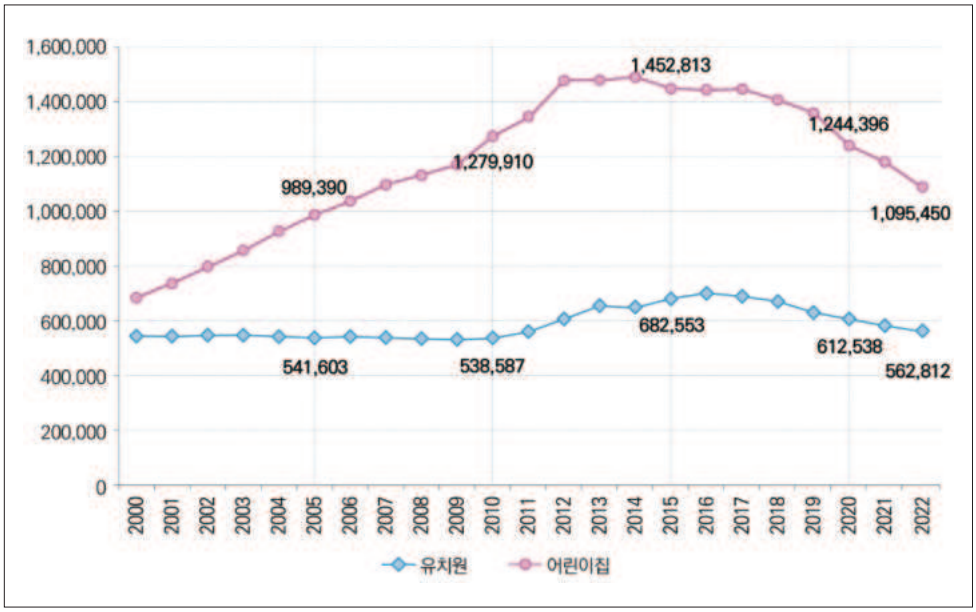
Note: 1) The population is based on the resident registration population aged 0-6 as of December 2022 (based on the living age standard).
2) For infants aged 0, the concept is not based on the living age but on the daycare age (half-age), and it includes all babies born in 2021 and 2022 as of December 2022.
3) The data for kindergartens is as of December 31, 2022, and for childcare centers, it is as of April 1, 2022, excluding those aged 6 and older based on the daycare age.
4) The kindergarten utilization rate is calculated differently from the "kindergarten enrollment rate" and uses the resident registration population statistics as the denominator.

References: 1) Korean Educational Development Institute Education Statistics Service. https://kess.kedi.re.kr/index (Retrieved: June 15, 2023).
2) Ministry of Health and Welfare website. https://www.mohw.go.kr (Retrieved: June 15, 2023).
3) Ministry of the Interior and Safety Resident Registration Population Statistics. https://jumin.mois.go.kr (Retrieved: June 15, 2023).

Korea Institute of Child Care and Education (2023). 2022 Key Statistics on Children at age 0 to 5, p 27.

<Figure 1> *Number of children in kindergartens and childcare centers (2000~2022)*

(Unit: person, %)



Source: 1) Korea Educational Development Institute (2022). Educational Statistics Yearbook.
2) Ministry of Health and Welfare (2022). Childcare Statistics (As of December 2022).
3) Korea Institute of Child Care and Education (2022). 2021 Key Statistics on Children at age 0 to 5.

References: 1) Korean Educational Development Institute Education Statistics Service. https://kess.kedi.re.kr/index (Retrieved: June 15, 2023).
2) Korea Institute of Child Care and Education website (Retrieved: June 15, 2023)
3) Ministry of Health and Welfare website. https://www.mohw.go.kr (Retrieved: June 15, 2023)
Korea Institute of Child Care and Education (2023). 2022 Key Statistics on Children at age 0 to 5, p 25.

3) Participation Rates in Public Kindergartens and Childcare Centres (K-SDG Indicator)

As one of the top priority national agenda on ECCE policy, the Korean government aimed to increase participation rates in public ECCE services by creating more classrooms and increasing their capacities in public kindergartens as well as by building new childcare facilities.

The participation rate in public kindergartens increased by approximately 5.0%, rising from 24.8% in 2017 to 30.3% in 2022. The number of public childcare centers

was expanded from 450 in both 2018 and 2019, 550 in 2020, and 364 in 2021, resulting in an increase in participation rates from 13% in 2017 to 25.3% in 2022. Nonetheless, it should be noted that both public kindergartens and childcare centers still have a significant distance to achieve the initial target of a 40% participation rate in public institutions by the end of 2022. The overall number of children enrolled in kindergartens and childcare centers is declining due to a sharp decrease in the absolute number of children aged 0 to 5, resulting from serious low birthrates. In 2022, the total number of children enrolled in kindergartens and childcare centers decreased by 121,018 and 348,085, respectively, compared to 2017, with a total reduction of about 470,000 children.

<Table 5> *Participation rates in public kindergartens and childcare centres (2017-2022)*

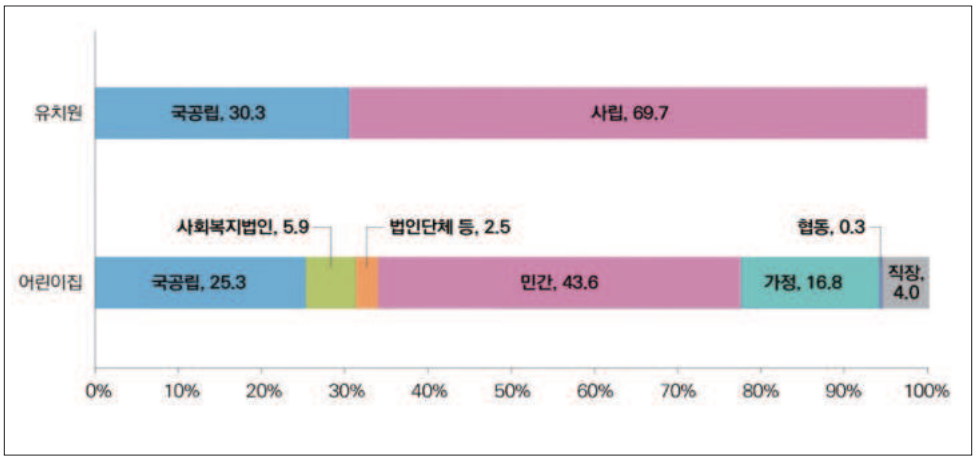
(Unit: person, %)

Year	Kindergarten (3-5yrs)			Childcare centres (0-5yrs)		
	Total	Public	Private	Total	Public	Non-public
2022	552,812	**167,485(30.3%)**	385,327	1,095,450	**276,670(25.3%)**	818,780
2021	586,572	177,361(30.2%)	405,211	1,184,716	268,967(22.7%)	915,749
2020	612,253	178,758(29.2%)	433,495	1,239,338	252,212(20.4%)	987,126
2019	633,520	177,140(28.0%)	456,380	1,359,475	230,900(17.0%)	1,128,575
2018	675,559	172,125(25.5%)	503,434	1,409,680	199,335(14.1%)	1,210,345
2017	693,830	**172,099(24.8%)**	521,731	1,443,535	**185,413(12.8%)**	1,258,122

Source: 1) Ministry of Education & Korea Educational Development Institute (2017-2022). Educational Statistics Yearbook.

2) Ministry of Health and Welfare (2017-2022). Annual Statistics on Childcare

<Figure 2> *Percentage of the enrolled children by types of ECCE services (2022)*



Source: 1) Ministry of Education & Korea Educational Development Institute (2022). Educational Statistics Yearbook.

2) Ministry of Health and Welfare (2022). Annual Statistics on Childcare

Korea Institute of Child Care and Education (2023). 2022 Key Statistics on Children at age 0 to 5, p. 26.

About K-SDG 4.2.1, Korea has been implementing a revised Nuri Curriculum since March 2020, focusing on child-centered and play-centered approaches to promote the holistic development and well-being of young children.

Furthermore, the Infant Allowance was introduced in 2022 to alleviate the financial burden on parents of infants aged 0-1 who do not participate in institutional childcare. In 2023, the Infant Allowance was integrated and converted into a Parental Allowance, as part of income support to compensate for the income reduction during childbirth and child-rearing. The Parental Allowance is set to increase annually, with a plan to provide 700,000 KRW per month for each child under one year old in 2023, and 350,000 KRW per month for each child aged one (to be increased to 1,000,000 KRW and 500,000 KRW, respectively, in 2024).

4. Current Status and Issues

1) Strengthening Support for Early Childhood Care and Education Fees

Until 2018, the fee subsidy for children 3 to 5, which had been stagnant at 200,000 KRW per child per month for nearly six years since the Nuri initiative in 2013, increased to 280,000 KRW in 2022, reducing the financial burden on parents to some extent. Ministry of Education announced to increase in fee subsidies up to standard unit costs as part of the integration of ECCE policy (Ministry of Education, January 2023). The Special Account for Early Childhood Education Support Act, originally planned for three years until the end of 2019 to provide the fee subsidy, was temporarily extended to 2022, and re-extended to 2025. It is important to secure stable and sufficient funding for ECCE to pursue the integration of ECCE.

2) Realizing National Accountability through the Integration of Education and Care

The integration of early education and care toward the equity and quality of ECCE by lessening disparities is one of the most prominent national policy agendas of the current government of President Yoon Suk-yeol. It is included in the 110 major national agenda as 'Creating a Safe and High-Quality Child-rearing Environment' (National Agenda No. 46) and 'Strengthening the National Educational Accountability System to Eliminate Educational Disparities' (National Agenda No. 84). The Korean government is making efforts towards a phased implementation of the ECCE integration. In Phase 1 (2023-2024), efforts will be made to bridge the gap between the education and care sectors and thus, establish a foundation for integration. In Phase 2 (from 2025), comprehensive integration will be pursued under the leadership of the Ministry of Education and Local Offices of Education. Plans for the transfer of central and local administrative and financial systems are under development, and discussions are underway to devise integrated service models for kindergartens and childcare centers. In particular, consolidating

qualifications and training for kindergarten and childcare teachers, one the key integration tasks, is closely related to the SDG implementation of indicator 4.c. Specific tasks include strengthening childcare teacher training based on the Department of Early Childhood Education and Care at the college level, rather than course credit-based system, improving salaries of private kindergarten teachers and childcare teachers, and more.

For the successful integration of ECCE, clear communication among key stakeholders regarding the goals and outcomes of integration is critical. Numerous discussions and various opinions are indispensable in generating specific strategies. It is important to have guidelines for the operation of consultative bodies and concrete strategies for the integration of ECCE.

3) Enhancing the Implementation Quality of Child-centered and Play-based Nuri Curriculum

Although the Nuri Curriculum has been revised to be child-centered and play-centered to promote the holistic development and well-being of children, the implementation came to face significant challenges due to the COVID-19 pandemic. To strengthen play-based curriculum implementation, the key tasks include reducing the teacher-to-child ratio, enhancing teacher competence in supporting children's play through providing consultation, creating creative and safe play environments, and improving parental understanding of play. The continued prevalence of early private academies and excessive parental expectations for academic achievement in schools pose a risk to the well-being of children and may weaken the emotional bonds between parents and children. There is a need to cultivate a societal culture of child-centered play as well as to provide teacher and parent training on how to support children's play.

The Nuri Curriculum emphasizes the transition from kindergarten and childcare center to primary school. Pilot projects were undertaken in 2022, and programs and materials were developed and disseminated in 2023 to support the transition from early childhood to primary education. Successful

transition requires enhanced mutual understanding via professional learning communities consisting of early childhood and primary school teachers, securing time and space for communication among teachers, incentives for primary school teachers, provision of teacher training and substitute staff support, and strengthening the leadership of ECCE directors and school prin ㄴㄴcipals (Moon & Kang, 2022).

4) Support for Social and Emotional Development in the Early Years

With an increase in dual-income households, children tend to attend ECEC services earlier and longer hours nowadays. Thus, early childhood services come to play more important roles in children's development of emotional expression and regulation, interactions with others, and conflict resolution. It is crucial to significantly emphasize the social and emotional development in the national curriculum and to provide support for children in individual ECCE services. While not necessarily in need of special education, children who face difficulties such as, insecure attachment, maladaptive social relationships, emotional conflicts, attention problems, and excessive disruptive behaviors that persist for a long period are a growing concern. It is important to pay attention to the increasing portion and severity of 'borderline' children when these problems are left unaddressed (Jung, 2022). To address social and emotional problems in early childhood, Support systems need to be established by dispatching or circulating specialized professionals like counselors and therapists to early childhood institutions and homes.

5) Efforts to Recover from the COVID-19 Pandemic

The prolonged social distancing due to the COVID-19 pandemic made it challenging to implement the revised Nuri Curriculum which emphasizes social interactions through play. Efforts were made to ensure continuity in all children's learning, including the development of EBS TV kindergarten programs, the distribution of play kits, and the development of educational contents for distance learning for young children. According to surveys con-

ducted by 17 local offices of education, policy priorities were to develop digital competencies in early childhood teachers and to protect young children from potentially harmful digital environments (Moon & Jung, 2021).

Income inequity, regional disparities, social inequality and polarization due to COVID-19 are expected to have a significant impact on the early childhood sector. To implement SDG 4 target 4.2 successfully, special attention need to be paid to the absence of childcare at home, psychological stress and mental health experienced by young children, parents, and teachers, disparities for vulnerable children, and malfunctioning child abuse monitoring systems due to prolonged untact services.

5. Future Tasks

1) Designing a Data System to Achieve SDG 4 Target 4.2

Currently, there is no agreed-upon national definition for 'the socio-emotional well-being of young children' in SDG 4.2.1. Despite a considerable period having passed since setting the target, there is no tool available to assess children's well-being yet. It is necessary to consider using the recently developed UNICEF tool, the Early Childhood Development Index (ECDI, 2021) or to benchmark it to develop our domestic tool that enables international comparisons.

Existing assessment tools for development and learning in young children primarily rely on self-report ratings by teachers and parents. To have first-hand information, adult ratings need to be supplemented by direct observations and interviews with young children. In particular, for identifying and supporting the recovery of development and learning deficits caused by COVID-19, there is a need to accumulates and analyze related data through the mid- and long-term research projects (e.g., KICCE Panel Study on ECEC [2021-2030], Closing gaps in development and learning in early childhood after the COVID-19 [2022-2023]).

Additionally, it is urgent to devise methods and systems for generating gender-specific data related to participation rates in general and in public ECCE services, and creating a positive home learning environment in indicator 4.2.3. Monitoring SDG 4.2.1 progresses without empirical data would not be possible.

Efforts are required to streamline the monitoring system of SDG 4.2 through the integration of ECCE. There are challenges to be resolved, such as differing statisti cal aggregation time points in education and care sectors, and lack of coherence in monitoring governance with various ministries and divisions responsible for SDG 4.2 indicators. Consolidation of ECCE data will facilitate the linkage with other target indicators of SDG 4. Moreover, there is a need to explore what new data set will be needed for early childhood care and education in the future.

2) Securing Funding for the Implementation of SDG 4 Target 4.2

The first step in ensuring high-quality and inclusive early childhood education and care is the expansion of public investment. Although the unit cost for ECCE (the Nuri subsidy) has been increased by 200,000 KRW annually, reaching 280,000 KRW in 2023, it is still not sufficient. As some Local Offices of Education (e.g., Chungnam, Incheon) and provincial governments have already initiated, it is crucial to raise the Nuri subsidy to the level of standard unit cost of ECCE. This adjustment should be made firmly through legal legislation to secure stable funding.

3) Establishing a Mid-term Plan for the Implementation of SDG 4 Target 4.2

Korean National Commission for UNESCO has been leading the 'SDG 4-Education 2030 Working Group' since 2018 to monitor progress of specific targets of SDG 4. However, monitoring annual progress is not enough. Revision of annual goal settings for K-SDG indicators are necessary to enhance the capacity to respond and adapt to rapid societal changes, the COVID-19

pandemic, climate crises, and digital transformation. Currently, K-SDG 4.2 is being monitored with 2030 as the target timeline without clear intermediate goals. Therefore, setting intermediate benchmarks will allow for a more specific and strategic approach to monitor and implement SDG 4 target 4.2. When formulating mid-term plans on SDG 4 target 4.2, it is important to align them with the national policies on early childhood care and education to ensure consistent implementation.

4) Advocacy for SDG 4 Target 4.2

SDG 4 target 4.2 remains relatively less recognized and has lower implementation capacity in comparison to other targets of SDG 4. This is because ECCE is not yet incorporated within the public education system. There is a need to widely disseminate information and knowledge regarding the objectives, indicators, and challenges of SDG 4 target 4.2, encouraging active advocacy efforts among early childhood educators, parents, academia, local offices of education, provincial governments, and related organizations. Furthermore, it is needed to share Korea's issues, strategies, and lessons learned in the implementation processes of SDG 4 target 4.2, and contribute to universal high-quality ECCE on a global level.

6. Conclusion

Over the past ten years, Korea has achieved significant progress in early childhood education and care. In 2012-2013, universal free education and care for all 3-5-year-old children were initiated, along with the implementation of the consolidated common Nuri curriculum. In 2019, the Nuri curriculum was revised into child-centered and play-based. There have been ongoing efforts to ensure the quality of ECCE through evaluation systems. Besides, a range of policy measures have been practiced to support parental child-rearing including time-based childcare support systems, extended childcare, after-school programs in kindergartens and full-day care in primary schools.

Korea has been formulating the 3rd five-year plan for the development of early childhood education (2023-2027) by the Ministry of Education, and the 4th long-term plan for childcare (2023-2027) by the Ministry of Health and Welfare based on the Early Childhood Education Act and the Childcare Act respectively. SDG 4 target 4.2 is a powerful global goal that has had a significant impact on domestic and international political and social environments. The Tashkent Declaration, adopted at the 2nd World Conference on Early Childhood Care and Education (WCECCE) is acting as a key milestone for the early childhood care and education policies of all countries worldwide. The Tashkent Declaration's commitment to action, along with the Global Partnership for Early Childhood 2021-2030, encourages international collaboration and solidarity for the implementation of SDG 4 target 4.2. In this changing national and international policy landscape, it is important to align national policy goals with SDG 4 target 4.2 indicators, as well as to contribute to the realization of the Tashkent Declaration execution strategy and global cooperation measures.

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Monitoring SDG 4 Target 4.3.

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1. Introduction

The sustainable development goal for the higher education sector (SDG 4.3) under the SDG 4 (Education sector) states: "By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university" (Korean National Commission for UNESCO, 2022). This goal was adopted at the United Nations Development Summit in September 2015. Compared to UNESCO's Millennium Development Goals (MDGs) and EFA (Education for All), which focused on ensuring access to primary and secondary education, the scope of the SDG 4 goal expands its scope to include higher education and lifelong education.

Higher education in Korea has achieved explosive quantitative growth over the past 80 years since liberation. The number of higher education institutions, which was only 21 in 1945, became 237 in 1980, increased to 327 in 1995, and lately reached 426 in 2022. The enrollment rate for higher education, which was 52.5% in 2000, rose to 71.9% in 2022, already surpassing the level of universalization of higher education before 2000 (MOE·KEDI, 2022). It is time now to shift focus towards improving the quality of higher education.

The Korean Government has been committed to ensuring that everyone can pursue higher education without being restricted by his or her social and economic background. For example, the university admission system offers

opportunities for various underrepresented groups,[1] such as national veterans, disabled individuals, low-income families, rural residents, and North Korean defectors. The proportion of university admissions granted to these groups in comparison to the total university admission quota (including those outside the official quota) was 18.9% in 2023, which is expected to gradually increase to 21.5% in 2024 and 21.9% in 2025. National scholarships linked to income levels support students in financial difficulties.

Higher education degrees are accessible to adult learners and mature students through systems such as self-study degrees and credit banking systems. In addition, support has been provided to university students with disabilities to facilitate their learning in higher education. However, the disparities between universities in the metropolitan and those in local areas, and the intense competition for entrance exams pose ongoing social problems. In the current era of the declining school-age population and increasing aging population, there is a growing need to expand the target of higher education to include adult learners, moving beyond a focus solely on school-aged individuals.

2. Adaptation and Monitoring of SDG 4 Target 4.3 and Indicators

The Indicators for the implementation of SDG 4.3 in higher education can be categorized into global and thematic indicators as shown in Table 1. This report is mainly focused on the global indicator 4.3.1 and the thematic indicator 4.3.2 concerning the implementation of SDG 4.3 at the midpoint of Education 2030.

Global indicator 4.3.1 is "Participation rate of youth and adults in formal and non-formal education and training in the past 12 months, by sex". Among the statistics collected in Korea, the 'Lifelong Learning Personal Survey'

1 Due to the mandatory selection of balanced opportunities based on Article 42-6 of the Enforcement Decree of the Higher Education Act.

<Table 1> *SDG 4 Target 4.3 Indicators and K-SDG Indicators*

Classification	Concept
Global Indicator	4.3.1 Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex <K-SDG 4.3: Participation rate of adults in non-formal education in the previous 12 months>
Thematic Indicators	4.3.2. Gross enrollment ratio for tertiary education by sex < K-SDG 4.3.2: Tertiary Education Completion rate >
	4.3.3.Participation rate in technical-vocational program(15 to 24-year-olds) by sex

Note: 1) Global indicator is designed to allow all Member Countries to monitor progress towards the SDGs in a common way to identify global trends, while thematic indicators are designed to allow Member Countries to conduct additional monitoring based on their own context, policy priorities, expertise and data availability (Korean National Commission for UNESCO, 2022).
2) < > refers to related K-SDGs indicators.

is designed based on the Eurostat Adult Education Survey (AES) manual to ensure that the survey is compatible with the standards of international organizations such as the OECD.

Turning to the thematic indicator 4.3.2, which measures the 'Gross enrollment ratio for tertiary education by sex', it is calculated as the net enrollment rate of individuals within the relevant age group (18-21 years old) attending tertiary education institutions. In the context of measuring the gross enrollment rate for tertiary education and gender-specific indicators related to SDG 4.3.2, it is important to acknowledge that current international comparative indicators provided by UNESCO UIS (Institute for Statistics) are calculated based solely on age, without distinguishing education levels or gender. Therefore, there is a need for future indicator development to take into account both educational levels and gender breakdowns.

Additionally, in the pursuit of SDG implementation, it is crucial to consider domestic conditions while adapting to international trends. To address this,

Republic of Korea has established K-SDGs, with the involvement of government and private-sector experts, as well as stakeholder groups like K-MGoS[2], to align with the 17 SDG goals. Within K-SDGs, specific indicators related to higher education have been defined, as outlined in <Table 2>.

The first indicator of K-SDG 4.3, the participation rate of adult learners in non-degree lifelong learning, linked to the global indicator SDG 4.3.1, aims to continuously increase the rate until 2030. The second indicator, the tertiary education completion rate, is linked to the thematic indicator SDG 4.3.2 and represents the ratio of the population who have completed higher education in the respective age group. The third indicator is the amount of national scholarship per student.

<Table 2> *DHESK-SDGs Indicators in Higher Education Sector*

Classification	Details	Objectives
K-SDG 4.3	Participation rate of adults learners in non-degree courses in higher education institution.	Until 2030: ongoing growth Until 2040: ongoing growth
	Higher education completion rate	2030: 49% retention 2040: 49% retention
	Amount of national scholarship per student	2030: ongoing growth 2040: ongoing growth
K-SDG 4.9	Government expenditure on public education as a percentage of GDP in higher education(by level of education)	2030: OECD average 2040: OECD average

Source: Cooperation of related ministries. (2021). Fourth Continuation Basic Plan for Possible Development (2021-2040)—Part2 (Sustainable Development Portal: https://ncsd.go.kr/notice?pos = 2466). October 11, 2023. Data Extraction.

2 K-MGos: Major Groups and other Stakeholders.

3. Monitoring Progress of SDG 4 Target 4.3.

1) Progress toward Indicator SDG 4.3.1

Korea's implementation status of Global Indicator 4.3.1–'Participation rate of youth and adults in formal and non-formal education and training in the past 12 months (by sex)'– is examined based on the results of the 'Lifelong Learning Personal Status Survey'. The following Figure 1 below shows "Participation in formal and informal lifelong learning in the past 12 months among adults (25-64 years old) in South Korea, by sex" from 2015 to 2022.

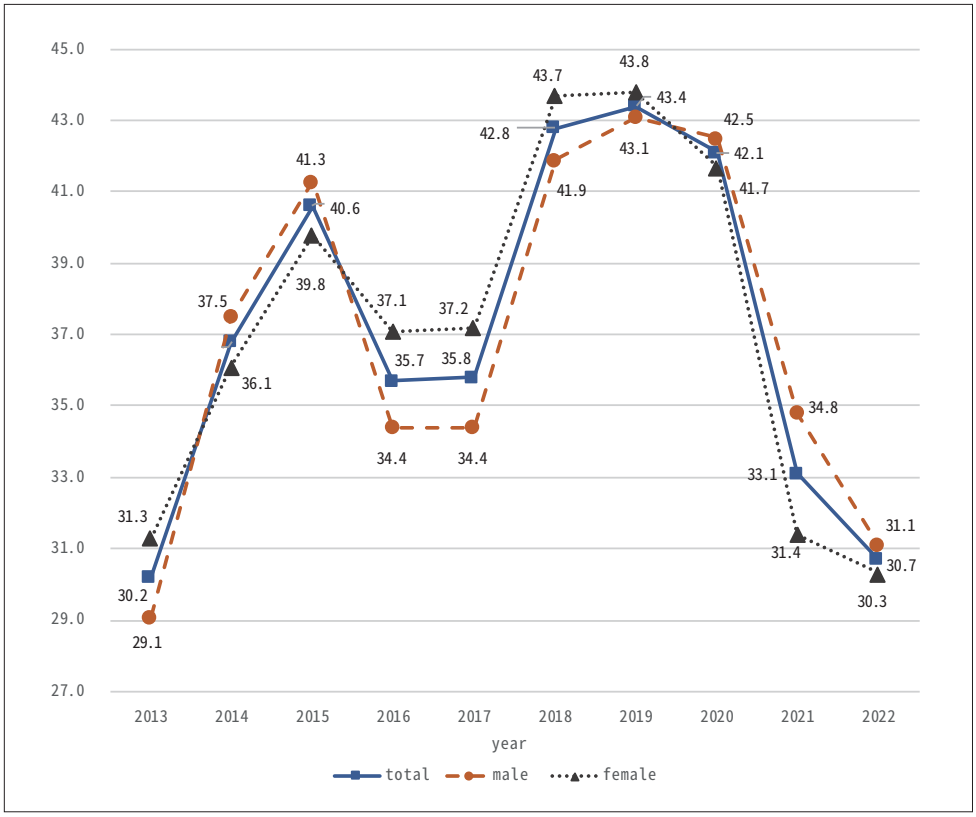
The participation rate in formal and non-formal lifelong learning among Korean adult learners (25-64 years old) increased from 30.2% in 2013 to 40.6% in 2015. After a period of stagnation, it reached a peak again in 2019 at 43.4% but then dropped to 42.1% in 2020, 33.1% in 2021, and 30.7% in 2022. The recent sharp decline is speculated to be due to the impact of the COVID-19 pandemic, leading to reduced participation in lifelong learning.

When examining the participation trends in formal and non-formal lifelong learning by sex for adult learners (aged 25-64), it follows a similar pattern to the overall participation trend. From 2016 to 2019, women's participation rates were higher, ranging from 37.1% to 43.8%, which was 0.7 to 2.8 percentage points higher than men's. However, in more recent years, from 2020 to 2022, men's participation rates exceeded women's by 0.8 to 3.4 percentage points. In 2022, the participation rate for male adult learners (aged 25-64) was 31.1%, while it was 30.3% for female adult learners.

As for the thematic indicator 4.3.2 'Gross enrollment ratio in tertiary education by sex', the trend in Korea is shown in Figure 2. Republic of Korea surpassed the universalization level of higher education in 2000 with a total enrollment rate of 52.5%, steadily increasing to 67.5% in 2015 and reaching 71.9% in 2022. Regarding gender-specific enrollment rates, in 2000, men's rate was higher at 57.2%, compared to women's 47.6%, a difference of about 10 percentage points. However, the gender gap narrowed over time, and from 2015, women's

<Figure1> *Trends in Participation in Formal and Non-formal lifelong learning among Adult learners (age 25-64)*

(Unit: %)



Classification	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total	30.2	36.8	40.6	35.7	35.8	42.8	43.4	42.1	33.1	30.7
Male	29.1	37.5	41.3	34.4	34.4	41.9	43.1	42.5	34.8	31.1
Female	31.3	36.1	39.8	37.1	37.2	43.7	43.8	41.7	31.4	30.3

Source: Ministry of Educations·Korea Educational Development Institute(2022). 2022 Korean Adult Lifelong Learning Status, page 133.

Note: The survey period was July of the previous year to June of the same year until year 2020, but was changed to January to December of the previous year from year 2021.

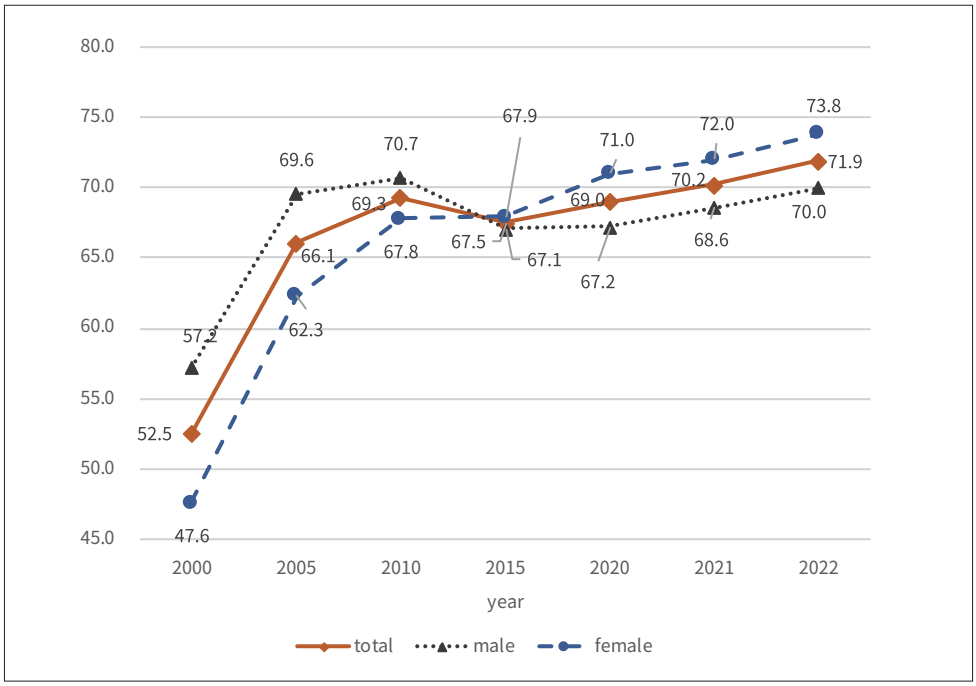
higher education enrollment rates surpassed men's. In 2022, the enrollment rate in higher education institutions was 73.8% for women and 70.0% for men.

2) Progress toward Indicator SDG 4.3.2.

As for the thematic indicator 4.3.2 'Gross enrollment ratio in tertiary education by sex', the trend in Korea is shown in Figure 2. The enrollment rate in tertiary education has surpassed the universalization level of higher education since 2000 with a total enrollment rate of 52.5%. It steadily increased from 67.5% in 2015, reaching 71.9% in 2022. Regarding gender-specific enrollment rates, in 2000, men's rate was higher at 57.2%, compared to women's at 47.6%. However, the gender gap has narrowed over time, and starting in 2015,

<Figure 2> *Trends in higher education enrollments*

(Unit: %)



Source: https://www.index.go.kr/unity/potal/indicator/IndexInfo.do?cdNo=2&clasCd=2&idxCd=4245)

Data: Ministry of Education·Korea Educational Development Institute(each year). Basic Statistics of Education, National Statistical Office. (2021). Estimation of Future Population as of year 2020.

Note:
1) The enrollment rate = (number of students ÷ the enrollment population) X 100.
2) The enrollment age for Higher Education institutions is 18-21 years old
3) The enrollment rate of higher education institutions includes universities, colleges of education, general universities, and various university courses.

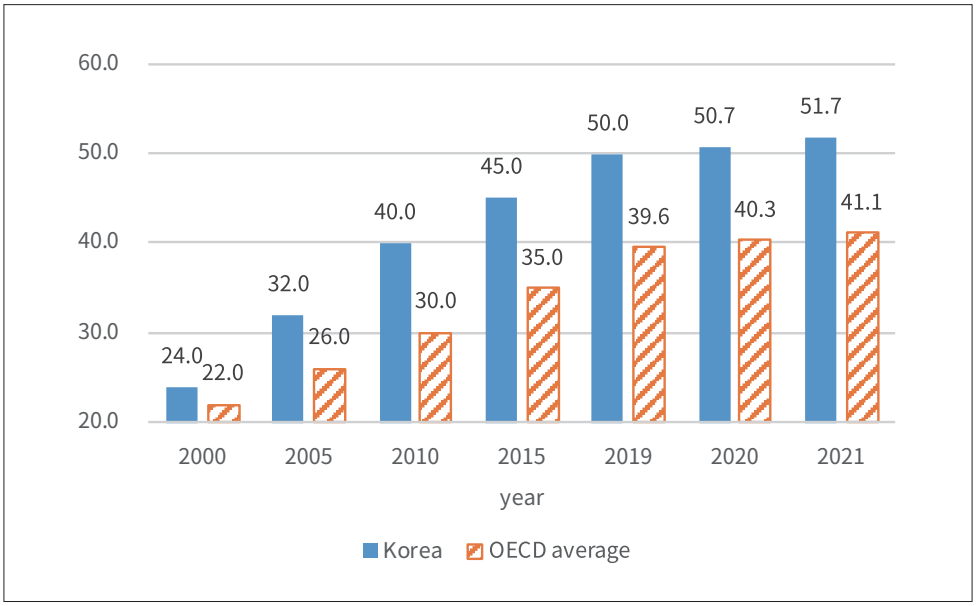
women's enrollment rate in tertiary education surpassed men's. In 2022, the gender-specific enrollment rates in tertiary education were 73.8% for women and 70.0% for men.

3) Progress toward Indicator K-SDG 4.3. and 4.9.

The first indicator within K-SDG 4.3 focuses on the participation rate of adult learners in non-degree lifelong learning, to achieve continuous increase until 2030. The second indicator, linked to the thematic indicator SDG 4.3.2, is the tertiary education completion rate. This indicator calculates the percentage of the population that has completed tertiary education relative to the total population in the respective age group. This information can be obtained by international comparative indicators provided by the OECD (as shown in Figure 3 and Figure 4).

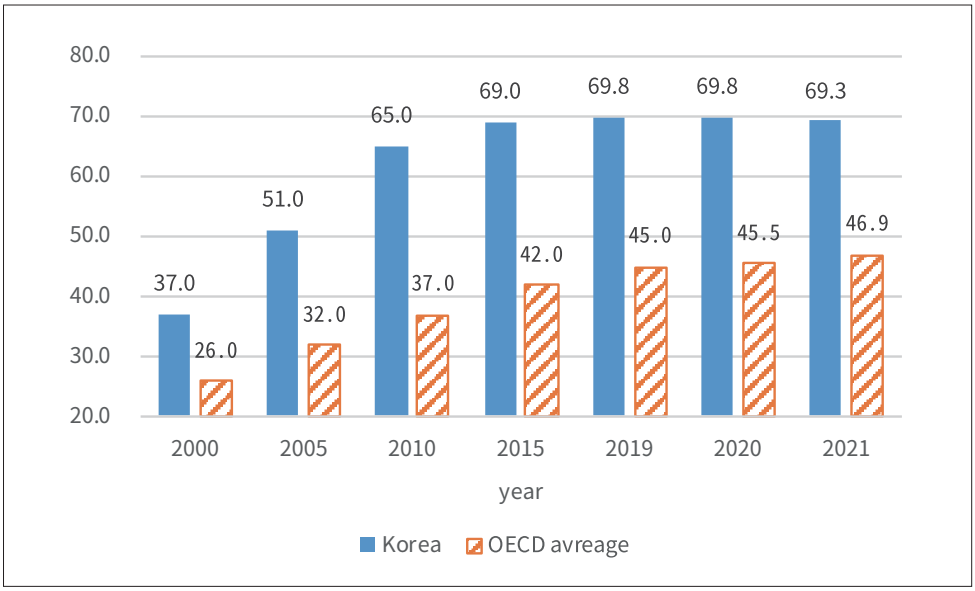
<Figure 3> *Trend in tertiary education completion rate (aged 25-64)*

(Unit: %)



<Figure 4> *Trend in Tertiary Education Completion Rate (Aged 25-34)*

(Unit: %)



Source: OECD (Each year). Education at A Glance, OECD: Indicators.

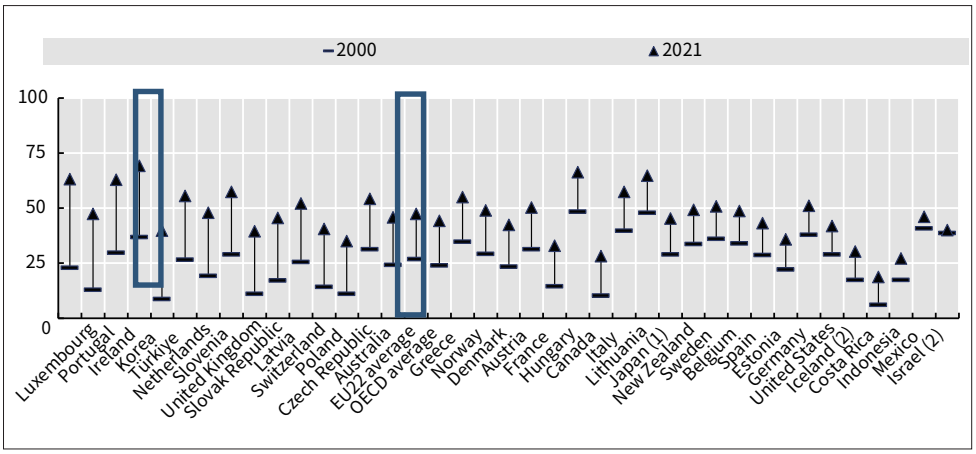
Note: 1) Subject to survey: 25 to 64 years old.
2) Tertiary education completion rate = Number of people with higher education level / total population of respective age.
3) Source of raw materials: Statistics Korea economically active population survey.

The tertiary education completion rate among individuals aged 25-64 in Korea has increased steadily, as shown in Figure 3, from 24.0% in 2000 to 50.0% in 2019, reaching 51.7% in 2021. It is worth noting that this surpasses the K-SDG target of 49%, indicating Korea's achievement of the goal for this indicator. In contrast, the OECD average tertiary education completion rate in 2021 was 41.1%.

For the younger demographic (25-34 years old) in Figure 4, Korea's tertiary education completion rate started at 37.0% in 2000 and steadily increased to reach 65.0% in 2010. It reached a peak of 69.8% in 2019 and 69.3% in 2021, the highest among OECD member countries. The OECD average for tertiary education completion rate among individuals aged 25-34 in 2021 was 46.9%.

Figure 5 illustrates the differences in tertiary education completion rates for individuals aged 25-34 between 2000 and 2021 in descending order among selected OECD member countries. Republic of Korea ranks fourth in the increase in tertiary education completion rate compared to 2000, following Luxembourg, Portugal, and Ireland. This demonstrates that Republic of Korea has made significant progress in increasing tertiary education attainment.

<Figure 5> *Trend in the Tertiary Education Completion Rates (aged 25-34) (2000 and 2021)*



Source: OECD (2022), Education at a Glance Database, http://stats.oecd.org/. See Source section for more information and Annex 3 for notes (https://www.oecd.org/education/education-at-a-glance/EAG2022_X3-A.pdf).

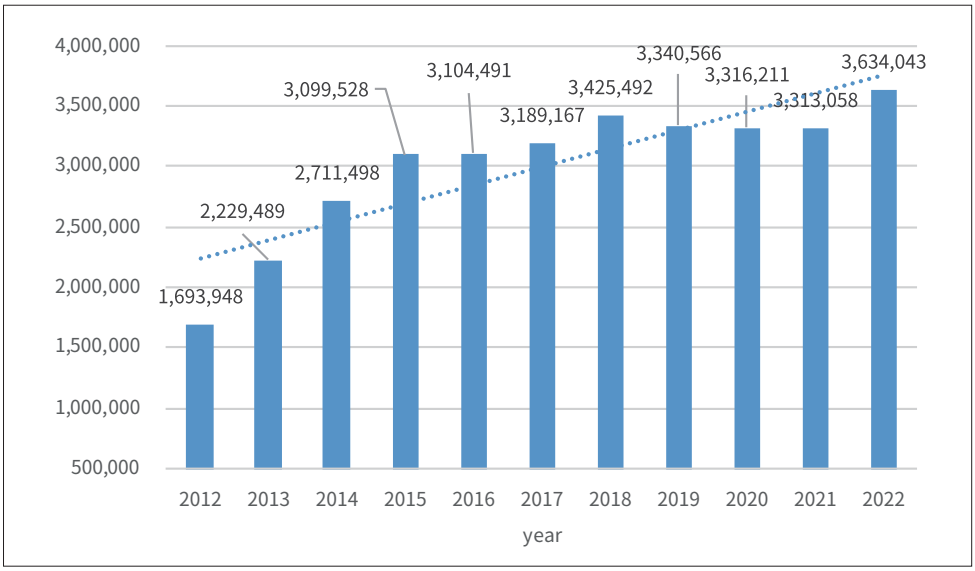
Note: 1) Data for tertiary education include upper secondary or post-secondary non-tertiary program (less than 5% of adults are in this group).
2) Year of reference differs from 2000: 2002 for Israel and 2003 for Iceland.
3) Countries are ranked in descending order of the difference in the share of tertiary-educated 25-34 year-olds between 2000 and 2021.

The third indicator within K-SDG 4.3 focuses on the amount of national scholarships per student, as depicted in Figure 6. Republic of Korea has implemented the national scholarship system linked to household income since 2012, to expand access to higher education. In 2012, the amount of national scholarship per student was approximately 1,693,948 KRW, which increased to approximately 3,425,492 KRW in 2018, nearly doubling in value. In 2022, the national scholarship amount per student rose to approximately 3,634,043

KRW. This significant increase in the national scholarship amount per student reflects Korea's commitment to providing financial support to students in higher education and ensuring that the cost of education does not hinder access.

<Figure 6> *Amount of Annual Income-linked National Scholarship Benefits Per Student (2012-2021)*

(Unit: won)



Source: Korea Scholarship Foundation Information Disclosure Request Data (December 14, 2022)

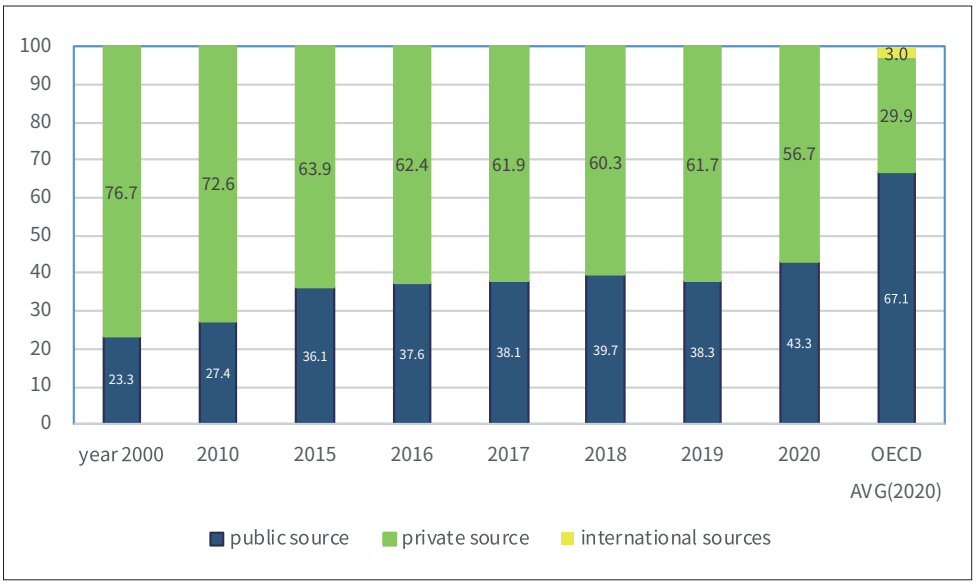
Note: 1) The target is the entire university (four-year university, junior college)
2) The beneficiaries are income-linked national scholarships (type 1, type 2 (including local talent), and multi-child, and annual net income excluding North Korea by semester. KRW based (e.g., 1 student is counted as simultaneous beneficiary in the 1st and 2nd semesters)
3) Until 2014, the amount is based on payment (not reflected in the return amount throughout the year), and from 2015, it is based on beneficiary (reflected in the return amount throughout the year)

Indicator K-SDG 4.9 focuses on the ratio of government expenditure on public education to GDP by different levels of education. Specifically, it examines the ratio of government funding for tertiary education relative to the GDP, as shown in Figure 7, which indicates the level of government investment in higher education. Republic of Korea has consistently increased the proportion

of public funding for higher education, from 23.3% in 2000 to 43.3% in 2020. Nevertheless, this still falls short of the OECD average of 67.1%. The goal of K-SDG 4.9 is to reach the OECD average. Considering the close relationship between financial investment in higher education and the quality of education, it is necessary to expand government funding for higher education.

<Figure 7> *Trends in the Proportion of Public and Private Funding for Higher Education*

(Uunit: %)



Source: OECD (Each year). Education at A Glance. OECD Indicators

4. Current Issues in regard to Implementation of SDG 4 Target 4.3

In the preceding sections, we examined the implementation status of Republic of Korea in achieving SDG 4.3 through global indicators, thematic indicators, and K-SDG 4.3 indicators. In this section, we will review the implementation status and related issues in Korean higher education, focusing on relevant policies and issues over this period across three dimensions: "1)

Ensuring equal opportunities, 2) Ensuring the quality of education, and 3) Promoting lifelong learning in higher education".

1) Ensuring Equal Opportunities in Higher Education

In a relatively short period, Republic of Korea has achieved the universalization of higher education through quantitative growth. This is evident in the changes in higher education enrollment and completion rates according to SDG 4.3.2 and K-SDG 4.3. In addition, Korea has consistently pursued various policies to ensure fair access to higher education. These include special admission systems for underrepresented groups in the university entrance examination, a national scholarship program linked to house income, and local government scholarships, such as the Seoul Scholarship Foundation by the Seoul Metropolitan Government, and scholarships for low-income high school students to support their higher education access. These initiatives aim to prevent economic barriers from restricting access to higher education. In addition, recent legislation has established legal grounds for universities to set up centers for comprehensive support for students with disabilities.

The recent COVID-19 pandemic has significantly transformed the higher education landscape, prompting the transition to online classes through distance education. This shift has brought about issues related to accessibility to education, such as access to online learning devices and students' circumstances which can hinder their learning. To minimize the barriers to distance education based on individual circumstances, the government has implemented various policies. Table 3 below shows the key policies implemented by the government to facilitate distance education in universities during the pandemic.

<Table 3> *Korean Government's Key Policies Related to Distance Education During the COVID-19 Pandemic*

Period	Policy	Main Contents
2020.3~11	Graduate School Distance Education Support Center(UDEC, University Distance Education Center) operation business promotion	• Korea Education and Research Information Service(KERIS) is designated as the central center for UDEC (March 2020) • Graduate School Distance Education Support Center Central Learning Management System (LMS) opened (20.4) • Establishment and operation of a graduate school distance education support center and operation business council ('20.10~) • Selection of graduate school distance education support centers in 10 regions and commencement of regional projects ('20.11).
2020.9.	Digital-Based higher education innovation support plan	• By improving regulations on the operation of university distance classes, universities can conduct remote / face-to-face classes. • Master's degree programs operated independently or jointly by domestic universities/Joint Online bachelor's and master's degree programs between domestic and foreign universities are permitted. • Master's degree programs operated independently or jointly by domestic universities / Joint online bachelor's and master's degree programs between domestic and foreign universities permitted. • Support for establishing a university distance learning quality management system, etc.
2020.11	Smart devices provided for low-income college students for free	• The Ministry of Education and the Korea Scholarship Foundation provide portable smart devices (tablet PCs) needed for distance learning classes to college students from low-income families.
2021.2.	Establishment of regulations for the operation of online classes in general universities	• For the purpose of ensuring the quality of online classes in universities and others, the details for the operation of online classes, the composition of the online class management committee, course evaluation, and the establishment of internal standards for using external content, were specified.
2022.2	Approval and operation of online degree courses in general universities	• Universities (including graduate schools) to implement the general university online degree program system which was introduced in 2021, were selected and began operating 7 master's degree courses 100% online .

To improve the accessibility of higher education through distance education, the government announced the "Digital-Based Higher Education Innovation Support Plan" in September 2020, provided free smart devices to low-income university students as of November 2020, established the "Regulations on the Operation of Online Classes at General Universities" in February 2021, and launched an initiative to support online learning for students with disabilities, and established the legal ground for the approval and operation of online degree programs at general universities in February 2022.

These aimed to facilitate online learning which was expanded due to COVID-19. In addition, the University Distance Education Center (UDEC) was established as part of a project plan developed in March 2020 through November 2020, to provide quality distance education and improve the competitiveness of university education through innovative teaching and learning methods, regardless of financial and infrastructural situations at an individual institution. As part of this, Korea Education and Research Information Service (KERIS) was designated as the central center for UDEC in March 2020, a shared remote education infrastructure (LMS) was established in April 2020, and 10 regional center consortia were selected in November 2020, to develop and operate distance education content and support innovation in university distance education. As of June 30, 2022, the learning management system had been utilized by 186,098 individuals, with 9,324 courses registered in the course content repository across 148 institutions (refer to Table 4).

<Table 4> *Status of Joint Use Distance Education Infrastructure Establishment*

Status of Learning Management System Establishment and Operation
In Total, 11 established, currently 10 in operation, 186,098 users
Status of Lecture Content Repository Operation
148 institutions, 9,324 lectures

Status of Joint Use Distant Lecture Establishment and Operation			
Classification	Building Distant Lecture Infrastructure	Improvement of Distant Lecture Infrastructure	Utilization of Infrastructure for Distant Lecture
Seoul Metropolitan Area	21 facilities built at 18 Universities 50 1-Person Lecture Filming KITs	8 facilities at 4 Universities improved	Infrastructure 2,388 cases/ 99 cases of 1-Person self-KIT
Gangwon	20 facilities built at 19 Universities	-	Infrastructure 492 cases
Chungbuk	16 facilities built at 11 Universities	2 facilities at 2 Universities	Infrastructure 838 cases
Daejun-Chugnam-Sejong	5 facilities built at 3 Universities	15 facilities at 15 Universities	Infrastructure 2,202 cases
Jeonbuk	14 facilities built at 12 Universities	13 facilities at 10 Universities	Infrastructure 651 cases
Gwangju-Jeonnam	23 facilities built at 21 Universities	5 facilities at 5 Universities	Infrastructure 486 cases
Daegu Gyeongbuk	16 facilities built at 7 Universities	7 facilities at 2 Universities	Infrastructure 971 cases
Ulsan· Gyeongnam	13 facilities built at 13 Universities	5 facilities at 2 Universities	Infrastructure 967 cases
Busan	25 facilities built at 9 Universities	1 facilities at 1 Universities	Infrastructure 280 cases
Jeju	facilities built at 5 Universities 205 1-Person Filming KITs	7 facilities at 2 Universities	Infrastructure 392 cases cases/ 277 cases 1-Person Self-KITs
Total	161 facilities built at 118 Universities, 255 1-Person Filming KITs	63 facilities at 43 Universities	Infrastructure 9,667 cases / 376 cases 1-Person Self- KITs

Source: MOE·KERIS (2022). 2022 Education Information White Paper.

Note: As of June 30, 2020 (Cumulative Count)

As part of the University Distance Education Center(UDEC) establishment and operation project, distance learning content for students is being operated regionally and inter-regionally. According to Table 5, a total of 151 content items have been developed, which were taken by 57,945 students from 86 universities up to June 30, 2022, as recorded on a cumulative basis.

<Table 5> *Content Development and Operation Status of Distance Lecture for Students*

Region	Content Development	Status of Content Operation
Seoul Metropolitan Area	19 kinds(174 classes) developed	22 Universities, 1,614 students registered
Gangwon	14 kinds(294 classes) developed	7 Universities, 3,271 students registered
Chungbuk	14 kinds(546 classes) developed	Coming Soon
Daejun-Chugnam-Sejong	12 kinds(311 classes) developed	6 Universities, 16,959 students registered
Jeonbuk	21 kinds(273 classes) developed	2 Universities, 988 students registered
Gwangju- Jeonnam	16 kinds(417 classes) developed	17 Universities, 1,567 students registered
Daegu Gyeongbuk	17 kinds(603 classes) developed	10 Universities, 1,263 students registered
Ulsan·Gyeongnam	12 kinds(346 classes) developed	9 Universities, 29,285 students registered
Busan	14 kinds(291 classes) developed	9 Universities, 2,597 students registered
Jeju	12 kinds(450 classes) developed	4 Universities, 401 students registered
Total	151 kinds developed	86 Universities, 57,945 students registered

Source: MOE·KERIS (2022). 2022 Education Information White Paper

Note: As of June 30, 2020(Cumulative Count)

Korea has made significant efforts for quantitative growth and expansion of access to higher education. However, it is now necessary to shift the focus toward providing high-quality, substantial opportunities for higher education. It is also necessary to understand and support marginalized group students for their adaptation and skill acquisition during their higher education experiences. In addition, the COVID-19 pandemic, which led to a shift to distance learning, has resulted in educational disparities among primary and secondary school students. Related studies (Moon et al., 2023; Kim et al., 2022) have shown that the proportion of top-performing students in Korean, English, and mathematics achievement among high school students decreased or that lower-performing students experienced further declines in their academic achievements in the post-COVID era, widening educational disparities. To prevent these disparities in secondary education from leading to those in university admission opportunities, ongoing monitoring and intervention are necessary.

To address the learning loss and academic setbacks experienced by elementary and middle school students, the Ministry of Education, along with local governments, has been providing support for supplementary education programs and psychological and emotional recovery programs. These programs can be delivered online or through small-scale in-person sessions (Ministry of Education, January 13, 2022, press release). The widening educational disparities among elementary, middle, and high school students can indeed impact their opportunities for entering higher education and their adaptation during their higher education. Therefore, it is crucial to make concerted efforts at both the government and university levels to support university students. Additionally, addressing and supporting university students' psychological and emotional challenges resulting from the impact of the COVID-19 pandemic and providing support for their adaptation to higher education are equally important considerations.

2) Ensuring the Quality of Education

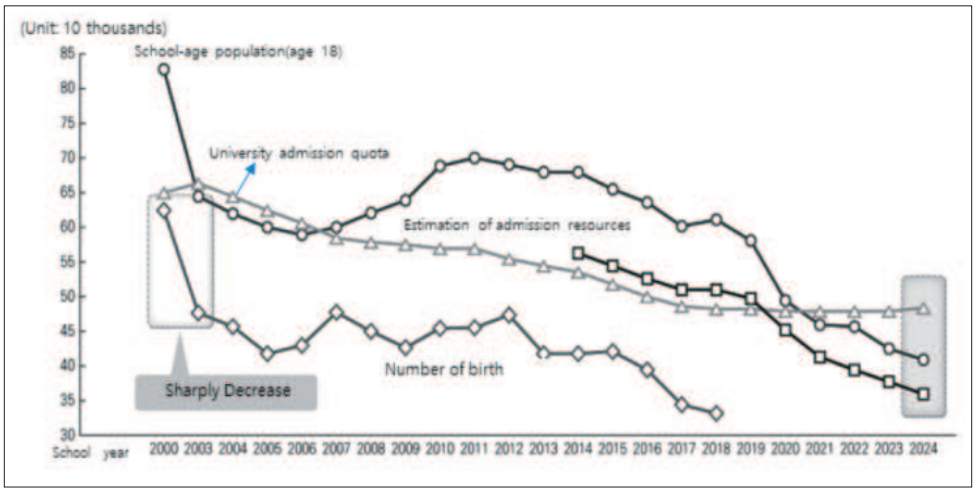
Spanning the period before and after the 2000s, the Korean Government has

implemented various financial support programs to improve the quality of undergraduate education. These initiatives include the Education Reform Outstanding University Support Program in 2000, followed by the NURI Project in 2004, the Metropolitan Area Specialization Project in 2005, the Industry-Academia Cooperation-Centered University Project in 2007, the University Competency Enhancement Project in 2008, the Leading University Support Program for Undergraduate Education Advancement(Advancement for College Education, ACE) in 2009, and the University Specialization Project in 2014. These national-level financial support projects were multidimensionally pursued to enhance the quality and competitiveness of higher education (Park, 2018). However, the policies such as the tuition freeze introduced in 2012 have led to a continuous deterioration of universities' financial situation, posing challenges to achieving further qualitative improvements. The issue of ensuring the quality of higher education can be directly affected by the financial resources allocated to universities. In Republic of Korea, the proportion of public funding for higher education is relatively low, with a significant burden placed on the private sector. Although policies related to tuition fees and national scholarships have reduced the private sector's share of the burden for public higher education costs, direct financial support to universities has not substantially increased. Accordingly, the financial conditions of universities to make substantial investments in education have deteriorated. Most importantly, the recent establishment of the Special Account for Support of Higher and Lifelong Education in December 2022, with a budget of approximately 9.7 trillion won, enables financial investments in universities, promoting autonomy, fostering local universities, and improving education and research conditions. While this is a positive step toward enhancing the quality of higher education, given the temporary nature of this budget, it is important to develop sustainable ways to secure such funding.

Universities located in both metropolitan and non-metropolitan areas in Korea are making multifaceted efforts to improve the quality of education. However, challenges such as a decrease in school-age population as illustrated in Figure 9, the concentration of the population and industries in metropolitan areas have led to higher rates of student and faculty attrition

rates in non-metropolitan universities. Consequently, there is an increasing number of non-metropolitan area universities facing deteriorating educational environments.

<Figure 9> *The Trend of Decreasing School-age Population and Enrollment Resources*



Source: Ministry of Education, 2020.3.

To address these issues, the government has implemented university financial support programs to encourage voluntary restructuring. Simultaneously, through initiatives like RISE (Regional Innovation System & Education), local governments are taking the lead in promoting collaboration between local industries and universities. Moreover, the government established the "Education Development Special Zone Promotion Plan('23.11.2)" to pursue national balanced development through regional educational development. This plan intends to create a system where local governments, offices of education, universities, local businesses, and regional public institutions cooperate to comprehensively support regional education innovation, local talent development, and settlement in the framework of regional development. In higher education, the focus is on expanding admission programs for local talents and preventing the outflow of local talents by enabling universities to play a central role in local education. These policies aim to

foster conditions for local governments to lead regional development and to reduce the gap between metropolitan and non-metropolitan universities through specialization and functional differentiation. This is expected to diminish the disparity between metropolitan and non-metropolitan universities and establish a system where high-quality higher education is accessible everywhere.

Furthermore, addressing the issue of labor market mismatch is crucial for quality higher education to turn into educational outcomes. To this end, the government has recently promoted a policy to enhance the flexibility of university academic systems to adapt to the rapidly changing industrial structure. In particular, it has relaxed the requirements to increase the admission quotas of graduate schools, especially to educate human resources in high-tech fields.

3) The Promotion of Higher-Lifelong Learning

The recent increase in life expectancy and rapid changes in technology have further necessitated lifelong learning at the tertiary level to adapt to changes in the workplace and work. However, as previously reported in Global Indicator 4.3.1, the participation rate of Korean adults (aged 25-64) in formal and non-formal education is 30.7% in 2022, a rate that has declined further during the recent COVID-19 pandemic. In particular, in 2022, participation rates[3] among adult learners (aged 25-64) show a decline with age: 39.6% for those in their 20s, 35.9% in their 30s, 31.5% in their 40s, at 27.0% in their 50s, and 20.0% in their 60s.

The Korean government launched the LiFE (Lifelong education at universities for the Future of Education) 1.0 project (2019-2022) in 2019 to support universities that have made efforts to create an adult learner-friendly university culture, thereby expanding adult learners' access to higher education and improving the lifelong education system in universities. The LiFE 2.0 project

3 Source: Ministry of Education· Korea Educational Development Institute(2022). 2022 Korean Adult Lifelong Learning Status, page 133.

(2023-2024) supports the competence development of adult learners through higher education, by establishing and operating departments specifically for adult learners at participating universities, establishing centers for adult learners' learning, and adopting the flexible academic system.

5. Future Tasks

At the midpoint of the SDGs, Korea's implementation status of SDG 4.3 was reviewed, by examining global and thematic indicators for the achievement of specific goals, the implementation of domestic policies and their results. Relevant issues, such as ensuring equal opportunities in higher education, ensuring quality in higher education, and advancing higher and lifelong learning. Based on this review, the following future tasks have been identified:

Firstly, there is a need to seek more substantial and varied opportunities to access higher education. Going beyond the expansion of university admissions for underrepresented students, it is necessary to establish a system that provides customized support to help these students develop their capabilities fully after entering university. Improvement of admission systems, development of student support services, and the establishment of career guidance systems are particularly crucial, considering the educational needs of diverse underrepresented groups, related to marriage migration and North Korean defection. The COVID-19 pandemic has accelerated a digital transformation through the adoption of flexible academic systems and the promotion of distance education. This presents an opportunity to further expand access to quality higher education and degree recognition through distance education. Furthermore, efforts to sustain policies to expand access to higher education, especially those implemented during the pandemic, need to continue beyond the pandemic era.

Secondly, Korea must strive to ensure the quality of higher education in the future. In the context of SDG 4.3 implementation, Korea has made significant progress in ensuring access to higher education opportunities. Considerable growth in the quantity of higher education has already been achieved, and

various policies to expand access to higher education for underrepresented groups have been implemented, either by the government or local authorities. To ensure that everyone can receive equitable and high-quality higher education, efforts to reduce the disparity between universities in the metropolitan region and regional universities must continue. Particularly, there is a need to expand various financial support programs that encourage ongoing improvements in undergraduate education. Given the development of technologies like AI, transitioning from the traditional model of higher education to a personalized AI-driven model necessitates government support. While the introduction of advanced technologies such as AI, VR, and online learning models has occurred through the experience of the COVID-19 pandemic, financially constrained universities tend to stick to older educational models. In addition, with private universities accounting for more than 80% of all universities, which are heavily dependent on tuition fees for funding, a decrease in the number of students could lead to a sharp decline in the quality of university education. Therefore, in addition to restructuring universities considering the number of students, it is necessary to increase government investment in higher education and establish a stable financial support plan. Thirdly, it is necessary to promote quality higher education and lifelong learning through the reorganization of higher education where higher education leads to lifelong education. Currently, the higher education system in Korea primarily targets students who graduate high school and directly enter higher education. However, considering the demographic shift towards an ultra-aging society due to the declining population, it is necessary to expand the scope of higher education to include adult learners. In addition re-educating adults to adapt to the rapid changes in technology during the Fourth Revolution and beyond has emerged as a national and social task. It is also necessary to address the increasing demand for re-skilling and up-skilling in the workplace due to rapid social change. To respond to the diverse needs and demands of these adult learners, universities need to adapt flexibly, such as focusing on the function of continuing education.

Lastly, it is necessary to build a positive cycle in which local governments, universities, and industries collaboratively foster the talents needed for local

industries to create new local growth industries, and to establish a flexible higher education system by strengthening the role of regional universities and diversifying the functions of higher education. Recently, non-metropolitan universities are facing a crisis amid the regional crisis caused by population decline and concentration in metropolitan areas. To overcome this, it is important to move away from the central government's top-down approach to developing regional universities and fully adopt a bottom-up paradigm led by local governments and regional universities. Efforts to innovate the financial support system for universities, such as the RISE project (Regional Innovation System & Education), which is currently being promoted, also need to be further strengthened and established.

6. Conclusion

Since the adoption of the Sustainable Development Goals (SDGs) at the United Nations Development Summit in September 2015, Korea has been diligently working to implement SDGs 2030 across various sectors. In education, particularly, Korea has strived to provide uninterrupted education even during the COVID-19 pandemic, offering flexible educational opportunities through various means, including distance learning, and making policy initiatives to support individual development. In higher education, the digital transformation prompted by the pandemic should be seen as an opportunity to provide more flexible and diverse educational opportunities, including various forms of degrees, and to continue support for underrepresented groups. Furthermore, the efforts to implement SDGs for sustainable development, led by the government and civil society organizations, should foster an environment where individuals actively participate at the grassroots level. The Republic of Korea needs to persistently work towards ensuring equal access to quality technical, vocational and tertiary education, at reasonable costs for all women and men, by preparing a roadmap for the post-pandemic era and towards 2050.

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Annex: *Relevant Regulatory Document, References and Stakeholders and Their Responsibilities by SDG 4 Targets and Indicators*

SDG 4 target	SDG 4 indicator	Name and hyperlink of the relevant policy, strategy, other regulation	Key references in the policy/strategy/regulation which address the target/indicator	Responsible stakeholder	Type of responsibility	Key achievement	Chal-lenges	Data Sources
4.3		Basic Education Act	Article 28(Scholarships, etc.)			Income-Linked National , Merit, Scholarships		
		Higher Education Act Enforcement Decree	Article 42-6 Operation of the Social Integration Program			College admissions for people with affirmative action needs		
		Regulations for Distance Learning Operations at General Colleges and Universities				Improve the quality of University distance learning by defining the details of distance learning		
		Digital and Distance Learning Enabling Act				Improve the quality of distance education in preparation for the transition to the digital era and establish a systematic operation guide		
		Higher-lifelong Education Special Account				Increase government investment in higher education		
		Special Education for Students with Disabilities	Article 33(center for people with disabilities at Higher Education Institute)			Integrated support for students with disabilities in college		

Monitoring SDG 4 Target 4.4.

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1. Introduction

SDG 4 Target 4.4 aims to encourage youth and adults to have relevant skills that enable them to update their current skills and acquire new skills to better adapt to changes in the world of work due to demographic changes and labor market transformation. In other words, the target seeks to increase the proportion of youth and adults with relevant skills for employment, decent work, and entrepreneurship.

Since the UN General Assembly adopted the 2030 Agenda for Sustainable Development Goals in 2015, the most significant challenges affecting the implementation of the goals include digital transition, adoption of global norms and principles for a carbon-neutral economy, and changes in the global value chain and markets. The need for people to acquire digital and green skills to better perform in their livelihood and the workplace looms large. There has been a growing concern of job displacement and polarization due to the adoption of automation technology and AI across the globe, while optimists eye new employment opportunities in high technology and new industry sectors.

The Korean community has witnessed an unprecedented incident of low birth rates, population aging, and decreasing school-age cohorts, which calls for reform of higher education institutes to address the needs of adult learners

and to encourage them to take part in lifelong learning and vocational skills development more than ever.

Korean ministries initiated their plans for establishing a lifelong learning system and citizens' rights to lifelong learning. In 2021, the Lifelong Learning Act was amended to emphasize lifelong learning as a universal social and citizenship right, among which lifelong education vouchers were extended to monitor progress in individual learning trajectories and to introduce merit-based talent development. In tandem, targets and scope of support for lifelong learning vouchers have expanded, and diverse curricula for tailored and learner-guided education were drafted for the digital era. To diversify learning pathways, university admissions expand for adult applicants who pursue bachelor degrees, and the LiFE (Lifelong Education at Universities for the Future Education) project has been launched for adults aged 30 or above, and those who graduate specialized vocational high schools with more than 3 years of service in their jobs.

Ministry of Employment and Labor also amended the National Lifelong Vocational Skills Development Act to expand policy targets and scope of support for individual training accounts, the so-called Naeil Baeum Card, and to minimize blind spots for vocational skills development. In addition, an online learning platform was established to extend chances for non-face-to-face and remote training and to promote lifelong vocational skills development to a better extent.

2. Adaptation and Monitoring of SDG 4 Target 4.4 and Indicator

For the last few years, in Korea, many parties have monitored progress towards SDG 4 targets based on a bottom-up steering mechanism, in which ministries concerned, private working groups, stakeholders, and the general public take their roles, respectively. In February 2018, social ministries' joint meetings

approved 'the Plan for National SDGs Establishment', and organized public-private-academic joint committees and task force teams with environment ministries and others concerned.

Once SDGs are adopted at the national level, the state agency is designated as the institution in charge, for which the Statistical Development Institute of Statistics Korea has been nominated. As the international organization in charge of each indicator asks for data collection, Statistics Korea collaborates with 24 ministries concerned and provides relevant data for international agencies, which then fine-tune the data provided according to the criteria of UN SDGs definitions. Final data are registered in the UN SDGs database. For SDG 4 target 4.4, the only global indicator is 4.4.1 which measures the proportion of youth and adults with information and communications technology (ICT) skills, by type of skill. This indicator is annually collected by The International Telecommunication Union (ITU), the United Nations specialized agency for information and communication technologies. However, no data are publicly released for that indicator domestically in Korea.

3. Monitoring Progress of SDG 4 Target 4.4.

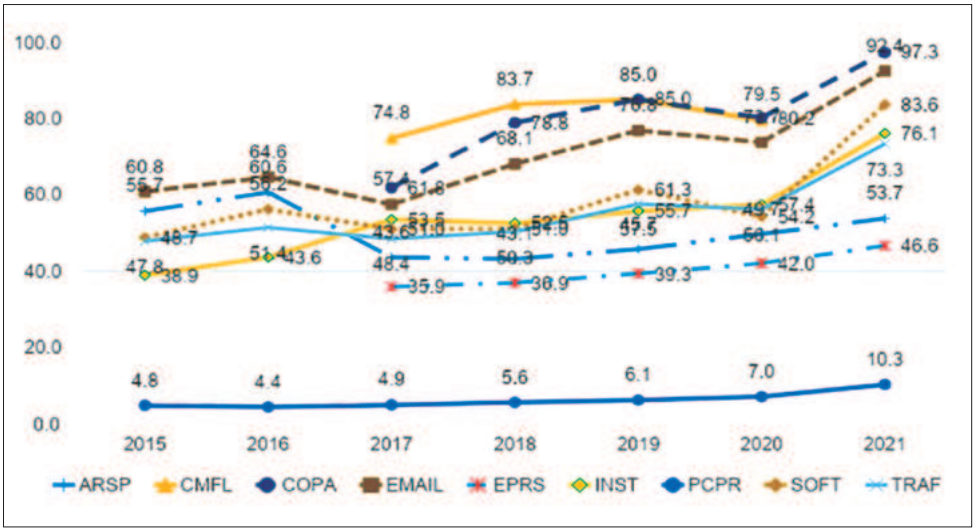
SDG 4 target 4.4 aims to increase the number of youth and adults who have relevant skills, including technical and vocational skills for employment, decent jobs, and entrepreneurship. The only global indicator used for this target is the proportion of youth and adults with ICT skills, by type of skill, the data of which are collected by the International Telecommunication Union (ITU). In Korea, data are not nationally released but only provided to ITU To monitor progress toward the target. <Table 1> describes the data type, description of items used, data collection method and periodicity, and organizations in charge of data collection.

<Figure 1> shows recent developments in ICT-related skills for the Korean population with 9 distinct items measuring skills used at both foundational and middle levels of proficiency. There have been significant improvements

in the share of youth and adults with relevant ICT skills over the last 7 years, regardless of items measured. For each ICT skill, men have outperformed women, with gender gaps having narrowed to some extent for the last few years.

<Figure 1> *Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill, 2015-2021*[1]

(Unit: %)



Trends have shown improvements in terms of gender parity, while some types of skills used have still exhibited larger gender gaps than others. For instance, in 2021 59.3% of males used basic arithmetic formulas in a spreadsheet, while only 48.0% of females used that skill, yielding a 11.3%p gender gap in skill use. In the same vein, in 2021 about half of males (51.8%) wrote a computer program using a specialized programming language, while two in five females (41.2%) did the same task, showing a 10.6%p gender gap. These two skill types require a middle level of proficiency in ICT skills as compared to other basic skills, suggesting that gender disparity in ICT skills use is more prominent in the middle level of skills than in the lower level of skills. For other skills use

1 Source https://unstats.un.org/sdgs/metadata/files/Metadata-04-04-01.pdf (last accessed on July, 19, 2023)

items, gender gaps have gradually narrowed, reaching gender parity in terms of using ICT-related skills over the last 7 years.

<Table 1> *Description of Indicator SDG 4.4.1*[2]

Data type	Estimated data by international organizations (Type2) This is Korean data prepared by international organizations through estimation and modeling. If there are no national data corresponding to UN SDGs indicators, international data are available for monitoring.
Indicator	Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill
Definition	The proportion of youth and adults with information and communications technology (ICT) skills, by type of skill is defined as the percentage of individuals that have undertaken certain -ICT-related activities in the last 3 months. ARSP : Using basic arithmetic formula in a spreadsheet CMFL : Copying or moving a file or folder COPA : Using copy and paste tools to duplicate or move information within a document EMAIL : Sending e-mails with attached files EPRS : Creating electronic presentations with presentation software INST : Connecting and installing new devices PCPR : Writing a computer program using a specialized programming language SOFT : Finding, downloading, installing and configuring software TRAF : Transferring files between a computer and other devices
Data collection	Data are collected from institutions conducting national household surveys (including statistical services and government ministries).
Organizations	ITU International Telecommunication Union)
Periodicity	Annually

2 Source: from SDG Data Platform for the Republic of Korea available at https://kostat-sdg-kor.github.io/sdg-indicators/public/data/Metadata-04-04-01_ENG.pdf, (last accessed on July, 19, 2023)

<Table 2> *Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill by gender, 2015-2021 (Unit: %)*[3]

	2015	2016	2017	2018	2019	2020	2021
ARSP	55.7	60.6	43.6	43.1	45.7	49.7	53.7
ARSP-F	49.4	55.0	35.5	36.9	39.8	44.8	48.0
ARSP-M	61.8	66.1	51.7	49.1	51.4	54.3	59.3
ARSP-Gap	12.4	11.1	16.2	12.3	11.6	9.5	11.3
CMFL			74.8	83.7	85.0	79.5	
CMFL-F			76.4	79.6			
CMFL-M			84.1	87.6			
CMFL-Gap			7.7	8.0			
COPA			61.8	78.8	85.0	80.2	97.3
COPA-F			55.7	73.6	82.6	76.7	96.6
COPA-M			68.6	83.8	87.3	83.5	98.0
COPA-Gap			12.9	10.2	4.7	6.8	1.4
EMAIL	60.8	64.6	57.4	68.1	76.8	73.7	92.4
EMAIL-F	55.0	58.7	51.4	61.8	72.6	69.8	91.2
EMAIL-M	66.5	70.4	63.8	74.1	80.9	77.5	93.6
EMAIL-Gap	11.5	11.8	12.5	12.3	8.4	7.7	2.4
EPRS			35.9	36.9	39.3	42.0	46.6
EPRS-F			29.2	31.1	33.7	36.4	41.2
EPRS-M			42.5	42.5	44.8	47.5	51.8
EPRS-Gap			13.3	11.4	11.1	11.1	10.6
INST	38.9	43.6	53.5	52.5	55.7	57.4	76.1
INST-F	31.3	35.7	47.0	46.2	49.9	52.4	75.1
INST-M	46.4	51.4	60.9	58.6	61.3	62.1	77.0
INST-Gap	15.1	15.7	13.9	12.4	11.4	9.7	2.0
PCPR	4.8	4.4	4.9	5.6	6.1	7.0	10.3
PCPR-F	3.0	2.6	3.1	3.9	4.5	5.6	8.6
PCPR-M	6.6	6.1	6.7	7.2	7.7	8.5	11.9
PCPR-Gap	3.6	3.4	3.7	3.3	3.2	2.9	3.3

[3] Note: highlighted rows refer to gender gaps for the items in percentage point differences.
Source: retrieved and modified from SDG Data Platform for the Republic of Korea available at https://www.index.go.kr/unity/potal/sdgs/4/SDGsIndicator.do (last accessed on July, 19, 2023)

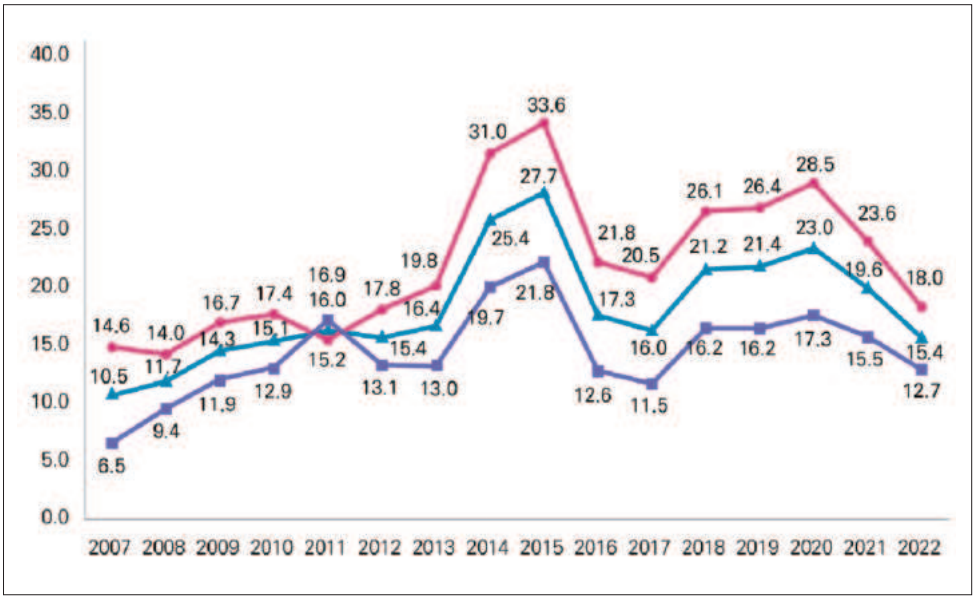
SOFT	48.7	56.2	51.0	51.0	61.3	54.2	83.6
SOFT-F	41.3	49.3	43.9	44.7	56.0	48.5	82.9
SOFT-M	56.1	62.9	58.2	57.1	66.4	59.7	84.4
SOFT-Gap	14.8	13.6	14.2	12.4	10.5	11.3	1.5
TRAF	47.8	51.4	48.4	50.3	57.5	56.1	73.3
TRAF-F	41.5	44.8	42.8	44.7	52.2	50.6	71.4
TRAF-M	54.0	57.9	54.9	55.8	62.7	61.4	75.2
TRAF-Gap	12.5	13.1	12.1	11.1	10.5	10.8	3.8

Regarding the COVID-19 pandemic's impact on the progress towards indicator SDG 4.4.1, there seem to be positive effects on having men and women equipped with relevant skills for every aspect of information and communication activities, yielding some unexpected outcomes given that COVID-19 has widened gaps in educational achievement for primary and secondary level of educations overall (Cho, 2023; Choi et al., 2022; Kim et al., 2022; Kim, 2021; Park and Choi, 2022; Park, 2020). Since the outbreak of the COVID-19 pandemic in 2020, a series of lockdowns and social distancing measures have induced the Korean population to resort to internet access and ICT-related activities for more than 3 years, which also accelerated ICT-related skills activities with more increase for women. This may be because youth and adult populations have better chances of getting access to ICT-based learning and training activities based on online interfaces or blended settings using both hands-on and digital devices.

<Figure 2> shows trends in participation rates for job-related non-formal learning in total and by gender between 2007 and 2012. The data draw on the National Lifelong Learning Survey for Individual Learners, which is administered to a representative sample of the Korean population aged 25 to 79 on an annual basis. In 2015 about 27% of Korean adults aged 25-64 took part in some job-related learning with male 33.6% and female 21.8%, showing about 11.8%p gender difference. The rates dropped for the following two years, which reversed since 2018. However, the overall participation rates reached a peak at 23.0% in 2020, and then decreased for the last two years to 15.4% in 2022. There seem to be COVID-19 effects in reducing participation rates for

job-related non-formal learning for both sexes, which seems consonant with an overall decline in learning activities caused by the COVID-19 pandemic.

<Figure 2> *Participation rates for job-related non-formal learning by sex, 2007-2022*[4]



4. Impact of the COVID-19 Pandemic on Progress of SDG 4 Target SDG 4.4.

Although it is very challenging to assess the impact of the COVID-19 pandemic on the implementation of SDG target 4.4, it seems plausible that the expansion of online classes and remote work may have contributed to strengthening ICT- related digital skills, which is a global benchmark indicator for SDG 4.4.

However, <Figure 2> shows that the outbreak of COVID-19 has had a strong negative effect on participation rates for job-related training for the adult

4 Note: The survey covers a sample of aged 25-64; survey data correspond to participation rates between July of the previous year and June of the current year; blue lines refer to total adults, red to male, and purple to female, respectively.
Source: KEDI (2022: 132)

population in Korea, which may be due to the limited availability of job training courses and venues, as well as quarantine issues.

In 2021, the Korean government released 'Comprehensive Measures for Educational Recovery', in which complementary education opportunities were given to students taking part in vocational education classes, and job placement services to non-employed students who graduated from vocational education schools. In addition, guidance for job practice class were circulated and non-employed graduates were placed as co-instructors for job practice class.

5. Future Tasks

SDG 4 casts light on how we should provide opportunities for education and lifelong learning for all to respond to multiple crises such as digital transition, the rise of a carbon-neutral economy, demographic change, and local extinction. In addition to early childhood education and care, higher education and lifelong learning, raising skills to address problems voluntarily and independently is critical in the workplace and civil society. Of great importance is digital literacy to deal with digital devices and to communicate and cooperate with others in the era of digital transition as well as green skills to understand and practice sustainability for future generations and planetary boundaries, which will work as key drivers to implement sustainable development goals and relevant policies. Regarding relevant skills for decent work, below are three areas of priority:

First of all, the vision and goals of national lifelong learning and skills development policies are set to be revised by monitoring SDG 4 target 4.4 implementation. As already known, global norms are often transferred or translated into national policies with various levels of coordination mechanisms, be they global, regional or national. In the realm of relevant skills for decent work, indicator development and coordination among stakeholders are yet to further develop; lifelong learning and skills development policies need to

increase adaptive capacities in tandem with the rise of ESG norms for which engagement from private sectors including business owners is emerging rapidly.

Secondly, data infrastructure and systems are necessary to help monitor the implementation of SDG targets. As previously mentioned, few, if any, agreements have been achieved regarding job training participation rates, for various databases resort to their own aggregation measures. To include both job seekers and employees who have seen an increase in their demand for reskilling and upskilling, a data management system is of high priority. In addition, policy efforts should be given to increase inclusiveness and quality in access to education and training in terms of improving lifelong learning enhancement.

Lastly, lifelong learning participation rates or job training participation rates in SDG 4 target 4.4 may be used to monitor progress in labor market policies or government-funded job creation projects. Currently, evaluation focuses on short-term outcomes, which need to take into account social impact regarding sustainability. As SDGs include impact measures in their benchmark or indicators, national skills development and job creation policies may take stock of them to improve on their current schemes.

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Annex: *Relevant regulatory document, references and stakeholders and their responsibilities*

SDG 4 target	SDG 4 indicator	Name and hyperlink of the relevant policy, strategy, other regulation	Key references in the policy/strategy/regulation which address the target/indicator	
4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship	4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill	Lifelong Education Act (1999)	The purpose of this Act is to prescribe basic matters concerning the responsibility of the State and local governments for promotion of lifelong education prescribed in the Constitution of the Republic of Korea and the Framework Act on Education, the lifelong education system and the operation thereof and to contribute to the improvement of the quality of life and the pursuit of happiness of all citizens by guaranteeing the right of all citizens to learn and receive education throughout their lives. <Amended on Jun. 8, 2021>	
	4.4.2	National lifelong vocational skills development act (2021)	The purpose of this Act is to create jobs and promote and stabilize the employment of every citizen and enhance their social and economic status by facilitating and supporting their vocational skills development throughout their lifetime, nurturing workforce necessary for industrial sites, and performing business related to industrial and educational cooperation, with the aim of improving the productivity of enterprises and realizing a meritocracy, contributing a social and economic development. <Amended on May 31, 2010; Jan. 27, 2016; May 26, 2020; Aug. 17, 2021>	
	4.4.7	The 3rd Master Plans for "Vocational Skills Development for Innovation and Inclusive Growth" (2017)	The plan have set specific goals for increasing the provision of adult learning programs and establishes an online VET platform, including the learning management system using big data, Internet of Things and artificial intelligence (AI) via Massive Open Online Courses (MOOC), flipped learning and blended learning. Strengthens the prior learning accreditation system for eventual alignment to credit accumulation towards a degree.	

	Responsible stakeholder	Type of responsibility	Key achievement	Challenges	Data sources
	Ministry of Education	Conduct of survey and analysis on lifelong education projects by the national and local governments; Submission of findings to the lifelong learning education promotion committee; Designation of lifelong study cities for people with disabilities; Issuance of lifelong education vouchers; Collection of relevant data and management of lifelong education statistics center			Korea Law Translation Center https://elaw.klri.re.kr/kor_service/lawView.do?hseq=57412&lang=ENG
	Ministry of Employment and Labor	Responsibility of governments and business owners to formulate necessary measures to support vocational skills development training; Establish an information network for vocational skills development to collect and provide information on citizens' lifelong vocational skills development			Korea Law Translation Center https://elaw.klri.re.kr/kor_service/lawView.do?hseq=60204&lang=ENG
					OECD (2021: 13)

Monitoring SDG 4 Target 4.5.

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Kyungsook Kang *(Wonkwang University*)

1. Introduction

'Leaving no one behind' is the centrle principle of SDGs. Although equity and inclusion are taken into consideration throughout all SDG 4 targets, target SDG 4 target 4.5 particularly highlights equity and inclusion to 'ensure inclusive and equitable quality education and promote lifelong learning opportunities for all people regardless of their age, sex, class, location, social-economic status' (UNESCO, UNICEF, 2021). Korea has achieved universal enrollment rate in primary and secondary education, and the dropout rate is very low. In addition, there is no significant gender gap at the primary and secondary education levels. However, gender segregation in selecting a major in tertiary education still exists, and more efforts are needed to ensure educational opportunities for vulnerable groups such as multicultural students, students from North Korean refugees, and students with disabilities. Against this backdrop, in this section we examine Korea's progress and efforts made to ensure educational equity.

2. Adaptation and Monitoring of SDG 4 Target 4.5. and Indicators

SDG 4 target 4.5 places a special emphasis on equity and inclusion, declaring that "by 2030, eliminate gender disparities in education and ensure equal

access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and at-risk children". Target 4.5 is cross-cutting through all SDG 4 targets.

Target 4.5 includes one global indicator (4.5.1) and four thematic indicators (4.5.2-4.5.5) as seen in Table 1. For global comparison purposes in future, this analysis focuses on the global indicator. The global indicator of target 4.5 represents "parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflict-affected, as data become available) for all education indicators on this list that can be disaggregated". This indicator value of the likely more disadvantaged group is divided by the indicator value of the other sub-population of interest (UNESCO, 2022). The data sources are the same as for the underlying indicators (4.1.1, 4.2.2, 4.3.1, 4.4.1, 4.6.1 and 4.c.1). K-SDG 4.5's indicator also represents the same as global indicator 4.5.1.

<Table 1> *Indicators of Target 4.5*

Indicator		Type	Baseline available
4.5.1	Parity indices (female/male, rural/urban, bottom/top wealth quintiles and others such as disability status, indigenous peoples and conflict-affected, as data become available) for all education indicators on this list that can be disaggregated	Global	Partly
4.5.2	Percentage of students in primary education whose first or home language is the language of instruction	Thematic	No
4.5.3	Extent to which explicit formula-based policies reallocate education resources to disadvantaged populations	Thematic	No
4.5.4	Education expenditure per student by level of education and source of funding	Thematic	Partly
4.5.5	Percentage of total aid to education allocated to least developed countries	Thematic	Yes

Source: UNESCO (2018). p. 68.

Since indicator 4.5.1 requires the specific groups of interests, parity indices represent various disadvantaged populations. However, while parity indices are available for mainly gender parity, most indicators are not disaggregated by all characteristics (such as geographical location, wealth, or disability). This paper utilizes the data from the UNESCO Institute for Statistics[1] to analyze the trend of indicator 4.5.1 in he Republic of Korea (hereinafter referred to as the ROK) .

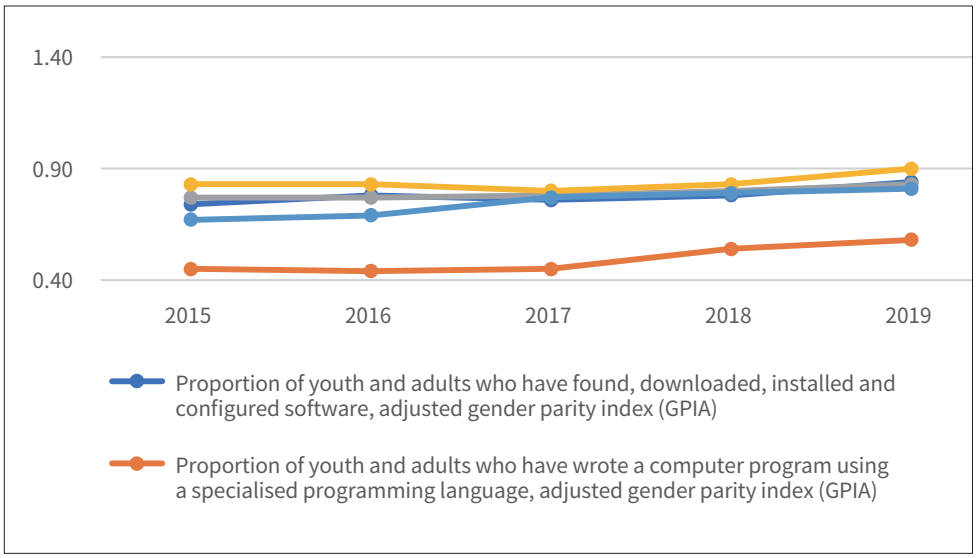
3. Monitoring Progress of SDG 4 Target 4.5

Indicators of target 4.5 show that Korea has achieved educational equity in various areas. The adjusted gender parity regarding completion rate in primary education, lower secondary education, and upper secondary education all consistently show 1 from 2015 to 2020. The adjusted wealth parity index (WPIA) of the completion rate in upper secondary education is 0.93, and the adjusted location parity index (LPIA) of the completion rate in upper secondary education is 0.99 as of 2016. The gross enrollment ratio of the gender parity index in higher education is also continuously improving from 0.78 in 2015 to 0.83 in 2020. Moreover, there is no significant gender gap in minimum proficiency level in mathematics and reading.

In particular, the equity index related to ICT has improved overall since 2015. The adjusted gender parity index (GPIA) of the proportion of youth and adults who have sent e-mails with attached files (e.g. document, picture, video) improved from 0.83 in 2015 to 0.90 in 2020. The adjusted gender parity index (GPIA) of the proportion of youth and adults who have written a computer program using a specialized programming language also improved from 0.45 in 2015 to 0.84 in 2020.

1 http://sdg 4-data.uis.unesco.org/

<Figure 1> *ICT-related Educational Equity Index (2015-2019)*



Source: UNESCO SDG 4-data http://sdg 4-data.uis.unesco.org/

Korea has continued its efforts to improve educational equity. Nevertheless, there are still some areas that need improvement in a Korean context. Gender disparity remains in vocational education in that the adjusted gender parity index (GPIA) for 15-24 year-olds in vocational education constantly shows 0.73-0.75 between 2015 and 2020. The adjusted wealth parity index (WPIA) regarding minimum proficiency level in reading and mathematics at the end of lower secondary represent low.[2]

Furthermore, in Korea the number of students in social crisis, such as out-of-school youth, out-of-home youth, perpetrators and victims of school violence, and youth in psychological and emotional crisis (reclusive loners, experiencing depression, or attempting suicide), are increasing. After COVID-19 pandemic, the number of students who dropped out of school

2 The proportion of students at the end of lower secondary education achieving at least a minimum proficiency level in reading, adjusted wealth parity index (WPIA) decreased slightly from 0.83 in 2015 to 0.82 in 2018. The proportion of students at the end of lower secondary achieving at least a minimum proficiency level in mathematics, adjusted wealth parity index (WPIA) is also at a similar level, at 0.79 in 2015 and 0.80 in 2018.

increased by about 20,000 in 2022 (52,981) compared to 2020 (32,027) (Ministry of Education, 2023. 11.27). To systematically support out-of-school students, the ROK government announced the 'Support Plan for Students at Risk of Dropping Out of School and Out-of-School Youth' on November 27th, 2023. However, more efforts are still needed to ensure education equity for various vulnerable groups, such as multicultural students, North Korean refugees, and students with disabilities, which we will examine in detail later.

4. Current Status and Issues

1) Gender Equity

An unremarkable gender gap of enrollment rate

The gender gap in net enrollment rate (hereinafter referred to as NER) is not noticeable at less than 1%p in all of the primary, lower secondary, and upper secondary education over the past seven years since 2015. As of 2022, both girls and boys have identical NER which is 98.5% in primary and 98.2% in lower secondary, and there was little gender gap in upper secondary education (girls 94.2%, boys 94.9%). Even in the dropout rate, the gender gaps in both primary, lower secondary and upper secondary education are insignificant, less than 1%p.

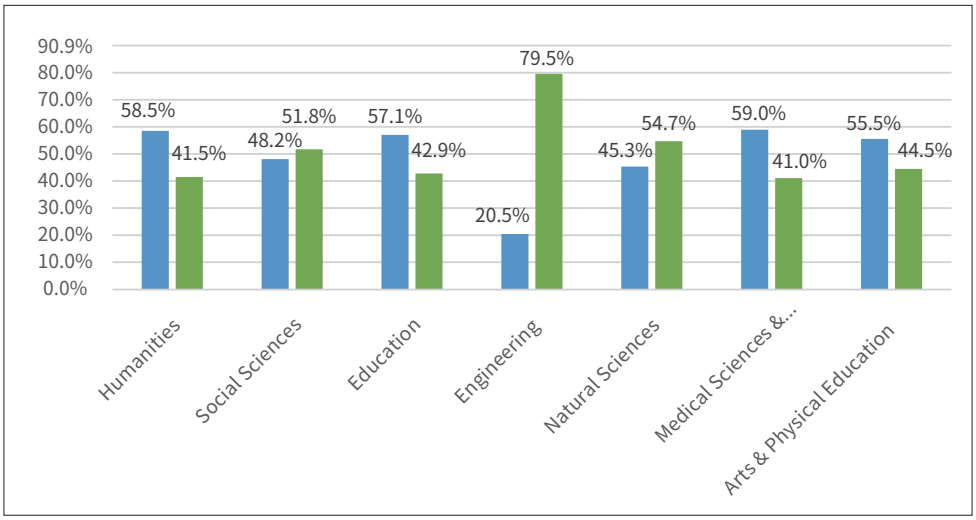
Male students have traditionally dominated the enrollment rate in higher education, However, female students have surpassed male students since 2014, and this trend has continued. As of 2022, the higher education net enrollment rate for female students is 70.5% and 66.6% for male students, which is about 4%p higher for female students.

Continued gender segregation in major selection

Although the gender segregation in selecting a major in higher education is decreasing compared to the past, main trends remain. Male students are still prominent in engineering and natural sciences, while female students are

strong in humanities, education, medicine, and arts and sports. In particular, engineering is the area with the widest gender gap among all departments. The proportion of female students in engineering exceeded 20% for the first time in 2020, and it was 20.5% in 2022, which means that the proportion of women is increasing very slowly. Gender segregation in major selection is important in that it leads to gender segregation in the labor market, and it is necessary to encourage male and female students to explore and choose diverse career paths.

<Figure 2> *Gender ratio by major field in University (2022)*



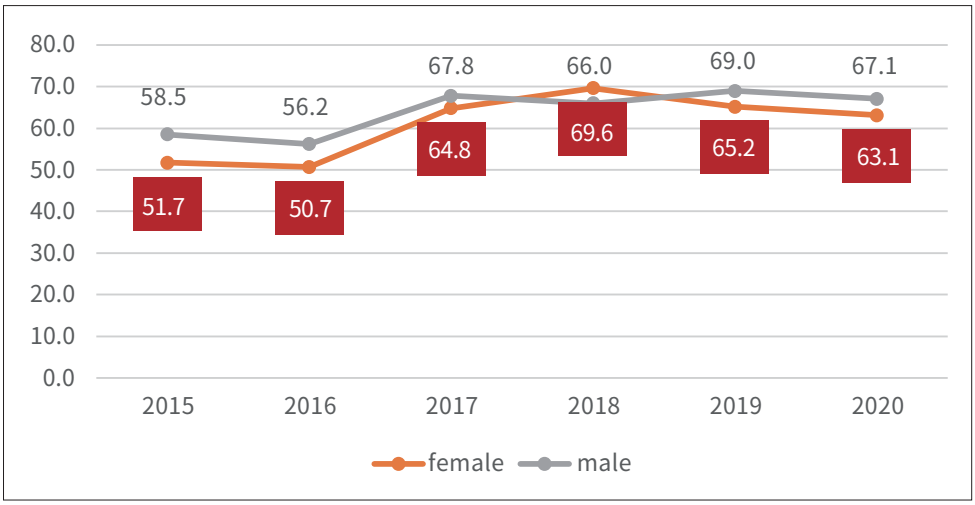
Source: Ministry of Education (2022a). Statistical Yearbook of Education, pp.864-869.

It is worth noting that Korean female students do not have lower math and science achievements than male students. Korean female students' achievement in science has tended to be equal to or slightly higher than male students since 2006 in OECD PISA. In the case of mathematics, male students' achievement was higher, but female students have overtaken or appeared at an equal level since 2015. It is important to closely understand why female students do not choose their career paths in math and science, although they have higher or similar levels of math and science achievement than male students. Some works of literatures argue that female students' low self-

belief in math and science is an obstacle to a career choice (OECD, 2013; OECD, 2016). Male students show higher self-efficacy in math and science than female students despite their relatively low achievements (OECD, 2013; OECD, 2016), and it is necessary to closely understand why such gender gaps occur and what effects they have.

One of the important reasons for resolving gender segregation in major selection is that it also leads to the performance of the labor market. The employment rate of those who have completed higher education is continuously observed to be lower in female students than male students, and the gap has maintained approximately 3-4%p over the past 7 years except 2018. As of 2022, the higher education employment rate for female students is 66.1%, and that for male students is 69.5%, which is 3.5%p higher for male students. Though the low employment rate of female students may have various reasons, the problem that female students are less likely to choose fields preferred by companies—such as engineering—and the companies' tendency to prefer men are cited as the main reasons.

<Figure 3> *Employment rates among graduates of higher education by gender*



Source: Korean Education Development Institution (2015-2020). Statistical Yearbook of Higher Education Graduates.

Gender conflict among the students

One of the biggest social conflicts in Korean society is gender conflict, which is also observed within the youth. 33.9% of secondary school students said they had experienced sexual discrimination, and 27.8% said they had experienced sexual harassment at school (Choi et al., 2019a: 330-332), the rate of experiencing sexual discrimination among female adolescents was 40.9%, 13.4%p higher than that of male adolescents (27.5%), and the rate of experiencing sexual harassment was 31.0%, which is relatively more damaging for female students (Choi et al., 2019a:51,75).

The main cause of this phenomenon is due to online contents and online culture that sexually objectifies women or hates women (Choi et al., 2021). Male-oriented content and female-oriented content are clearly distinguished online, and it is understood that contents feed algorithms by the major platforms have an important influence (Choi et al., 2021). Also, digital sexual violence has become an important social issue in Korea, and many of the victims are teenage women. Many legislative measures have been implemented since the "Nth Room" incident in 2020, but more than one-third of female teenagers are still anxious about exposing personal information online or being damaged by illegal filming or crimes (Choi et al., 2020:280).

2) Multicultural Students[3]

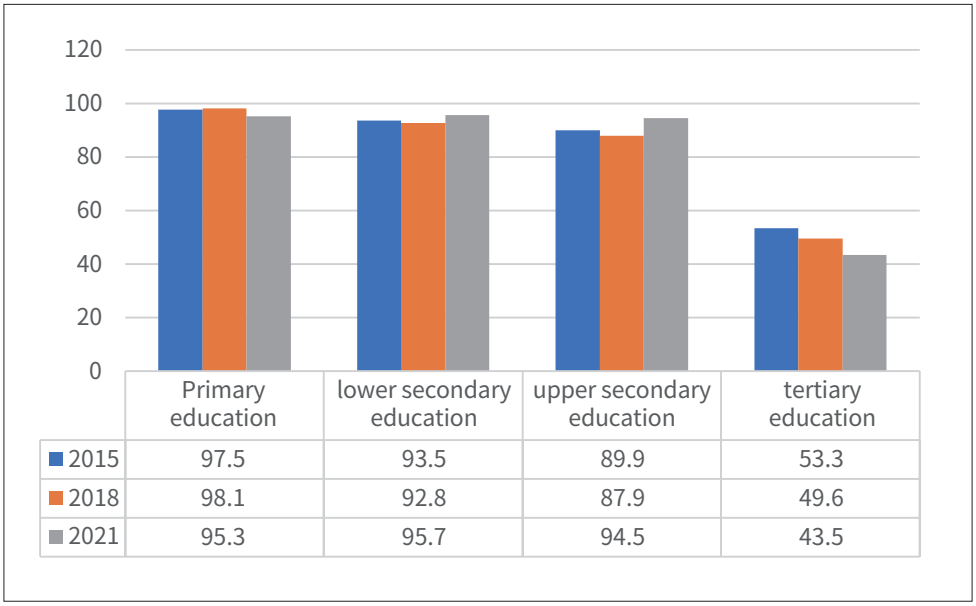
While the total number of students in the ROK is continuously decreasing, not only the number of multicultural students has recently been steadily increasing but also their enrollment rate has been improving gradually. To be more specific, the number of multicultural students has increased by more than 10,000 each year over the past five years and exceed 168,000 in 2022. The ratio of multicultural students is gradually increasing accounting for 1.68% in 2016 and 3.19% in 2022.

3 The term "multicultural students" includes Korean nationals whose parents' or themselves have migrated from another country to live in Korea, as well as the non-Korean nationals who are enrolled in schools in Korea (Ministry of Education, 2023.10.6).

Improved in enrollment and dropout rate of multicultural students

Despite improvement in the enrollment rate of multicultural students, there is still a gap with other student groups. As of 2021, the enrollment rate of multicultural students by educational level is 95.3% for primary, 95.7% for lower secondary, 94.5% for upper secondary, and 43.5% for tertiary education. The enrollment rates of all educational levels are below the national average (primary 98.4%, lower secondary 97.9%, upper secondary, 96.1%). In addition, the enrollment rate of tertiary education is 31.0%p lower than the national average.

<Figure 4> *Enrollment Rates of Multicultural Students by Level of Education*

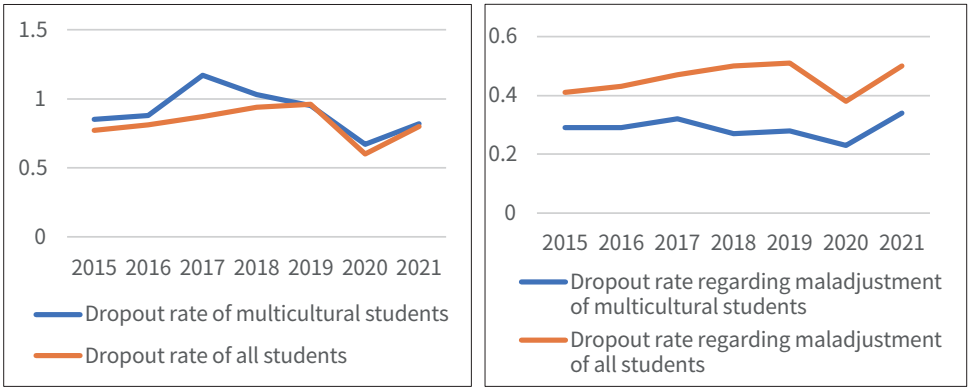


	Primary education	lower secondary education	upper secondary education	tertiary education
2015	97.5	93.5	89.9	53.3
2018	98.1	92.8	87.9	49.6
2021	95.3	95.7	94.5	43.5

Source: Choi et al. (2019; 2022).

The dropout rate of multicultural students is progressively decreasing. As of 2021, the dropout rate for multicultural students (0.82%) is similar to that of the national average (0.80%), and the dropout rate related to maladjustment (0.34%) is lower than that of all students (0.50%).

<Figure 5> *Dropout Rates of Multicultural Students (2015-2021)*



Source: Ministry of Education (2017a; 2023a).

However, multicultural students still experience difficulties with discrimination and peer relationships. In 2015, 5% of multicultural students responded that they had experienced school violence in the past year, which increased significantly to 9.2% in 2018. The rate plummeted to 2.3% in 2021. Yet there is a need to monitor future trends further, since school attendance was limited due to COVID-19 pandemic. (Choi, Y. J. et al., 2022).

Legal and policy system for multicultural students

The legal basis and policy foundation for educational support for multicultural students have been continuously strengthened. The Multicultural Families Support Act (enacted in 2008) stipulates that multicultural education and educational support measures should be prepared so that multicultural students can quickly adapt to school. With a revision of the Multicultural Family Support Act in December 2015, the scope of education care expanded to include not only children but also juveniles (Article 10). In particular, with the newly inserted Article 10, Paragraph 4, more active inclusive education for multicultural students was ensured stating that "heads of all types of schools ... shall take necessary measures to prevent children and juveniles of multicultural families from being discriminated against in providing care and education services for children and juvenile."

Additionally, in 2017, the Multicultural Family Support Act was revised to require all teachers to receive training related to multicultural understanding education.

To support multicultural students, various ministries such as the Ministry of Education, the Ministry of Gender Equality and Family, and the Ministry of Justice are implementing policies related to multicultural students. The Ministry of Education announces its plans to implement the Multicultural Education Support Plan every year. The Ministry of Gender Equality and Family established a *Basic Policy Plan for Multicultural Family Support* every five years in accordance with the Multicultural Families Support Act (enacted in 2008), and has recently announced its "4th *Basic Policy Plan for Multicultural Family Support* (2023-2027).

At the 8th Social Affairs Ministerial Meeting on September 26, 2023, the Ministry of Education announced the 'Human Capital Development Plan for Migrant Students (2023-2027)' (Ministry of Education, 2023.9.26). This plan emphasizes strengthening the Korean language education system for migrant students, since unlike children born in Korea, students who immigrated midway or children from foreign families may drop out of school due to problems communicating in Korean. Along with the new plan, the partially revised the Elementary and Secondary Education Act was announced on October 6, 2023, which will help lay the groundwork for enhanced multicultural educational policies. According to the revised the Elementary and Secondary Education Act, the central and local governments are obligated to provide measures that support multicultural students (Ministry of Education, 2023. 10.6).

Through the policies so far, Korea consistently promoted educational support for multicultural students, focusing on improving Korean language skills and supporting adaptation to school life. To support basic learning before and after entering elementary school, a basic learning support center was established and operated, and Korean language classes were established within schools to improve multicultural students' Korean language skills

and adapt to schools. As a result, the dropout rate of multicultural students decreased from 1.17 in 2017 to 0.82 in 2021. Recently, efforts have been made to develop the global competencies and career education of multicultural students.

In addition, through the operation of 'multicultural education policy schools' where multicultural understanding education is provided to all students (416 schools in 2020 -> 518 schools in 2023), the ROK tries to build a mature educational environment in which various cultures coexist. According to the recently established '4th Basic Policy Plan for Multicultural Family Support (2023-2027)', customized and comprehensive support plans for each growth stage from infancy to late adolescence are being established.

3) North Korean Refugee Students

Establishment of Legal and Institutional Support System

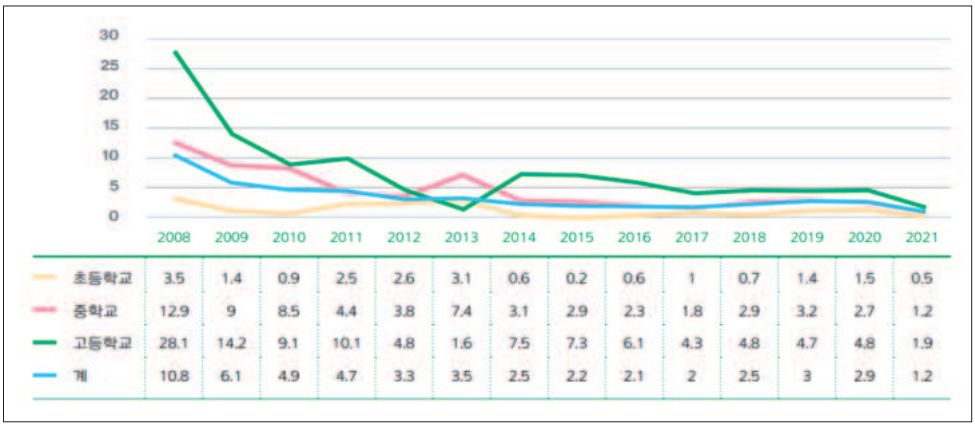
To guarantee the right to learn for North Korean refugee students, a legal basis has been established and a governance system has been established and operated to promote policies. The ministry in charge of education for North Korean refugee students is the Ministry of Education, and the Ministry of Education is cooperating with the Ministry of Unification, which is in charge of settlement support. The Ministry of Education implements the "Plan for Educational Support for North Korean Refugees" every year. The Ministry of Unification also establishes the "Basic Plan for Supporting the Settlement of North Korean Refugees" every three years. North Korean refugee students are guaranteed to complete free primary and secondary education in the same way as all citizens. The Ministry of Unification provides education opportunities under Article 24 (Education Support) of "The Act on the Protection and Settlement Support of North Korean Refugees" and "Guidelines for Education Support for North Korean Refugees", and the Ministry of Education provides education opportunities under "the Elementary and Secondary Education Act" and "Higher Education Act". In doing so, it guarantees access to and completion of free elementary and secondary

education. North Korean refugees who entered or transferred to schools below high school will be exempted from school entrance fees, tuition fees, school operation support fees, and dormitory fees. Furthermore, opportunities for higher education are also guaranteed through a special admission system for high school and college admissions, and support for education expenses. The educational support presented so far should be included in the category of 'North Korean Refugees' prescribed by law. "'North Korean Refugees' is a person who has an address, immediate family, spouse, or workplace in North Korea and has not acquired foreign nationality after leaving North Korea." Those who are children of North Korean Refugees but born outside of North Korea, do not receive various settlement supports. However, the Ministry of Education is making lots of efforts to establish and implement support policies regarding the education of all North Korean refugee students, regardless of the countries they were born.

Decrease in dropout rate of North Korean refugee students

Various educational supports are being provided in consideration of the characteristics of North Korean refugee students so that they do not give up their studies in the middle. They may have difficulty adapting to school

<Figure 6> *Dropout Rates of North Korean Refugee Students (2008-2021)*



Source: Korea Educational Development Institute (2022).

in the early stages due to educational experiences in North Korea or China, learning gaps in the process of defection, personal characteristics, and family environments. The dropout rate of North Korean refugee students is steadily improving. As of April 2022, the number of North Korean defectors was 2,061. By birth place, 635 students (30.8%) were born in North Korea, and 1,426 students (69.2%) were born in third countries such as China. That is the students born in third countries are accounting for a larger proportion. The dropout rate of North Korean refugee students was 10.8% in 2008, 3.5% in 2013, 2.5% in 2015, 1.2% in 2021, and 1.6% in 2022. Their dropout rate is somewhat higher than that of general students. Thus, it seems that continuous interest and support are still needed.

Establishment of Customized Education Support System

It contributes to reducing the rate of dropout and enhancing adaptability through customized educational support that takes into account the characteristics of refugee students. Policy efforts are being made to ensure fair educational opportunities, such as mentoring learning guidance, psychological counseling, Korean language education support, and guidance on advancement. Specifically, schools are conducting 1:1 customized mentoring between students and teachers, and mentoring was expanded to prevent learning deficits, especially during COVID-19. Schools attended by many North Korean refugee students sent "psychological counselors," "unification educators" with experience as teachers from North Korea, and "Korean language instructors" who can speak Chinese to support adaptation and learning.

Also, efforts are being made to minimize the impact of North Korean Refugees' family backgrounds on their educational opportunities and academic achievement gaps. Support considering the weak family background consists of a psycho-emotional stability support system. For students in crisis in blind spots, support for competency development, and resolution of a learning gap are provided. Finally, an alternative education system (such as specialized schools for North Korean Refugees, alternative schools, and group homes) is in operation for North Korean Refugees who find it difficult

to adapt to general schools. This will lower their dropout and provide access to quality education for out-of-school youth.

4) Students with Disabilities

The number of students with disabilities

The number of students with disabilities is steadily increasing every year from 88,950 in 2015 to 109,703 in 2023.

The college entrance and employment rate

The college entrance rate (including junior college) and employment rate of high school and students with a major (an opportunity to receive vocational education at a special school for 1+1 years after graduating from high school in Korea), are indicators showing the accessibility of educational opportunities and employment opportunities for students with disabilities. The entrance rate is defined as the ratio of students who graduated from high school (special schools and regular schools) to educational institutions such as major departments, junior colleges, universities, etc. The employment rate is the ratio of students who graduated from a relevant course (e.g. high school or university) to the total number of students excluding those who advanced to higher education. This can be expressed as a ratio.

When comparing the results of the college entrance rate (including junior college) of high school and major department students, the result is that during the five years from 2017 to 2022, the overall advancement rate of high school graduates for special education improved by 19.4%p from 36.8% in 2017 to 56.2% in 2022. For comparison: the employment rates of high school and major department students during the same period (e.g. 2017-2022), the employment rate of high school graduates for special education students improved only by 5.3%p from 38.8% in 2017 to 44.1% in 2022 (Ministry of Education, 2022b).

Inclusive education with general students is an important indicator of

educational equity for students with disabilities. The proportion of students with disabilities receiving inclusive education in regular school is increasing. In 2015, the number of students with disabilities included in regular schools was 70.4%, but it steadily increased every year to 73.3% in 2023. Thus, the number of students assigned separately to special schools is decreasing every year.

<Table 2> *Current status of placement of special education students by year*

(Uunit: number of person, %)

year	Number of students placed in special schools and special education support centers	Number of students placed in regular schools			Total number of students
		Special class	General class	subtotal	
2014	25,827 (29.6)	45,803 (52.5)	15,648 (17.9)	61,451 (70.4)	87,278 (100)
2015	26,094 (29.6)	46,351 (52.6)	15,622 (17.7)	61,973 (70.4)	88,067 (100)
2016	25,961 (29.5)	46,645 (53.0)	15,344 (17.4)	61,989 (70.5)	87,950 (100)
2017	26,199 (29.3)	47,564 (53.2)	15,590 (17.4)	63,154 (70.7)	89,353 (100)
2018	26,337 (29.0)	48,848 (53.8)	15,595 (17.2)	64,443 (71.0)	90,780 (100)
2019	26,459 (28.5)	50,812 (54.7)	15,687 (16.9)	66,499 (71.5)	92,958 (100)
2020	26,615 (27.9)	52,744 (55.3)	16,061 (16.8)	68,805 (72.1)	95,420 (100)
2021	27,288 (27.8)	54,266 (55.3)	16,600 (16.9)	70,866 (72.2)	98,154 (100)
2022	28,233 (27.2)	57,948 (55.9)	17,514 (16.9)	75,462 (72.8)	103,695 (100)
2023	29,236 (26.7)	61,993 (56.5)	18,474 (16.8)	80,467 (73.3)	109,703 (100)

Source: Ministry of Education (2023b).

To improve the chances of employment for students with disabilities, the employment capabilities were strengthened by providing made-to-measure vocational training and by expanding field-oriented vocational education. A work environment similar to that of a regular workplace was created to provide on-site training-oriented vocational education for students with disabilities (Ministry of Education, 2023). To strengthen special school enterprises (30 schools), 25 special school enterprises designated by the Ministry of Education and 5 special school enterprises designated by municipal and provincial offices of education, were in operation in 2022.

5. Future Tasks

1) Gender Equity

Unlike in the past, Korean education currently does not have a large gender gap in enrollment rates and academic achievement. However, there is still a gap that cannot be narrowed in terms of education outcomes, such as major selection and employment rate. Engineering is still a minority field for girls, and this bodes ill for women in the era of the Fourth Industrial Revolution. The government has enacted and promoted a law on fostering and supporting female science and technology workers since 2003, but it has not been resolved more than 20 years later. Although female students' math and science achievements have caught up with male students, a close analysis is needed on why the gender gap in major and career choice is still maintained. Also, male and female students should be supported to choose various career paths without gender stereotypes through various educational support.

In addition, gender conflict within teenagers is also an important issue to be addressed. Men and women need to be enlightened from an early age to a mutually beneficial cooperative relationship, not a hostile, confrontational or zero-sum relationship. Although efforts are being made to revise the Framework Act on Education and prepare guidelines for schools in relation to gender equality education, professional supports are needed to ensure concrete implementation within the curriculum and the school policies.

2) Multicultural Students

Support to improve the academic achievement gap of multicultural students must be strengthened. While the enrollment rate of multicultural students has been gradually improving, the gap between multicultural students and other students still exists, and in particular, the gap in tertiary education's enrollment rates has deepened (18%p in 2018 → 31%p in 2021). In addition, according to the results of the 2021 Multicultural Family Survey, many respondents (56.2%) said that the reason for the maladjustment of multicultural students to school was difficulty studying at school, indicating that more support for their studies is needed. Since this gap in academic achievement is likely to lead to a gap in social class, efforts should be strengthened to increase the enrollment rate and provide learning support for multicultural students.

In addition to support for the learning opportunities and achievements of multicultural students, support to ensure a safe school life must be more encouraged. According to the 2021 Multicultural Family Survey, the school adaptability of children from multicultural families is overall high at 4.23 points (in 2021), but it appears to be gradually decreasing compared to the results of 2015 (4.53) and 2018 (4.33). The rate of multicultural students experiencing school violence is 2.3% in 2021, which is a lower figure than before (5% in 2015, 8.2% in 2018), but is higher than that of all students. Also, the decrease in school violence experiences may be due to the decrease in school attendance due to COVID-19 pandemic, thus regular monitoring is required in the future. Korea is implementing multicultural education to enhance the multicultural sensitivity of school teachers and their students, and such efforts to prevent violence and discrimination against multicultural students in schools should be more promoted.

3) North Korean Defectors

The dropout rate of North Korean refugee students is somewhat higher than that of general students, but it is decreasing due to the continuous interest

and support of schools such as customized mentoring. The future challenges are as follows.

First, personalized education such as learning support, psycho-emotional support, and counseling for higher education should be continuously emphasized to reduce dropouts. The "customized mentoring project for North Korean refugee students" should build and reflect objective data such as their background, learning experience, personal characteristics, and home environment. Counseling and guidance should be provided to prevent students from quitting their studies in the middle of understanding the educational status and needs according to their characteristics.

Second, to improve educational equity, support considering their family background should continue. Support differentiated by birthplace should be minimized. Psychological and emotional support for students in crisis in blind spots of education should be provided to identity and narrow the educational gaps.

Finally, while reinforcing integrated education in general schools, it is necessary to continue discussing alternative learning forms and educational support at various levels. The purpose of education is to grow into a democratic citizen. Therefore, it is necessary to induce admission to general schools that study with South Korean students and strengthen school adaptation. Alternative education for North Korean defectors should serve as a transitional educational institution, and the function of alternative education for those who are over school age, the school maladjusted, and those who wish to specialize in programs should be reinforced.

4) Students with Disabilities

To support customized jobs and employment considering the type and degree of disability, a one-stop employment support system should be established by education, welfare, and employment related ministries. To provide employment support services for students with disabilities systematically

promptly the government has established and is operating a unified system. This system includes job evaluation, vocational education, employment support, and follow-up management. However, more sophistication is needed (Ministry of Education, 2023b).

The Ministry of Education has created a foundation for revitalizing lifelong learning for persons with disabilities on the community level. In 2022 it also improved accessibility to lifelong education for persons with disabilities by designating and expanding the operation of lifelong learning cities for persons with disabilities. The number of designated lifelong learning cities for persons with disabilities increased from 15 in 2021 to 32 in 2022. A total of 540 programs (regional specialization, job connection, integrated programs for persons with/ without disabilities, etc.) were operated in 2021 (Ministry of Education, 2022b). However, persons with disabilities must participate naturally in lifelong education programs for all rather than being assigned to separate programs for persons with disabilities.

To protect the human rights of students with disabilities and prevent human rights violations, the government developed and distributed materials to create a human rights support group, a school violence prevention monitoring, and a culture of empathy for people with disabilities (Ministry of Education, 2023b). In addition, online support centers for reporting human rights violations of students with disabilities are run by the National Institute of Special Education as well as 17 provincial offices of education. Support and guidance materials for teachers and parents, were developed and distributed as they are necessary to create an inclusive education environment and a culture of empathy for people with disabilities. These materials are also available for children, including those with a disability, to foster empathy. As these empathy activities will take place only during specific class hours, human rights sensitivity education must be provided in an integrated manner throughout all classes.

One also has to be prepared for serious crisis behavior of students with disabilities. Therefore, special education-related services have to be offered

to school administrators and behavioral support for teachers (professional counselors, etc.), education office advisors, and organisations specialized in support. To this end, the government operated a project (program) to manage cases of crisis behavior for students with disabilities and provided teacher training to support behavior analysis as well as response measures. For students at risk, early positive behavioral support can prevent the development of serious challenging behavior. Therefore, general and special education teachers must receive training to be in a position to collaborate to prevent and guide challenging behavior.

To improve the equity of education for students with disabilities in our country, we must specialize in career and vocational education for students with disabilities, expand lifelong education on disabilities in adulthood, strengthen human rights protection for students with disabilities, and further increase behavioral support and safety for students with disabilities.

6. Conclusion

Korea has made some progress to ensure inclusive education that leaves no one behind as pursued by the SDGs. In Korea, in consideration of various vulnerable groups such as multicultural students, North Korean refugees, and students with disabilities, many policies and projects are being promoted to guarantee educational opportunities for each group. Through these efforts, some positive results have been shown in terms of school enrollment rate and school dropout rate. However, the dropout rate among vulnerable groups is still higher than that of all students, and the achievement gap remains. Issues of gender conflict among youth and sexual harassment and violence in schools are still emerging. Above all, there is a lack of segregated data for various disadvantaged groups. As mentioned earlier, except for gender parity indices, most data are not disaggregated by geographical location, wealth, disability, or other marginalized groups. Therefore, it is highly required for the Korean government to make continuous efforts to establish well-contextualized policies, educational environments, and segregated data for each vulnerable group.

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Annex: *Relevant regulatory document, references and stakeholders and their responsibilities*

SDG 4 target	SDG 4 indicator	Name and hyperlink of the relevant policy, strategy, other regulation	Key references in the policy/strategy/regulation which address the target/indicator	
4.5	4.5.1 (gender)	Framwork Act of Education(1997)	Article 17-2 of the Framework Act of Education states the State and local goverments, and founder or manager of schools shall implement policies and provide curriculum and educational environments to promote gender equality awareness.	
		The 3rd Plan for Gender Equality Policy (2023~2027)	An policy task among the 3rd Plan is Creating a gender-equal growth environment(No.4-1), and it includes sub-tasks such as revitalizing gender equality education, supporting gender equality career selection, eliminating gender discrimination in the educational environment.	
	4.5.1 (multi-cultural students)	The Multicultural Families Support Act (enacted in 2008) https://law.go.kr/LSW/eng/engLsSc.do?menuId=2&query=MULTICULTURAL%20FAMILIES%20SUPPORT%20ACT#liBgcolor2	The Multicultural Family Support Act (Revised in December 2015). Article 10. expanded the scope of education care to include not only children but also juveniles The Multicultural Family Support Act (Revised in December 2015) - the newly inserted Article 4.10 states "Principals of child-care centers ..., heads of all types of schools, ... and heads of other organizations prescribed .. shall take necessary measures to prevent children and juveniles of multicultural families from being discriminated against in providing care and education services for children and juveniles." The Multicultural Family Support Act (Revised in December 2017) states "the Minister of Education, and the Superintendent of each Office of Education, whether in the Special Metropolitan City, a Metropolitan City, the Special Self-Governing City, a Do, or the Special Self-Governing Province, shall conduct a training on understanding of multiculture as prescribed by the Presidential Decree, for teachers"	
		Multicultural Education Support Plan (every year)	-	

by SDG 4 targets and indicators

	Responsible stakeholder	Type of responsibility	Key achievement	Challenges	Data sources
	Ministry of Education	Oversight and Supervision of Schools	Mandatory gender equality education in schools	Some parents' opposition to gender equality education widespread misogyny among the youth	
	Ministry of Gender and Family	Oversight of implementing the 3rd Policy Plan	Implementation of each policy task	The marginalization of gender equality policy in main education policy	
	Ministry of Education	conducting a training for teachers on understanding of multiculture	The enrollment rate of multicultural students is gradually improving. The dropout rate of multicultural students decreased from 1.17 in 2017 to 0.82 in 2021.	Gap in enrollment rate (especially in tertiary education) Gap in dropout rate Establishment of safe school environment for multicultural students	
	Ministry of Education	Establishment and implementation of policy measures to provide education to enhance understanding of multicultural families in schools			

		Basic Policy Plan for Multicultural Family Support (every five year)	「3rd *Basic Policy Plan for Multicultural Family Support* (2018-2022)」 「4th *Basic Policy Plan for Multicultural Family Support* (2023-2027)」	
	4.5.1 (North Korean Defectors)	Act on the Protection and Settlement Support of North Korean Refugees (2010)	Article 24 of Act on the Protection and Settlement Support of North Korean Refugees (2010) states about educational support.	
		Basic Plan for Supporting the Settlement of North Korean Refugees (every three years)	「3th Basic Plan for Supporting the Settlement of North Korean Refugees (2021-2023)」	
		Enforcement Decree of the Elementary and Secondary Education Act(2010) Enforcement Decree of the Higher Education Act (2018)	Articles 19, 75, 82, 89-2, 96, and 98-3 : the recognition of academic background, transfer support Articles 29 and 70 : the recognition of academic background, admission, and transfer.	
		Plan for Educational support of North Korean refugee students(every year)		
	4.5. (students with disabilities)	Special Education Act for Persons with Disabilities, etc. / Enforcement Decree / Enforcement Rules the Welfare of Persons with Disabilities Act Enforcement Decree of the Welfare of Persons with Disabilities Act Act on Prohibition of Discrimination against Persons with Disabilities and Relief of Rights, etc. Act on Prevention and Measures of School Violence	Article 20 (Education), Article 25 (Improvement of Social Awareness, etc.) Article 16 (Implementation of disability awareness improvement education) Chapter 2 Section 2 Education Article 16-2 (Protection of Students with Disabilities)	

	The Ministry of Gender Equality and Family (MOGEF)	Establishment of a master plan for policies on multicultural families			
	Ministry of Unification	Oversight of the whole area of settlement		Establishment of safe education environment for NK refugees students	
	Ministry of Unification	Establishment of a master plan for policies on North Korean Refugees			
	Ministry of Education	Oversight of the whole area of education	The dropout rate of NK refugees students decreased from 2.2 in 2015 to 1.6 in 2022.	Gap in dropout rate	
	Ministry of Education	Establishment and implementation of policy measures			
	Ministry of Education, Korea National Institute for Special Education Ministry of Health and Welfare Ministry of Health and Welfare Ministry of Education	Conducting program for enhancing disability awareness	The college entrance rate and the employment rates Reduce disability discrimination	Inclusive education and life long education Disability discrimination Violation of the rights of persons with disabilities	

Monitoring SDG 4 Target 4.6.

Min-Seon Park (*National Institute for Lifelong Education*)
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1. Introduction

In May 2015, at the World Education Forum in Incheon, the Republic of Korea, UNESCO adopted the Incheon Declaration. The declaration highlighted accessibility, equality, inclusiveness, quality, and lifelong learning as key global educational goals. UNESCO committed to achieving these objectives by 2030. In September of the same year, during the UN Sustainable Development Summit 2015, the fourth goal for sustainable development (henceforth, SDG 4) was adopted, emphasizing "inclusive and equitable quality education and lifelong learning opportunities for all." This goal aims to inspire every country to ensure opportunities for lifelong learning are available to all. "Literacy" is essential in achieving SDG 4 targets and is specifically addressed in target 4.6, a target outlining detailed objectives to achieve this goal. SDG 4 target 4.6 sets a clear aim to ensure that by 2030, all youth and a substantial proportion of adults of both genders attain literacy and numeracy (Lim and Park, 2018).

In the context of striving for sustainable development, literacy is perceived not merely as the basic reading and writing skills, but as an ongoing journey of learning and growth. Literacy is a fundamental skill that enables individuals to engage actively in global social and economic activities, embodying their basic right to education. The concept of literacy is closely connected to public welfare and underscores the international community's responsibility to guarantee access to literacy education (KNCU, 2018). There is a shared

consensus within the international community that literacy education empowers individuals by enhancing their fundamental abilities, contributing to the formation of a more enriched society. UNESCO research indicates that enhancing basic literacy skills among young people in impoverished countries could lead to a 12% reduction in worldwide poverty. Despite such promising prospects, the challenge of illiteracy looms large, with 750 million adults worldwide still unable to read or write (UNESCO, 2019).

Evaluating the Republic of Korea's progress on SDG 4 target 4.6 can serve as a means to assess the literacy skills of its population, the standard of education, and outline the path forward to achieve this objective. Surveys conducted by the National Institute for Lifelong Education (henceforth, NILE) indicate that literacy rates are notably lower among seniors, women, low-income individuals, and residents of agricultural and fishing villages. In response, NILE and the National Centre for Adult Literacy Education have introduced a range of educational programs and policies to mitigate this issue. Positive changes in literacy education are already visible, thanks in part to updates to the Lifelong Education Act and the creation of the Integrated Literacy Education Information System. Local governments are playing a crucial role as well, actively participating in these initiatives, which is leading to improved quality and access to education for their communities.

Improving the literacy skills of the citizens is a critical factor directly tied to sustainable growth. The Republic of Korea is actively seeking diverse strategies to overcome this challenge and aims to foster the country's educational and socio-economic development through these efforts.

2. Adaptation and Monitoring of SDG 4 Target 4.6. and Indicators

In March 2015, the development of global indicators began for the promotion and monitoring of Sustainable Development Goal (SDGs). Particularly for SDG 4, the "Technical Cooperation Group on the Indicators for SDG 4 – Education

2030 (TCG)" was formed to amend and supplement indicators for monitoring SDG 4. The global indicator for SDG 4 target 4.6 is ① the proportion of the population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex, while the thematic indicator is ② youth/adult literacy rate, commonly monitored internationally. Global indicators are structured to allow all member countries to commonly monitor the progress of SDGs and identify global trends. Thematic indicators are designed to enable each member state to undertake additional monitoring, tailored to their specific circumstances, policy priorities, professional capabilities, and data accessibility.

In 2018, the Korean government, reflecting the framework of SDGs, established the National Sustainable Development Goals, namely K-SDGs, and has been working on refining specific objectives and indicators based on them. K-SDGs have set ① the proportion of a specific age population with a certain level of proficiency in functional language and mathematical skills, and ② the youth/adult literacy rate as central monitoring indicators. The creation of such indicators takes into account global benchmarks to facilitate international comparison, while also incorporating measurements that accurately represent the country's specific circumstances. This aims to offer valuable insights for establishing and improving national education policies.

<Table 1> *SDG 4 Target 4.6 and Indicator*

Category	SDG 4.6
Target	**By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy**
Global Indicator	**4.6.1** Proportion of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex <key indicator for K-SDGs>
Thematic Indicator	**4.6.2** Youth/adult literacy rate <key indicator for K-SDGs>

3. Monitoring Progress of SDG 4 Target 4.6

2) Adult Literacy Surveys

The Ministry of Education and the National Institute for Lifelong Education (NILE) survey adult literacy skills every three years to gauge the nation's literacy levels and inform policy development. The first survey was conducted in 2014, and subsequently taken in 2017 and 2020 as well. These periodic evaluations have become integral in painting an accurate picture of the current literacy landscape. The implementation of a government-led and professional adult literacy survey lays the foundation for accurately identifying and evaluating the current state and necessity of literacy education.

<Table 2> *Levels of Literacy*

Level	Definition
1	Unable to perform basic reading, writing and numeracy skills needed for daily activities (Primary school grade 1-2 learning level)
2	Has basic reading, writing and numeracy skills, yet not adequate for daily activities (Primary school grade 3-6 learning level)
3	Has adequate literacy skills to handle family affairs and recreational life, yet not equipped to handle sophisticated and complex tasks in public and financial domains (Middle school grade 7-9 learning level)
4 and above	Sufficient literacy level for daily activities (Middle school and above)

Source: Ministry of Education, NILE (2021).

2020 survey found that 4.5% of adults in Korea, about 2 million people, were at literacy skill level 1, unable to perform basic reading, writing, and arithmetic essential for daily living. (MOE & NILE, 2021). This statistic represented a significant decrease from 6.4% (2.64 million) in 2014 and 7.2% (3.11 million)

in 2017, marking a 2.7 percentage point drop and a shift to a declining trend after three years. Among the adult population aged 20 or older, if literacy skill remain below the level of middle school, which corresponds to compulsory education, it is classified as a population subject to literacy education (literacy skills level 1 to 3). The adult population was compiled as 20.2% (8.89 million) in 2020. Though there's been a consistent improvement from 28.6% (11.79 million) in 2014 to 22.4% (9.61 million) in 2017, a significant number of adults still require literacy education, indicating a substantial latent demand in the country.

The literacy skills of the adult population were found to decrease with age. In 2017, the illiteracy rate was 6.5% for those under 60, 14.2% for those in their 60s, 28.7% for those in their 70s, and 67.7% for those 80 and above. However, in 2020, these figures improved significantly to 0.8% for those under 60, 5.3% for those in their 60s, 13.7% for those in their 70s, and 49.3% for those 80 and above. Although there was a notable improvement in literacy levels across all age groups over the past three years, the trend of literacy levels sharply declining as age increases remained unchanged.

<Table 3> *The Level of Literacy Skill by Age Group*

Age	Level 1	Level 2	Level 3	Level 4 and above
18~29	0.2	0.5	4.0	95.3
30~39	0.1	0.3	4.3	95.3
40~49	0.8	0.8	6.9	91.5
50~59	1.9	2.3	13.0	82.8
60~69	5.3	7.9	22.4	64.4
70~79	13.7	19.4	25.7	41.1
80 and above	49.3	14.2	13.6	22.9
Total Respondents	4.5	4.2	11.4	79.8

Source: Ministry of Education, NILE (2021).

Literacy levels in the Republic of Korea are found to correlate with monthly household income. The average income for wage workers in 2020 was 3.33 million Korean Won (hereinafter, KRW) with a median of 2.5 million, according to Statistics Korea. When considering an average income of three million KRW as a benchmark, data from 2021 revealed that 34.3% of the population earning less than 1 million KRW (bottom 20%) were classified as illiterate. In contrast, only 1.6% of the high-income population (top 20%) earning 5 million KRW or more fell into this category. In 2017, 41.1% of those earning less than one million KRW and 1.5% of those earning five million KRW or more were classified as illiterate. In 2014, these figures were 33.8% and 0.1%, respectively, indicating that the literacy gap between different income levels has not significantly changed over six years.

<Table 4> *The Level of Literacy Skill by Monthly Household Income*

Income	Level 1	Level 2	Level 3	Level 4 and above
Less than 1 million KRW	34.3	20.3	15.7	29.7
1 million to 2.99 million KRW	6.6	8.9	20.3	64.2
3 million to 3.99 million KRW	2.9	3.1	13.3	80.7
4 million to 4.99 million KRW	1.5	1.6	7.8	89.1
5 million KRW or more	1.6	1.0	5.8	91.6
Total Respondents	4.5	4.2	11.4	79.8

Source: Ministry of Education & NILE (2021).

The illiteracy rate is higher in rural areas compared to major cities. In 2014, 4.8% of residents in Seoul and other metropolitan areas were illiterate, compared to 5.5% in smaller cities and a significant 21.4% in agriculture, mountain and fishing villages. By 2017, these numbers shifted to 5.7%, 7.2%, and 16.2%, respectively. In 2020, the trend showed 3.6% illiteracy in small and medium-sized cities, 4.4% in Seoul and metropolitan areas, and 12.1% in rural regions. While smaller cities displayed a noticeable improvement in literacy over three years, rural areas, albeit still leading in illiteracy, evidenced

a consistent reduction over six years.

<Table 5> *The Level of Literacy Skill by Region*

Region	Level 1	Level 2	Level 3	Level 4 and above
Seoul and Metropolitan Cities	4.4	4.2	11.0	80.3
Medium and Small Cities	3.6	3.6	11.4	81.3
Agricultural and Fishing Villages	12.1	8.3	14.1	65.5
Total Respondents	4.5	4.2	11.4	79.8

Source: Ministry of Education & NILE (2021)

Additionally, women demonstrated lower literacy levels than men. The proportion of female illiterate adult declined from 10.1% in 2014 to 9.9% in 2017, and further to 6.4% in 2020. In comparison, male illiterate adult decreased from 2.6% in 2014 to 4.5% in 2017, and 2.7% in 2020. Consequently, the literacy gap between genders narrowed over these periods from 7.5 %p to 5.4%p and then 3.7%p.

<Table 6> *The Level of Literacy Skill by Gender*

Gender	Level 1	Level 2	Level 3	Level 4 and above
Male	2.7	3.3	10.3	83.7
Female	6.4	5.1	12.5	76.0
Total Respondents	4.5	4.2	11.4	79.8

Source: Ministry of Education & NILE (2021)

In the 2020 survey, a survey on the level of literacy by education level was added. It revealed that only 1.1% of respondents with a middle school diploma or higher were illiterate. In stark contrast, 35.5% without a middle school education fell into the illiterate category.

<Table 7> *Literacy Levels by Educational Attainment*

Educational Attainment	Level 1	Level 2	Level 3	Level 4 and above
No formal education	66.9	16.4	8.2	8.5
Primary school graduate	17.3	24.3	29.0	29.4
Middle school graduate	5.0	14.0	31.2	49.8
High school Diploma	1.4	2.0	13.2	83.4
College Diploma or higher	0.0	0.4	3.9	95.7
Total Respondents	4.5	4.2	11.4	79.8

Source: Ministry of Education & NILE (2021).

2) Institutional System Development

In recent years, the Republic of Korea has witnessed significant advancements in adult literacy education, a development attributed to the collaborative initiatives of the government and multiple institutions. This evolution finds its roots in the endeavours of the Ministry of Education and the NILE. Since 2006, these bodies have amplified the reach of literacy education via the Adult Literacy Education Support Project. Their sustained investment and innovation have been instrumental in broadening and enhancing the quality of adult literacy education.

The partial amendment of the Lifelong Education Act in 2016 served as another breakthrough in this development. The establishment of the National and Metropolitan Centres for Adult Literacy Education gained legal grounds through this amendment, thereby systematically revitalizing literacy education at both national and regional levels. In 2017, the Comprehensive Literacy Education Information System began its phased construction. This

system is tasked with systematically managing information on literacy education institutions and instructors that offer primary and middle school level recognition, enhancing the efficiency and transparency of literacy education.

The establishment of operational systems between the National Centre for Adult Literacy Education and Metropolitan Centres for Adult Literacy Education has laid the foundation for the systematization and increased efficiency of adult literacy education. This structure aims to ensure consistent quality of literacy education nationwide and enhance accessibility in various regions. A visible outcome is the establishment of the accredited literacy education project led by the Offices of Education across the country, elevating the social status and self-esteem of the participants by providing opportunities for academic recognition.

Local governments are actively participating in literacy education, a trend highlighted by the recent success in Andong City, Gyeongsangbuk-do. The city illustrates the tangible contributions and positive community impact that can stem from local government initiatives. Since launching a literacy project in 2004, Andong's literacy landscape has flourished. Currently, five literacy centres are operational in the city, along with 15 Korean delivery classes and 20 standard Korean language classes, catering to the educational needs of local residents. A Digital Literacy Education project, backed by the Local Extinction Fund, is on the cards for 2022-2023, promising to broaden Andong's adult literacy initiatives. Since 2014, the "Andong City Korean Delivery Class" has consistently generated 300-400 literate individuals each year. A new stride was marked in the first half of 2023 with the onset of a program for training digital literacy instructors and establishing literacy classrooms. The initiative is geared towards cultivating a robust digital learning environment, aiming to educate 90 instructors and 1,500 students over the next five years. (Jin, 2021) Additionally, incorporating private organizations and institutions into a cooperative governance structure has enriched and expanded the landscape of literacy education. This collaboration delivers a wider range of educational programs and opportunities. There's an ongoing effort to boost the skillset of literacy instructors through systematic training, elevating the quality of

teaching. The ongoing research and development of educational content ensure that the curriculum remains responsive and adaptive to both current and future needs, enhancing the overall quality of education.

4. Current Issues and Future Tasks

There is a noticeable disparity in literacy education in the Republic of Korea, with distinct differences emerging among learners from diverse socio-economic backgrounds. These disparities are most pronounced considering age, academic background, and income levels. As such, there is a pressing need for strategic approaches to make literacy education more efficient and inclusive.

While opportunities for literacy education should be widely available, marginalized groups often face barriers to accessing these resources. Hence, it is crucial to broaden learning opportunities and create programs that cater to the specific needs of individuals. Educational institutions, in particular, are honing in on this issue, working to develop programs that are not only tailored to accommodate different income levels but are also inclusive of learners from a variety of socioeconomic backgrounds.

The COVID-19 pandemic underscores a pressing need to digitalize educational resources, with literacy education being no exception. The government is crafting a detailed national plan to smooth the transition for educators and learners alike to embrace digital platforms effectively. This initiative calls for setting up a strong infrastructure, enriching digital materials, and fostering supportive networks and communities, with a focus on minority group learners. It's crucial to train participants to skilfully navigate digital resources, with "digital tutors" aiding the process, and to ensure they can take full advantage of expanded services, including the "adult literacy education e-learning platform." Efforts should intensify to support senior citizens struggling with digitalization, enhancing their access to devices, software, and content tailored to their needs.

The proficiency of teachers in digital platforms is crucial for delivering quality education to students. Authorities need to enhance training programs, ensuring teachers are equipped with the skills to guide students effectively in a digital landscape, tailoring education to each student's individual needs and abilities. Establishing and fostering communities among teachers can be instrumental. These communities can serve as a platform for sharing insights and experiences related to online teaching and digital education, promoting mutual learning and skill enhancement.

The Republic of Korea has laid the groundwork for adult literacy education, but ongoing challenges require attention to elevate its quality and reach. A more nuanced approach is needed to manage data connected to individual learning experiences and to reduce regional disparities. A shift in focus is essential, where the emphasis is placed on equalizing the quality between programs that provide academic records and those that don't. Moreover, empowering provincial leadership to direct relevant programs is crucial to achieving consistency in quality and accessibility nationwide. This balanced approach ensures that every learner, regardless of location, has equal access to enhanced learning opportunities.

The upskilling of lecturers and practitioners is crucial. There is a need to develop training initiatives and improve working environments to bolster their expertise and ensure quality education. Tailored educational experiences, attuned to the specific needs and circumstances of learners, can be achieved by diversifying content beyond traditional textbook-based approaches.

These advancements are contingent upon their integration into a robust support system for literacy education. Provincial and basic local governments bear the responsibility to establish and manage a steady and enduring adult literacy education support framework. This is essential to uphold educational quality at a consistent and sustainable standard. Implementing such a system will not only elevate the educational standards for learners and teachers but will also positively impact the broader community, fostering an environment of enhanced learning and development.

5. Conclusion

The Republic of Korea is channelling extensive efforts into elevating the educational standards, particularly in literacy and adult learning. These intensive efforts are designed not only to amplify individual skills but also to establish a solid groundwork for the sustainable growth of society as a whole. A targeted focus is maintained on fostering inclusive and fair education, transitioning to future-oriented learning paradigms, and instilling principles of sustainability into the educational framework.

There is a need to expand learning domains for the enhancement of literacy, recognizing the workplace as an essential learning environment. Vocational training and lifelong learning are seen as core elements for enhancing workers' capabilities and job quality. Such transformation should be systematically pursued through social consensus, national educational development plans, and strengthened public finances.

Amid the ongoing challenges of the COVID-19 pandemic, the crucial role of digital literacy and technology in education has been brought into sharper focus. Initiatives aimed at narrowing the digital gap, ensuring ethical engagement with artificial intelligence, and broadening the access to open.

The establishment of an education system based on an inclusive future foundation will serve as a guide for the welfare and sustainable development of individuals, communities, and the nation. Such orientation will reaffirm the value of education as a common good, realized through continuous efforts and sharing among members of society.

Even in the face of substantial societal changes brought about by events like the COVID-19 pandemic, the Republic of Korea's dedication to literacy education stands firm. The country is immersed in devising and executing a variety of well-crafted strategies and policies. These focused efforts are anticipated to not only enhance individual skills but also play a significant role in reinforcing the foundation essential for social welfare and sustainable development.

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Annex: *Relevant regulatory document, references and stakeholders and*

SDG 4 target	SDG 4 indicator	Name and hyperlink of the relevant policy, strategy, other regulation	Key references in the policy/strategy/ regulation which address the target/ indicator	Responsible stakeholder	
4.6	4.6.1	Constitution	Article 31 ① All citizens shall have an equal right to receive an education corresponding to their abilities. ③ Compulsory education shall be free of charge. ⑤ The State shall promote lifelong education.	Ministry of Education	
	4.6.1	Framework Act on Education	Article 3 (Right to Learn) Every citizen shall have a right to learn through life and to receive an education according to his or her abilities and aptitudes. Article 8 (Compulsory Education) ① Compulsory education shall be elementary education for six years and secondary education for three years. Article 3 (Right to Learn) Every citizen shall have a right to learn through life and to receive an education according to his or her abilities and aptitudes. Article 8 (Compulsory Education) ① Compulsory education shall be elementary education for six years and secondary education for three years. ② Every citizen shall have a right to receive the compulsory education referred in to paragraph (1).	Ministry of Education	

their responsibilities by SDG 4 targets and indicators

	Type of responsibility	Key achievement	Challenges	Data sources
	Conduct of survey and analysis on lifelong education projects by the national and local governments; Submission of findings to the lifelong learning education promotion committee; Designation of lifelong study cities for people with disabilities; Issuance of lifelong education vouchers; Collection of relevant data and management of lifelong education statistics centres			Korea Law Translation Center https://elaw.klri.re.kr/kor_service/lawView.do?hseq=57412&lang=ENG
				Korea Law Translation Center https://elaw.klri.re.kr/kor_service/lawView.do?hseq=60204&lang=ENG

4.6	4.z6.1 4.6.2	Lifelong Education Act	Article 39 (Implementation etc. of Literacy Education) ① The State and local governments shall endeavor to enhance basic capabilities of people such as literacy required for adults to lead the social life. Article 39-2 (Establishment, etc. of Literacy Education Centers) Article 40 (Curriculum, etc. of Literacy Education Programs) Article 40-2 (Establishment, Operation, etc. of Integrated Literacy Education Information System)	National Institute for Lifelong Education (National Centre for Literacy Education)	
	4.6.1 4.6.2	Enforcement Decree of The Lifelong Education Act	Article 73-2 (National Literacy Education Center) Article 73-3 (City/Provincial literacy education center)	National Institute for Lifelong Education (National Centre for Literacy Education)	

		As of 2022, educational programs have been installed and designated in 17 provincial and metropolitan education offices nationwide, and 267 accredited literacy education institutions.	- Need for a digital transition tailored to the unique characteristics of various literacy education cohorts.	National Institute for Lifelong Education (National Centre for Literacy Education)
		- Designation of city and provincial literacy education centers completed in 17 metropolitan areas and provinces nationwide - The number of local governments participating in adult literacy support programs expanded from 61 in 2006 to 170 in 2022 (covering 74% of the basic local governments nationwide) - By 2022, a total of 642,000 learners have participated in adult literacy education programs	Establishment of measures to eliminate regional disparities in literacy education Need to support the enhancement of professionalism among literacy instructors and related practitioners	National Institute for Lifelong Education (National Centre for Literacy Education)

Monitoring SDG 4 Target 4.7.

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1. Introduction

The international community is witnessing a significant change in the education paradigm. An education system that promotes transnational cooperation and global prosperity has been gradually focused more than an education system that focuses on resolving issues and problems within a single country. (Han et al., 2015). In a transnational global society, providing Global Citizenship Education (GCED) and Education for Sustainable Development (ESD) for students is to empower them to take active and responsible actions beyond geographical boundaries. It has been expected to play an important role in education in the Sustainable Development Goal (SDG) era. The Republic of Korea hosted the 2015 World Education Forum and played a key role in reflecting GCED in the UN SDGs, expressing its nationwide commitment to the promotion of GCED at home and abroad. Nevertheless, until 2015, GCED was hardly included in policies and applied to practices. That is, GCED was not promoted as a specific education policy at the national level (Yu, Kim, & Park, 2017). However, since GCED and ESD were adopted as a new global education agenda at the Incheon World Education Forum in 2015, as well as in the UN SDG 4 target 4.7, which emphasizes that all learners acquire knowledge and skills to promote sustainable development, Korea has made lots of efforts to reflect the philosophy and key elements of GCED and ESD actively. To accommodate the universal global norm and value of target 4.7, the national education policies, curricula, teacher education, and student assessment, have

been steadily promoting policies related to GCED and ESD.

The COVID-19 pandemic, which has affected a lot around the world, demonstrated what type of education needs to be strengthened in Korean society in the mid- to long-term. Issues such as inequality, hate speech, exclusion, stigma, and ecological destruction that have emerged surrounding the COVID-19 pandemic have posed various challenges, while further emphasizing the importance and necessity of GCED and ESD in Korean society. During the COVID-19 pandemic, international education activities, which were conducted in person, were halted. Experiential and whole-school activities related to GCED and ESD were also suspended or weakened. However, online and hybrid GCED and ESD teacher training were more activated, and educational materials related to GCED and ESD were more developed and shared with many people during the COVID-19 pandemic. Lastly, it has become an opportunity to increase and strengthen the GCED and ESD networks based on online platforms.

Now that half of the deadline for achieving the SDGs has passed, it is time to review the status of SDG 4 target 4.7 implementation since 2015 and discuss ways to reorganize the future direction of target 4.7 implementation to achieve the SDGs by 2030. Accordingly, this study aims to monitor the current status of the implementation of GCED and ESD in Korea and identify future tasks to implement SDG 4 target 4.7 more effectively.

2. Adaptation and Monitoring of SDG 4 Target 4.7 and Indicators

SDG 4.7 target and its indicator are shown in the following <Table 1> (UIS, 2023a). Among the indicators of SDG 4.7, SDG 4.7.1 is set as a global indicator to be periodically investigated, and it is managed as a common indicator with SDG 12.8.1 and SDG 13.3.1. SDG 4.7's global indicators are designed to allow all member states to monitor SDG implementation with the same indicators to identify global trends, while thematic indicators are developed to allow

each member state to conduct additional monitoring based on its national situations, policy priorities, and professional competencies (APCEIU, 2023; UN, 2023).

<Table 1> *SDG 4 Target 4.7 and Indicators*

Indicator	Description
SDG 4.7	4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and culture's contribution to sustainable development
SDG 4.7.1 / Provision	4.7.1 Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies, (b) curricula, (c) teacher education and (d) student assessment
SDG 4.7.2 / Provision	4.7.2 Percentage of schools that provide life skills-based HIV and sexuality education
SDG 4.7.3 / Provision	4.7.3 Extent to which green policy intentions are mainstreamed in curriculum documents
SDG 4.7.4 / Knowledge	4.7.4 Percentage of students in lower secondary education showing adequate understanding of issues relating to global citizenship and sustainability
SDG 4.7.5 / Knowledge	4.7.5 Percentage of students in lower secondary showing proficiency in knowledge of environmental science and geoscience

The Global Indicator of SDG 4.7.1 currently investigates the implementation status of member states every four years using the monitoring tools of UNESCO's "1974 Recommendation Concerning Education for International Understanding, Cooperation and Peace and Education relating to Human Rights and Fundamental Freedoms". The figures of this indicator have a value of 0 to 1, and the closer it is to 1, the more mainstreamed GCED and

ESD are. In the 2020 survey, the level of mainstreaming of GCED and ESD in the Republic of Korea was measured as 1.000, 0.883, 1.000, and 0.833, in the sectors of national education policies, curricula, teacher education, and student assessment, respectively (UIS, 2023a).

Unlike other targets and indicators of SDG 4, which are relatively measurable and quantifiable, such as guaranteeing educational opportunities and improving educational conditions, target 4.7 comprehensively deals with the direction and value of future education. And it makes it difficult to monitor its progress in a uniform way due to the lack of context. For this reason, when implementing and reviewing SDG 4 target 4.7's detailed indicators since its establishment, each country's ownership has been highly emphasized. Member states are encouraged to develop monitoring systems contextualized to each country and to share performance results (APCEIU, 2022). Korea is constantly attempting to establish and operate an effective monitoring system following the global indicator (SDG 4.7.1) as well as reflecting the domestic context. In addition, the following Korean government's National Sustainable Development Goals (K-SDGs) are set similar to those of global indicators as target 4.7 monitoring indicators: the degree of mainstreaming of GCED and ESD (in national education policises, curricula, teacher education, and student assessment), the ratio of education policy projects related to GCED and ESD, the ratio of reflection of factors related to GCED and ESD in the curricula and the ratio of teachers who have experienced GCED and ESD.

3. Monitoring Progress of SDG 4 Target 4.7.

1) Progress toward Global Indicators

National Education Policy

As Sustainable Development Goals adopted GCED and ESD, they became essential in Korean education, promoting key educational policies at both the national and local levels.

Central government and local governments of the Rep. of Korea have enacted and revised laws and ordinances related to SDG 4 target 4.7 to establish a legal framework that systematically promotes policies supporting GCED and ESD which have emerged locally and abroad. In 2021, the Ministry of Education carried forward the revision of the <Act on UNESCO Activities> to promote and develop GCED, which is the foundation for SDG 4.7 locally and abroad, but the revision process is currently pending in the National Assembly. Earlier in 2015, the Ministry of Gender Equality and Family revised the 'Framework Act on Women's Development' to the 'Framework Act on Gender Equality' to lay the foundation of a truly gender-equal society. In addition, in 2017, the 'Multicultural Families Support Act' was revised to mandate teachers to complete training related to the topics of multicultural understanding. In 2022, the Ministry of Environment enacted the 'Framework Act on Carbon Neutrality and Green Growth for Coping Climate Crisis', ensuring the basic principles for a transition to a carbon-neutral society and green growth are integrated in all areas, including education. In 2015, the Ministry of Education enacted the 'Character Education Promotion Act' to establish a policy framework to support SDG 4.7 in Character education, and in 2021, the 'Basic Law on Education' was revised to establish and implement necessary measures to ensure all citizens receive ecological transformation education to respond to climate change, and stipulated that each school systematically implement gender equality education, including sex education, gender awareness education, and sexual violence prevention education. Moreover, in June 2022, the Ministry of Environment revised the 'Act on Promotion and Support of Environmental Education' and as a result, environmental education at schools became mandatory. In 2008, Korea enacted the 'Framework Act on Sustainable Development' as a Basic Act but it was downgraded to a General Act in 2009. However, in 2022, the act reclaimed its status as a Basic Act. The enactment and revision of these laws motivated policies such as 'Cultivating Disciplined Global Citizens', 'Multicultural Education to Foster Global Citizens', 'Establishing Basic Plans for Environmental Education in Schools', and 'Carbon Neutral Focused Schools and Carbon Neutral Pilot Schools Projects'.

To promote the implementation of target 4.7, 17 Metropolitan and Provincial Offices of Education (MPOEs) and local governments in Korea also took part in establishing legal mechanisms with the enactment of various ordinances. For instance, since 2015, 15 of the 17 MPOEs have enacted the <Ordinance on the Promotion of Democratic Citizenship Education>. Also, several local governmental organizations, including Gwangmyeong coined the <Ordinance on Democratic Citizenship Education>. In 2017, the Seoul Metropolitan Government enacted <Basic Ordinance on Sustainable Development>. In 2019, the Jeju Special Self-Governing Province Office of Education legislated the <Ordinance on Supporting International Education Activities to Realize Peace and Coexistence>. Three years later, the Sejong Metropolitan Office of Education enacted the <Ordinance on International Exchange and Cooperation Promotion> and the Seoul Metropolitan Office of Education enacted the <Ordinance on the Promotion of Ecological Transformative Education>.

In addition to the enactment and revision of laws and regulations for the implementation of target 4.7, the Ministry of Education and 17 MPOEs have established and implemented various policies and plans to promote GCED and ESD nationwide.

As early as 2016, the Ministry of Education announced the promotion of GCED as one of the major education policy tasks in its yearly operational plan. The ministry proceeded with executing various policies related to GCED. The activities encompassed not only developing GCED policies, GCED training, GCED curriculum and teaching materials, but also devising GCED programs suitable for elementary, middle and high school students as well as college students in Korea. In addition, the Ministry of Education has been implementing policies to emphasize fostering global citizens through international exchanges in its 'Special Zone for Internationalization of Education Project', a nationwide project, that designates, with some financial support, cerstain districts within municipal ministry of education every five years since 2013. In addition, the Ministry of Education, along with related ministries, MPOEs, and the Korea Education Development Institute, is supporting the operation of 258 carbon-neutral schools as of 2022 as part of ESD,

and through the Korean National Commission for UNESCO, is also actively promoting policies to support the 'SDGs Project on Global Citizenship Education' to promote GCED and ESD in 552 UNESCO schools.

In the 4th Basic Plan for Sustainable Development 2021-2040, established jointly by the government, the Republic of Korea has set GCED and ESD as major policies, and has made it a policy task to support curriculum development, strengthen the capacity of educators, and promote educational activities through cooperation with international organizations.

In line with the promotion of GCED and ESD policies implemented by the Ministry of Education, each MPOE has been actively integrating GCED and ESD in its visions and policies of education. Since 2015, GCED and ESD have gradually been presented as the core policies in basic plans for major tasks of 17 MPOEs. The Seoul Metropolitan Office of Education has established the '2023 Basic Plan for Peace and GCED', and the Incheon Metropolitan Office of Education has established a basic plan such as the '2023 Incheon Basic Plan for GCED' that reflects regional characteristics and promoting GCED as a more weighty educational policy. In 2023, the Gyeonggi-do Office of Education is presenting strengthening GCED as one of its 20 core tasks, the Jeollabuk-do Office of Education is presenting GCED of peace and coexistence as one of the six policy directions, and the Chungcheongnam-do Office of Education is proposing GCED that grows together as the main body of life as a basic indicator. In addition, based on the 'Framework Act on Education' and the 'Act on Environmental Education Revitalization and Support', 17 MPOEs have established basic plans for environmental education at schools, such as school environmental education, ecological transformative education, carbon-neutral environment education, and climate change environment education, and are systematically promoting ESD in the era of the climate crisis.

The 17 MPOEs have steadily increased the number of organizational bodies and staff in charge to systematically promote GCED and ESD. Examining the 2023 organizational map of 17 MPOEs, 16 MPOEs nationwide, excluding the

Gangwon-do Office of Education, have departments and officials in charge of GCED. The Gangwon-do Office of Education does not have a dedicated department or dedicated personnel for "GCED" internally, but it rather developed an affiliated agency called GCED the Gangwon International Education Center, which has even stronger organizational support and more trained staff for GCED and ESD programs and projects. According to the study of APCEIU (2022), as of 2022, members of the MPOEs' GCED-related staff accounted for about 5% of the total officials. In addition, MPOEs are expanding their organizational support and personnel for GCED and ESD manpower by establishing specialized agencies under their governance, allowing more focused and enhanced programs and projects for GCED and ESD.

Based on this dedicated organization and personnel structure, which reflects regional characteristics and issues, the MPOEs are promoting policies such as the development of GCED curriculum and teaching materials, the operation of GCED and ESD capacity-building training, the holding of the GCED Policy Forum, the operation of the GCED 'Innovation School' and the 'Practice School', the operation of the Ecological Transformative Education, the support of the activities of the GCED, the establishment of a domestic and international network of GCED.

According to a study by APCEIU (2019, 2020, 2021, 2022), which analyzed the projects specified in the major work plans of 17 MPOEs, GCED-related policy projects accounted for 12% (482 projects) in 2019, 8.3% (347 projects) in 2020, 7.4% (285 projects) in 2021, and 10% (416 projects) in 2022. In addition, by examining the proportion of 416 GCED policy projects specified in the major work plans of 17 MPOEs in 2022 for each of the 6 thematic areas of GCED, policy projects in the field of sustainable development accounted for the most at 28.4%, followed by global citizenship at 26.4%, human rights at 17.8%, gender equality at 9.4%, cultural diversity at 9.1%, and peace at 8.9% (APCEIU, 2022).

Since 2015, Korea has emphasized or mandated the realization of GCED and ESD in various related laws, educational policies, and plans centered around

the Ministry of Education and 17 MPOEs. In addition, the 17 MPOEs have established a stable organizational foundation by continuously expanding the number of departments and personnel dedicated to GCED, and the number of institutions directly under the MPOEs that will specialize in promoting GCED and ESD is increasing. In summary, it can be concluded that GCED and ESD in Korean education are entering the mainstreaming stage in terms of national educational policies.

Curriculum

The steady emphasis on the philosophy and key elements of GCED and ESD are prevalent in the 2015 and 2022 Revised Curricula in the Republic of Korea, and the proportion of implementation has also increased.

Although Korea's education policy and curriculum have undergone several changes, the a desirable image of human and core competencies in the 2015 and 2022 Revised Curriculum have a lot in common with the ideals sought to be achieved through GCED and ESD. As one of the desirable human characters in the 2015 Revised Curriculum, Korea posited "a person who lives in harmony with others, fulfilling the ethics of caring and sharing, as a democratic citizen with a sense of community and connection to the world", and revealed that fostering global citizenship is an important educational goal of the Republic of Korea's curriculum. In addition, the 2015 Revised Curriculum suggested "community competencies that actively participate in the development of the community with the values and attitudes required of members of the regional, national, and global communities" as one of the core competencies to focus on. This stance was also adopted in the 2022 Revised Curriculum. According to the 2022 Revised Curriculum, the desirable human chracter was more concretely specified as "a person who lives in harmony with others, fulfilling the ethics of caring, sharing, and cooperation, as a democratic citizen who understands diversity, respects each other, and communicates with the world with a sense of community." In addition, the revised curriculum in 2022 aimed for competency-based education and emphasized community competency as one of the core competencies, while further specifying the

existing definition of community competency as "community competency that actively and responsibly participates in the sustainable development of the human community with open and inclusive values and attitudes required of members of the local, national, and global communities."

The educational goals for each school level specified in the curriculum also emphasize the core values pursued by GCED and ESD. In the 2015 Revised Curriculum, the high school education goal was "focusing on cultivating the qualities of a democratic citizen who communicates with the world", and this high school educational goal remained the same for the 2022 Revised Curriculum.

Korea has a well-established content structure that can integrate underlying values and philosophies promoted by GCED and ESD in subject areas, as well as the frameworks of the 2015 and 2022 Revised Curriculum. These Curriculums included SDG 4.7 key learning themes and values such as global citizenship, sustainable development, cultural diversity, gender equality, human rights, and peace at various levels in terms of educational goals, core ideas, content elements, and achievement standards of all curriculums. For example, the 2022 Revised Curriculum actively integrated the contents of climate and ecological transformative education in various subjects to respond to sustainable development tasks caused by changes in the climate and ecological environment. For teachers to merge SDG 4.7-related content into existing subjects, it was necessary to make efforts to find and analyze SDG 4.7-related learning themes in their subjects and reorganize the curriculum. APCEIU and MPOEs developed and distributed various teaching and learning materials and guidebooks to support teachers' activities to design classes by reorganizing SDG 4.7-related content in connection with existing subjects. For example, APCEIU developed <Teaching and Learning Guide Customized for the 2015 Revised Curriculum: GCED Integrated in New Curriculum> in 2017, and Gyeonggi, Seoul, Incheon, and Gangwon-do Office of Education jointly developed and distributed <Global Citizens Living in Global Villages> textbooks in 2017.

The 2022 Revised Curriculum of Korea went beyond integrating learning topics and elements of GCED/ESD into existing subjects and established GCED as an independent, stand-alone subject to teach GCED and ESD. The 2022 Revised Curriculum created a new subject called "Global Citizens and Geography" as a general elective and a College Scholastic Ability Test (CSAT) course, and a new subject called "Climate Change and the Sustainable World" as a convergence elective. "Global Citizens and Geography" was the first subject in Korea's national curriculum that directly represented GCED under the subject title.

In addition, 10 cross-curricular themes from the 2015 and 2022 Revised Curriculums can be organically related to the contents of GCED and ESD. Closely relevant to the cultivation of global citizenship, most of the 10 themes can be actively utilized for training goals of SDG 4.7, GCED and ESD. The 10 cross-curricular themes presented in the 2015 and 2022 Revised Curriculum include Safety and Health Education, Character Education, Career Education, Democratic Citizenship Education, Human Rights Education, Multicultural Education, Unification Education, Dokdo Education, Economy and Finance Education, and Environmental and Sustainable Development Education.

Through the 2015 and 2022 Revised Curriculums, the Republic of Korea has also created a range of enabling conditions to promote GCED and ESD activities. This includes, especially, the introduction of the "Free Semester System" for middle schools that allows schools, free from exams, to choose learning subjects and topics, to develop and practice unique curricula connected to real-life contexts and needs, and experiment with cross-subject and issue-based learning. It also includes other policies to promote schools' autonomy to organize class hours across subjects and topics and to encourage more tailored education for learners and learner-centered pedagogies, all of which provide enabling conditions for the designing and implementation of GCED/ESD. In particular, the free semester system for the middle school introduced in the 2015 Revised Curriculum is becoming an important system for conducting GCED and ESD.

To sum up, since 2015, South Korea has made substantial progress in incorporating the values, goals, and core elements of GCED and ESD into the desirable human character, core competencies, educational goals at each school level, and various subjects of the primary and secondary school curriculum. Most of all, the 2022 Revised Curriculum set up a realistic action plan for GCED by newly establishing 'Global Citizens and Geography' as a stand-alone subject. In Korea's curriculum, GCED and ESD are in the process of gaining its legitimate status of mainstreaming by impacting the core values and direction of education.

Teacher Education

Starting in 2015, when the World Education Forum was held in Incheon, the Republic of Korea's teacher education policy showed a significant change. In particular, policies to strengthen the professional capabilities of in-service and pre-service teachers in GCED/ESD have been steadily developed and promoted. According to the 2015 GCED survey conducted among 1,968 elementary and middle school teachers in Korea (Lee et al., 2015), most teachers who participated in the survey did not know specifically about the purpose, method, and content of GCED, and only 9.4% of them had experience in training related to GCED. SDG 4.7 was adopted in Korea under these circumstances and GCED/ESD became a newly emerging direction for future education. Finally, the Ministry of Education and 17 MPOEs began to actively develop policy supports and programs to strengthen teachers' capabilities in line with the new educational paradigm in cooperation with APCEIU, KOICA, and NGOs.

Above all, the Ministry of Education has developed, in consultation and cooperation with APCEIU, the GCED Lead Teachers Program in 2015, which has been steadily growing and significantly promoting GCED in Korea through teachers' GCED enhanced competencies. The program aims to designate and train 'GCED Lead Teachers' at the national level through the Ministry of Education in partnership with APCEIU. These 'GCED Lead Teachers Project' collaborates with the 17 MPOEs to introduce GCED and delivers further

training workshops to the teachers. These GCED lead teachers should develop their own training and education programs within their local contexts. Through a snowball effect, training has been delivered to and shared with a wider range of teachers and schools. GCED training was based on the cooperative system between the Ministry of Education, 17 MPOEs, and APCEIU, 35 teachers appointed as the 'first national-level lead teachers for GCED' in 2015. And by the 9th term in 2023, 561 national-level lead teachers and 5,334 municipal and provincial-level lead teachers were trained. In this way, GCED Lead Teachers Program is contributing not only to strengthening teachers' capacities in GCED/ESD but also to the promotion of whole-school programs for GCED. Recently, it has been witnessed that this GCED Lead Teachers Program eventually encouraged them to run teachers' learning communities specializing in GCED and to spread GCED school-wide.

The Ministry of Education also provides GCED-related teacher education in form of remote training. The National Institute for Educational Training under the Ministry of Education has developed and operated a remote training course to support teachers to devise practical GCED classes corresponding to elementary and secondary curricula. To provide GCED teacher training courses that are accessible year-round, the institution developed one training course in 2019 and another two courses in 2020. As part of mandatory training, 16,400 teachers have completed the training course so far.

With the support of the Korean government, APCEIU is also providing remote training for GCED to increase learners' access to education and expand the number of beneficiaries. Since 2016, APCEIU has developed and operated an online training platform called 'GCED Online Campus', targeting domestic and foreign educators, young generations, and the general public. The platform not only provides over 20 online courses annually, but also presents special lectures by experts, shares practical cases of GCED, and distributes teaching and learning materials. Learners also can access the remote training courses focusing on fostering global citizenship and gender equality to achieve SDGs, which were developed in collaboration with the Ban Ki-moon Center for Global Citizens (BKMC) in Vienna. Using APCEIU's GCED Online

Campus, more than 70,000 global learners have benefited from online learning opportunities for GCED and ESD, including several South Korean GCED Lead Teachers. In addition, APCEIU has developed and operated a remote-training course for Korean teachers in GCED together with I-Scream Media, a private education company, as part of the Public-Private Partnership (PPP), and many teachers, including leading teachers of GCED , are registered in this online course.

Regarding ESD, the Ministry of Environment supports teachers' learning communities related to environmental education for in-service teachers. This project aims to link activities inside and outside the subject class related to carbon neutrality and to support teacher research groups that develop teaching and learning content that can be applied in the classroom. Approximately 30 research groups were selected each year from 2020 to 2021 as teachers' learning communities to be supported by this project. In addition, the Ministry of Education and the Korea Foundation for the Advancement of Science & Creativity (KOFAC) have established a project to support the Teachers' Research Association for ESD to foster teachers' ESD capabilities.

In response to the needs of schools and educators and the regional context, MPOEs are steadily expanding various forms of GCED and ESD teacher training. For example, the Seoul Metropolitan Office of Education has been operating basic and advanced GCED training for teachers every year since 2015, and the Incheon Metropolitan Office of Education has been conducting GCED training every year since 2017 to promote school managers' understanding of GCED and to seek effective GCED implementation strategies at the school level. In addition, the Gyeonggi-do Office of Education and the Incheon Metropolitan Office of Education provide training for teachers of GCED practice schools, the Chungcheongnam-do Office of Education provides field training at each school to cultivate global citizenship, and the Gangwon-do Office of Education provides training with courses to educate school management skills contributing to strengthening global citizenship competence.

Recognizing the importance of GCED for both the general public and stakeholders involved in ODA, KOICA, the Republic of Korea's official aid agency, has also provided basic and advanced courses for GCED teacher training for Korean teachers every year since 2015. The basic course, GCED with KOICA, is provided online in partnership with I-Scream Media, and the advanced course is conducted offline for elementary and middle school teachers. Local governments are also training GCED instructors through instructor training projects in terms of lifelong education. And Korea's NGOs are also providing GCED teacher training on various topics related to SDG 4.7 through various approaches. For example, Peace Momo, a non-governmental organization (NGO) specializing in peace education, provides teacher training for peace education, including global citizenship as its main content along with ecology and gender. World Vision is also directly operating the World Citizen School and conducts GCED teacher training. Hope is Education (HoE) is conducting training in connection with education projects and GCED as part of the development cooperation project, and KCOC, a consultative group of 140 development cooperation organizations, is conducting teacher job training and workshops for GCED officials.

Meanwhile, the Republic of Korea is also spurring to drive projects to strengthen and promote GCED and ESD in pre-service teacher education programs of teacher education institutions. The Ministry of Education's project to strengthen capacities and curricula for citizenship education at teacher education institutions, APCEIU's GCED Course Development in Higher Education Program, and KOICA's project to promote understanding of international development cooperation at universities are examples. The first four-year project (2019-2022) has been completed, and the second project (2023-2026) is in progress as of 2023 for the 'Citizenship Education Capacity Enhancement Project for Teacher Education Institutions', which the Ministry of Education has been promoting since 2019. 12 Teacher Education institutions nationwide participated in the project for the first phase, and 10 Teacher Education institutions participated in the second phase. To strengthen the competency of pre-service teachers for GCED and ESD, 12 members of the first phase developed special programs following each

university's curriculum. The courses contributed to developing a diverse curriculum and revising existing curricula concerning GCED and ESD. Also, the courses encouraged pre-service teachers to devise extracurricular programs and guided them to experience substantial empowerment of the teaching competence of GCED. Over 8 years from 2016 to 2023, APCEIU's GCED Course Development in Higher Education Program opened 72 courses at 31 universities, among which around half of the participants are teacher education institutions. In total, 2,807 students registered as learners including pre-service teachers. KOICA, an agency under the Ministry of Foreign Affairs (MOFA), runs the project to promote understanding of international development cooperation for Universities. The program's goal is to enhance understanding of international development cooperation and foster global citizenship among university students. Annually, 30 universities participate in the program by opening courses and universities specializing in teacher education account for 30% of all participants.

In addition, Korea revised the Ordinance on teacher certification in 2021 to mandate that pre-service teachers strengthen their gender sensitivity and their awareness of gender inequality. Previously, gender sensitivity education for pre-service teachers was only recommended, but the revised ordinance requires everyone to complete courses on gender sensitivity as part of completing the teacher training course. As a result, gender sensitivity education in teacher education institutions has been successively expanding.

Korean teacher education institutions, which trains elementary and middle school teachers, are gradually opening more courses for pre-service teachers to cultivate knowledge, skills, and attitudes about the core values and contents of GCED and ESD. According to a study conducted by APCEIU (2020), by analyzing the status of organizing GCED and ESD curricula in 13 elementary and 46 middle school teacher education colleges in Korea in 2020, GCED-related subjects were 137 out of 1,196 liberal arts subjects accounting for 11.5% of all liberal arts subjects in elementary school teacher education colleges and 847 out of 12,212 liberal arts subjects accounting for 6.9% in middle school teacher education colleges. Despite the increasing number

of courses related to GCED and ESD in teacher education institutions, the current teacher education curriculum system, which is constrained by the requirements for the teacher certification program, can be an obstacle to promoting courses related to GCED and ESD.

In summary, various agents like civil society organizations (CSOs), as well as the Ministry of Education (MoE) and MPOEs, continue to expand GCED and ESD competence training for in-service and pre-service teachers. The targets and methods of training are gradually diversifying, such as teacher self-training and subject-specific training. Moreover, the number of teachers' learning communities for GCED/ESD is progressively increasing, supporting and encouraging the continuous professional development of in-service teachers in GCED/ESD. For example, education resources and material development as well as publications by teachers have become more accessible and widespread. In this respect, it can be concluded that the field of teacher education in Korea has also entered the mainstream stage of the paradigm of GCED and ESD.

Student Assessment

In the Republic of Korea, the student assessment method of GCED and ESD is the same as the assessment method applied to other subjects. It is not easy to design a separate student assessment structure. It is because the national curriculum encourages the integration of GCED and ESD into existing subjects or their implementation as creative experiential activities. In this regard, the assessment of learning outcomes of GCED and ESD in the school field cannot deviate significantly from the existing assessment framework applied in other subjects.

Student assessments on GCED and ESD, by nature, should pay more attention to changes that emerge over a long period rather than rating and quantifying immediate changes in students. In addition, the student assessments should comprehensively include social and emotional areas, behavioral areas as well as cognitive areas. The 2015 and the 2022 Revised Curriculums do not deal

with assessment and class separately but rather integrate them into the existing curriculum. They also emphasize problem-solving and critical thinking skills, suggesting assessments aligned with learning objectives and contents. In this way, process-based assessment is highly encouraged, allowing comprehensive and multifaceted assessment of student's performance rather than focusing on immediate learning results. All these aspects found in the national curriculums are in line with the assessment method pursued by GCED and ESD.

Korea's curriculum requires schools to implement teaching, learning, and assessment plans according to achievement standards and assessment standards for each subject. In addition, the achievement standards presented in each subject in Korea suggest elements that can evaluate skills, values, and attitudes as well as students' knowledge of facts.

Furthermore, student assessments can be performed during training and activities related to GCED and ESD, which are implemented in subject classes and creative experiential activities. Assessment results documented in the student record can be referred to in the process of school admission. In terms of subject classes, teachers can record their observation results in the section called 'particular competencies and special skills'. For contents related to creative experiential activities, teachers may describe the overall assessment of activities from the performance of activity, degree of progress, and changes in behavior.

In Korea, student assessments should be aligned with the achievement standards of the curriculum. Values and contents of GCED and ESD are sufficiently embedded in the achievement standards of various subjects, thus it can be stated that GCED and ESD are largely mainstreaming in student assessments in Korea's education system. Moreover, the Republic of Korea's curriculum and education policies are rapidly changing to promote self-directed learning and formative assessment, which allow teachers to reflect the values of GCED and ESD in the methods of student assessment.

4. Current Issues in regard to Implementation of SDG 4 Target 4.1.

1) Expansion of Budget Input

The Republic of Korea is steadily increasing the budget for GCED and ESD, which is the basis for achieving SDG 4.7, to promote several projects contributing to expanding and improving the quality of GCED and ESD. However, the budget related to GCED and ESD is distributed across various departments and various projects' budget items. Thereby, it is limited to identify the exact size of the budget spent on GCED and ESD. Korea enforces a local education system, and MPOEs are taking the lead in actively promoting GCED and ESD projects appropriate for regional contexts and needs. In this regard, the size of Korea's budget input can be estimated by examining the budget of 17 MPOEs regarding GCED and ESD. By analyzing the GCED projects among the total education projects specified in the major work plans of the 17 MPOEs (APCEIU, 2020, 2021), the budget assigned for GCED and ESD-related projects recorded 88.2 billion won in 2020 and about 97.7 billion won in 2021, up 10.8% from the previous year. Regarding the ratio of budget allocated for each six topics, cultural diversity recorded the highest at 33.7% in 2020, followed by global citizenship at 24.6%, human rights at 15.3%, peace at 11.2%, sustainable development at 9.7%, and gender equality at 5.5%. Similarly, in 2021, the amount of the budget for cultural diversity was the highest at 37.3%, followed by global citizenship at 26.7%, sustainable development at 17.4%, peace at 8.5%, human rights at 6%, and gender equality at 4.1%. However, each MPOE emphasized different areas among the six topics.

As mentioned above, Korea has continued to increase its budget for the expansion of GCED and ESD since 2015. But, compared to the status of the core education agenda of the SDGs, Korea's budget allocation for GCED and ESD remains low. Therefore, it is needed to expand the GCED and ESD budget at the central government level to achieve the transformative intent of the SDGs and to substantively promote GCED and ESD implementation policies according to the SDG 4 target 4.7 global indicators.

2) Improvement of Equity

SDG 4 Target 4.7. aims at integrating equity and inclusion in the educational content, while others are showing efforts to achieve equal opportunity and bridge the outcome gap through quantitative expansion, quality improvement, and inclusion guarantees in education for a specific group in a specific area (Eom, 2020).

From this point of view, the Republic of Korea is organizing inclusive and equitable GCED and ESD for all in the national curriculum, teaching and learning materials, and various teacher training. In particular, the vision of the 2022 Revised Curriculum supported students to grow into leading people with inclusivity, creativity, and the core competencies required by the future society. In addition, Korea's 2015 and 2022 curriculums newly suggested a meaningful concept of "providing equal opportunities for all students," which represents the core values of GCED and ESD and is directly related to equity issues. This is to cover the growing diversity in public education and to take appropriate educational measures to suit the characteristics of learners, such as students from multicultural families, students returning from abroad, students in need of special education, and students with learning difficulties, and serves as an established principle that GCED and ESD should not be limited by the student's circumstances.

In the process of implementing GCED and ESD programs, Korea is striving to secure equity and inclusion in selecting education targets. The Ministry of Education and APCEIU jointly sponsor the 'Asia-Pacific Teacher Exchange for Global Education' projects in the Republic of Korea and 7 countries in the Asia-Pacific region. Schools that have a comparatively large number of students from multicultural families are given priority to participate in the projects. When selecting teachers for the 'GCED Lead Teachers Program', efforts are also being made to select teachers who work for schools in islands or remote rural areas, schools for special education, and schools in charge of special classes for students from multicultural families in a policy manner. In addition, the Korea Disabled People's Development Institute (KODDI) has

developed and distributed online courses on GCED. Also, KOICA is conducting GCED programs for youths from multicultural backgrounds and refugees. For students with disabilities, members of the Special Education Research Society are developing and distributing GCED practice guides and educational materials that can be used in special education courses. In response to the climate crisis, the relevant authorities and MPOEs are also taking action to strengthen education within the social classes most vulnerable to climate change. For instance, they developed teaching and learning materials in form of sign language videos and books in braille to be utilized by students in need of special education.

Korea has been exploring various policy and implementation methods to ensure that underprivileged groups are not excluded from GCED and ESD. However, to realize inclusive and equitable GCED and ESD for all, it is necessary to increase efforts to include equity and inclusion in the targets and content of education by developing GCED and ESD policies, developing teaching and learning materials, and implementing various teacher training.

3) Monitoring

To effectively monitor implementation efforts to achieve the SDG 4 target 4.7, Korea is making an effort to establish a monitoring system for the implementation of GCED and ESD suitable for the local context while conforming to global indicators. Since 2018, Korea has developed a GCED monitoring tool, despite the restrictive environment, APCEIU took the key role in constantly monitoring the implementation status of GCED. In addition, institutions related to GCED along with experts, including APCEIU and the Korean National Commission for UNESCO, have formed a consultative body to achieve and monitor SDG 4.7 targets.

APCEIU focuses on SDG 4.7.1 among the sub-indicators of SDG 4.7 and monitors the degree of mainstreaming of GCED in sectors such as national education policies, curricula, teacher education, and student assessment. APCEIU analyzed GCED indicators at home and abroad through basic surveys

in 2018; developed conceptual models and areas for monitoring SDG 4.7.1 indicators in 2019; and refined monitoring conceptual models and areas through professional Delphi surveys in 2020. Since 2020, APCEIU has been investigating and analyzing the degree of mainstreaming in education policy, focusing on the organization, policy projects, and budgets of the MPOEs. Starting in 2022, based on the topic areas and conceptual framework of GCED, APCEIU has been developing and piloting question tools to monitor teachers' and students' global citizenship competencies and learners' global citizenship attributes and is also considering adding global citizenship items to the "School Education's Actual Condition Survey for Monitoring Public Education" conducted by the Korea Education Development Institute.

However, the MPOEs are not obligated to independently monitor the implementation status of GCED and report it to APCEIU, and there is no systematic framework that qualifies APCEIU to monitor the implementation status of each MPOE. Furthermore, only a few MPOEs have organized independent departments dedicated to GCED, thus in general, GCED-related tasks are dispersed across multiple departments. As a result, it makes it difficult not only to perform regular and continuous monitoring but also to devise actual educational policies by the results of monitoring (APCEIU, 2022).

Therefore, there is an urgent need to establish legal and institutional mechanisms to systematically monitor the level and trend of Korea's GCED and ESD implementation and feedback, and translate the results from the feedback into actual educational policies.

4) Expansion of International Cooperation

The Republic of Korea has also expanded international cooperation to promote GCED, playing a leading role in reflecting GCED in its sustainable development goals. Korea led the launch of the Comity of Nations for Solidarity and Inclusion with GCED to discuss and seek international cooperation against threats to or violation of human rights, such as hatred and discrimination in the face of the COVID-19 pandemic. The Comity of Nations is

contributing substantially to the international community's opposition to hatred and discrimination in the spirit of solidarity and inclusivity, strengthening international cooperation to promote GCED in the post-COVID era.

Korea supports UNESCO member states to integrate and mainstream GCED into the curriculum through the APCEIU. Also, various international training programs offer opportunities for educators to improve GCED capabilities, including teachers, teacher trainers, youth, and civil servants. In addition, along with APCEIU, the Ministry of Education is contributing to strengthening of GCED capabilities of teachers in the Rep. of Korea and the Asia-Pacific region by leading 'Asia-Pacific Teacher Exchange for Global Education' projects conducted in the Republic of Korea and seven countries in the Asia-Pacific region.

Korea should take responsibility for achieving SDG 4 target 4.7, and its international responsibilities and roles should be strengthened further as well. In doing so, Korea needs to expand international cooperation to support the spread and institutionalization of GCED in other countries so that the UN SDGs and UNESCO Education 2030 do not remain a goal in name only.

5. Future Tasks

For GCED and ESD to be properly implemented in Korea's education system and schools, and for SDG 4 target 4.7 to be performed more effectively, the following challenges must be resolved urgently.

First, it is requisite to develop a comprehensive policy framework and action plans for target 4.7 in Korea to consolidate and interconnect related legal supports and policies and various topics, efforts, programs, and projects across different organizational bodies and stakeholders of policies related to SDG 4 target 4.7. Despite the growing policy and program support from the central and local governments for target 4.7, the implementation of such policies and programs on top of the existing education policies and programs

as well as organizational structures are fragmented and confusing without a comprehensive policy framework for 4 target 4.7 (Eom, 2022).

Second, it is essential to establish an integrated and comprehensive medium and long-term GCED promotion plan supported by a national vision and willingness to implement. This should be supported by systematical preparation of institutional strategies, including the target of the policy, contents and methods, promotion systems, and monitoring structures of GCED. For GCED and ESD provided in a city or a province, MPOEs and local governments should closely cooperate. They should encourage schools and local communities to communicate and share information so that GCED and ESD in local areas can create synergy. Through a more organic cooperation system between schools and local governments, a partnership system can be formed to actively promote and enable GCED and ESD.

Third, it needs to be considered to manage the GCED/ESD budget separately which has been allocated to education policies for central government and MPOEs. The Ministry of Education and MPOEs' budgets assigned to GCED and ESD are distributed to various related departments, so it makes it difficult to collect and analyze information on the budget. When the South Korean government establishes a new GCED/ESD budget item to be tracked and managed separately, it will also contribute to achieving the goal of mainstreaming GCED and ESD policies and understanding the status of implementation (APCEIU, 2019, 2020).

Fourth, a firm institutional strategy for GCED monitoring should be established in South Korea to monitor the implementation efforts of GCED and ESD more effectively and to comprehensively utilize the results. Other than partial GCED monitoring performed by APCEIU, Korea does not have a formal and regular monitoring system that can properly analyze the mainstreaming level of GCED and ESD (APCEIU, 2022). The absence of a national strategy makes it difficult to collect and analyze data for monitoring the status of SDG 4 target 4.7 implementation, and there is a limit to utilizing monitoring results in framing practical education policies. To resolve this problem, it is

necessary to institute a legal strategy with a macro perspective for monitoring the implementation status of GCED. In the process, the central government should establish a comprehensive plan for setting the purpose, investigation, analysis, and execution. In addition, it is necessary to implement a microscopic and process-oriented monitoring system that can help collect practical information on implementation activities related to GCED in unit schools.

Fifth, it is necessary to develop and implement a GCED policy that the Ministry of Education and 17 MPOEs can promote in cooperation. So far, the GCED Lead Teachers Program is the only GCED policy jointly implemented by the Ministry of Education, 17 MPOEs and APCEIU. The project has contributed significantly to the mainstreaming of GCED in domestic schools by supporting teachers to understand GCED and to cultivate capabilities to fulfill GCED in classes. Therefore, in addition to the GCED Lead Teachers Program, the Ministry of Education and the MPOEs in Korea need to collaborate in developing and implementing GCED policies.

Sixth, it is significant to operate a platform for sharing teaching and learning materials related to GCED and ESD. The platform can be a foundation for revitalizing GCED and ESD at schools and greatly contribute to accelerating the implementation of SDG 4 target 4.7 in the curriculum. In Korea, the Ministry of Education, the MPOEs, relevant authorities, teachers, and civil society organizations are actively developing and distributing various teaching and learning materials for GCED and ESD. However, it is difficult to collect data to comprehensively analyze the types of materials that are developed and distributed by the MPOEs and relevant authorities and practical cases of using those materials in the classrooms. It is necessary to analyze in advance the actual conditions of schools where the developed materials can be utilized effectively and then to develop materials and platforms that can meet those conditions, rather than just keep developing and sharing teaching and learning materials (APCEIU, 2021).

Lastly, it is needed to expand the training of in-service and pre-service teachers further for GCED and ESD and to diversify the targets and contents of

the training. In particular, South Korea should expand the administrative training for vice principals and principals so that GCED and ESD can be structurally established at each school. Also, training sessions for individual subjects and autonomous teacher training can support teachers in designing classes and activities for GCED and ESD. Rapidly increasing 'GCED teacher learning communities' in Korea also need attention and expanding operational support for them can lead to substantial implementation of GCED and ESD in schools. In addition, GCED and ESD-related competencies of pre-service teachers can be improved by developing a systematic and gradual curriculum related to GCED and ESD at the teacher education programs stage.

6. Conclusion

As the international community, mainly represented by the UN and UNESCO, has set GCED and ESD as key educational paradigms in the era of globalization, it also has had a great impact on education in the Republic of Korea. To contribute to realizing a more peaceful and sustainable world and to fulfill the SDG 4.7 goals, Korea has been consistently implementing GCED and ESD in national education policies, curriculum, teacher education, and student assessment. As a result, since 2015, GCED and ESD have secured their status of mainstreaming in national education policies, curriculum, teacher education, and student assessment in Korea, by impacting on basic principles and directions of the education system. Korea not only witnessed GCED and ESD successfully enter the phase of mainstreaming in the Korean education system but also identified various policies and action plans critical to ensure the acceleration of the implementation of SDG 4 target 4.7.

GCED and ESD are types of transformative education that will lead to the achievement of SDG 4.7 and contribute to the development of peaceful and just societies. GECD is not only a global education agenda declared by the international community, but also essential for future education to overcome hatred, discrimination, extremism, and polarization revealed through the COVID-19 pandemic. In addition, as UNESCO's Futures of Education Report

(UNESCO, 2021) indicates, ESD should be particularly emphasized to encourage acting against global crises such as the climate crisis.

To contribute to achieving SDG 4 target 4.7 and promoting GCED and ESD by 2030, Korea should quickly solve the challenging tasks that hinder the implementation of target 4.7. In the process, Korea should strive to institutionalize the core values of target 4.7 firmly as the basis of the educational ideology, the educational philosophy, and the education policy. In addition, as a leading country that established GCED, which is a global education agenda, the Republic of Korea is responsible for constantly sharing its experiences of GCED and ESD with the global community to ensure that the SDG 4 target 4.7 are successfully achieved worldwide.

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Annex: *Relevant regulatory document, references and stakeholders and their responsibilities by SDG 4.7 target and indicators*

SDG 4 target	SDG 4 indicator	Name and hyperlink of the relevant policy, strategy, other regulation	Key references in the policy/ strategy/regulation which address the target/indicator	Responsible stakeholder	Type of respon-sibility	Key Achievement	Challenges	Data sources
4.7	4.7.1	Notice of 2022 Revised Elementary and Secondary School Curriculum	I. Direction of Curriculum (2. Vision of an Educated Person and Core Com-petencies) II. Design and Operation of School Curriculum (4. Equal Opportunities for All Students) III. Standards for the Organization and Operation of Curriculums by School Level (4. High school)	Ministry of Education		Reflection of the major learning topics and values of GCED and ESD in the vision of human pursued, core competencies, educational goals, core ideas, content elements, and achievement standards goals of the curriculum	Competitive school climate focused on entrance exams and difficulty in securing sufficient class time for GCED and ESD	
		Framework Act on Education	Article 17-2 (Enhancement of Gender Equality Awareness) Article 22-2 (Environmental Education on Climate Change)	Ministry of Education		Improvement of schools' capacity for systematic implementation of gender equality education and ecological transformation education		
		Act on UNESCO Activities	Article 25 (Establishment of APCEIU)	Ministry of Education				
		Annual Plan for GCED Lead Teachers Programme	68 national GCED lead teachers and 680 provincial GCED lead teachers per year are trained.	Ministry of Education		About 561 national GCED lead teachers and 5,334 provincial GCED lead teachers trained by 2023	Lack of a whole-school approach to GCED and ESD	
		2023 Basic Plan for Peace and Global Citizenship Education		Seoul Metropolitan Office of Education		A GCED support system that reflects the characteristics of the school was established, the capacity to conduct GCED was strengthened, and the GCED network was established		

Monitoring SDG 4 Target 4.a.

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1. Introduction

Recently, due to factors such as the COVID-19 pandemic, a decrease in the school-age population, socioeconomic polarization, and digital transformation, the educational landscape has undergone rapid changes. Consequently, it has become critically important to provide an effective and inclusive learning environment that fosters adaptability in response to these changes. For this reason, the Republic of Korea lately has made efforts to implement educational policies aimed at promoting equitable learning opportunities for all, regardless of socio-economic background, gender, or disability status. These efforts have focused on establishing suitable physical infrastructure and fostering safe and inclusive learning environments. In pursuit of these objectives, SDG 4 indicator 4.a.1 has been implemented as a target with instrumental characteristics aimed at achieving specific goals from SDG 4.1 to SDG 4.7.

2. Adaptation and Monitoring of SDG 4 Target 4.a. and Indicators

Target 4.a. refers to "Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all". The target aims to overcome various

barriers to education and create a learning environment that fosters equal access to quality education for all individuals, regardless of their age, gender, or abilities.

The indicators for monitoring the target consist of one global indicator (SDG 4.a.1. Proportion of schools offering basic services, by type of service) and three thematic indicators (SDG 4.a.2. Percentage of students experiencing bullying in the last 12 months in primary and lower secondary education; SDG 4.a.3. Number of attacks on students, personnel, and institutions; SDG 4.a.4. Proportion of school attending children receiving school meals).

Firstly, as a global indicator, SDG 4.a.1 measures the proportion of schools that provide basic services, categorized by the type of service they offer. It assesses the extent to which schools fulfill essential requirements to support quality education, such as access to (a) electricity; (b) the internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities; (e) basic drinking water; (f) single-sex basic sanitation facilities; and (g) basic handwashing facilities. This indicator serves as a crucial measure to monitor progress in ensuring that schools worldwide have the fundamental resources needed for effective learning environments. The formulas for calculating each specific indicator are presented in Table 1.

SDG 4.a.1 addresses the foundational aspects of education infrastructure that are necessary for effective teaching and learning. By ensuring that schools offer these basic services, countries can work towards providing quality education for all, fostering student well-being, and promoting more inclusive and sustainable education systems.

Secondly, indicator SDG 4.a.2. (Percentage of students experiencing bullying in the last 12 months in primary and lower secondary education) is defined as the percentage of students who have reported experiencing bullying within the last 12 months in primary and lower secondary educational settings. Within the scope of SDG 4, bullying is not limited to just physical aggression;

<Table 1> *Formulas of Indicator SDG 4.a.1*

Indicator	Formula
Proportion of schools with electricity, by level of education	Number of schools with electricity / Number of schools * 100
Proportion of schools with access to internet for pedagogical purposes by level of education	Number of schools with access to internet for pedagogical purposes / Number of schools * 100
Proportion of schools with access to computer for pedagogical purposes, by level of education	Number of schools with access to computer for pedagogical purposes / Number of schools * 100
Proportion of schools with access to adapted infrastructure and materials for students with disabilities by level of education	Number of schools with access to adapted infrastructure and materials for students with disabilities / Number of schools * 100
Proportion of schools with access to basic drinking water	Number of schools with access to basic drinking water / Number of schools * 100
Proportion of schools with useable single-sex toilets	Number of schools with useable single-sex toilets / Number of schools * 100
Proportion of schools with access to basic handwashing facilities by level of education	Number of schools with access to basic handwashing facilities by level of education / Number of schools * 100

it also includes verbal abuse, social exclusion, cyberbullying, and other forms of intentional mistreatment that create a hostile or unsafe environment for students. This indicator focuses on tracking the safety and security of educational environments by quantifying the occurrences of attacks on students, personnel, and educational institutions.

The formula for calculating the SDG 4.a.2 indicator is as follows. In the formula, 'the number of students reporting bullying' refers to the count of students who have reported experiencing bullying in the last 12 months within primary and lower secondary education. In addition, the 'total number of students surveyed' means the total number of students who participated in the survey or study aimed at assessing the prevalence of bullying.

$$\textit{Percentage of Students Experiencing Bullying} = \frac{\textit{Number of Students Reportin Bullying}}{\textit{Total Number of Students Surveyed}} \times 100$$

The goal of monitoring and addressing the prevalence of bullying in primary and lower secondary education aligns with the broader objectives of promoting inclusive and equitable education. By focusing on this indicator, we can identify areas for improvement in educational settings to ensure that learning environments are safe, supportive, and conducive to the holistic development and overall well-being of students.

Thirdly, the SDG 4.a.3. indicator (Number of attacks on students, personnel, and institutions) is defined as the number of violent attacks, threats, or deliberate use of force in a given time period (e.g., the last 12 months, a school year, or a calendar year) directed against students, teachers, and other personnel or against education buildings, materials, and facilities, including transport. The indicator focuses on attacks carried out for political, military, ideological, sectarian, ethnic, or religious reasons by armed forces or non-state armed groups.

The indicator can be calculated by the total count of attacks, which refers to the sum of all reported attacks on students, personnel (e.g., teachers, administrators, support staff), and educational institutions within the defined scope and time period.

It is important to note that the availability and accuracy of data may vary between countries, and the absence of a universally agreed-upon definition of "attacks" across different countries has been identified as well. To collect relatively accurate data, this indicator is based on data compiled by the Global Coalition to Protect Education from Attack (GCPEA) for its report Education under Attack. The general data sources are as follows: reports released by UN agencies, development and humanitarian NGOs, human rights organizations, government bodies, and think tanks; media reports; and information shared with GCPEA by staff members of international and national organizations working in the countries profiled in this study.

SDG 4.a.3 highlights the urgency of creating safe and secure educational environments. Reducing attacks on students, personnel, and institutions not

only ensures the safety and well-being of individuals but also contributes to a peaceful, inclusive, and prosperous society.

Lastly, indicator SDG 4.a.4 (Proportion of school attending children receiving school meals) aims to assess the extent to which children attending school have access to nutritious meals provided by the school, which contributes to their overall well-being, nutrition, and ability to learn effectively. The indicator measures the extent to which countries are investing in the health and nutrition of learners in terms of the provision of school meals. School feeding programs address immediate nutritional needs while also promoting better educational outcomes, improved health, and broader community development. School feeding programs ensure that children receive at least one balanced and nutritious meal during their school day. Proper nutrition is crucial for their physical and cognitive development, overall health, and ability to concentrate and learn in the classroom. School meal programs can also help increase school enrollment rates and reduce dropout rates (UNESCO, 2022).

The formula for calculating the SDG 4.a.4 indicator is as follows. In the formula, 'the number of school-attending children receiving school meals' refers to the count of children who are attending school and are receiving school meals. Also, 'the total number of school attending children' refers to the total count of children who are attending school.

$$\textit{Proportion of School Attending Children Receiving School Meals} = \frac{\textit{Number of Schools Attending Children Receiving School Meals}}{\textit{Total Number School Attending Children}} \times 100$$

Data for the Proportion of School Attending Children Receiving School Meals have been reported on the State of School Feeding Worldwide published by the World Food Program every two years. The data sources vary from the Global Child Nutrition Foundation, World Bank, OECD, and other national databases. Indicator SDG 4.a.4 emphasizes the critical role of school meal programs in promoting education, health, equity, and development. By providing school

meals to children, countries can address some of the fundamental challenges faced by children, families, and communities, promoting better education, health, and social well-being.

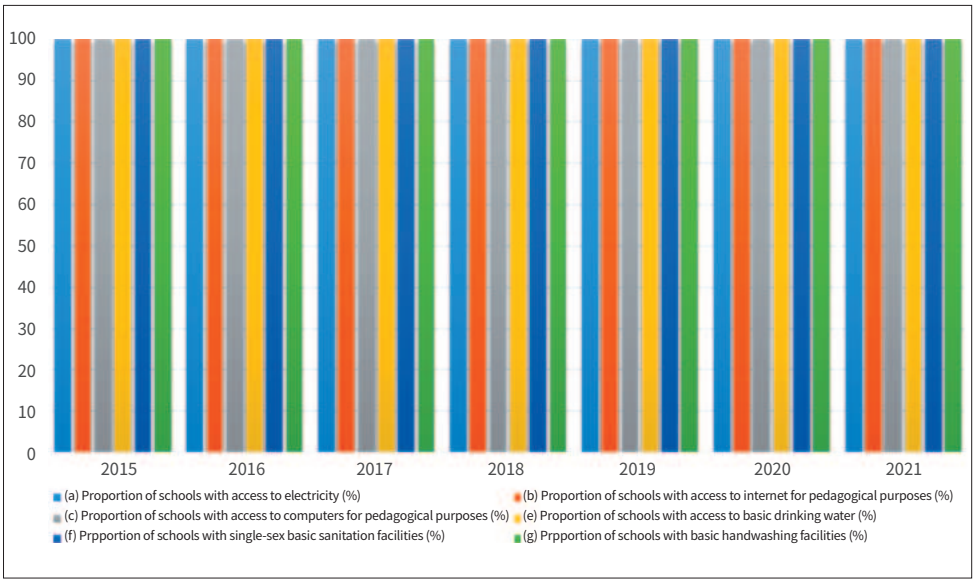
3. Monitoring Progress of SDG 4 Target 4.a.

1) Progress toward Indicator SDG 4.a.1

Proportion of schools offering basic services, by type of service

The current status of each indicator for SDG 4.a.1 in Korea can be presented in Figure 1. Upon examining the recent status, it has been observed that, with the exception of the indicator (d) "adapted infrastructure and materials for students with disabilities," all indicators have consistently shown values of 100% since 2015. This indicates that fundamental educational facilities necessary for providing an effective learning environment are being established in Korea. However, in the case of indicator (d), it has been unable to be calculated as there is a lack of available data on the number of schools with facilities and materials accessible to students with disabilities.

<Figure 1> *The Proportions of schools offering basic services in Korea*



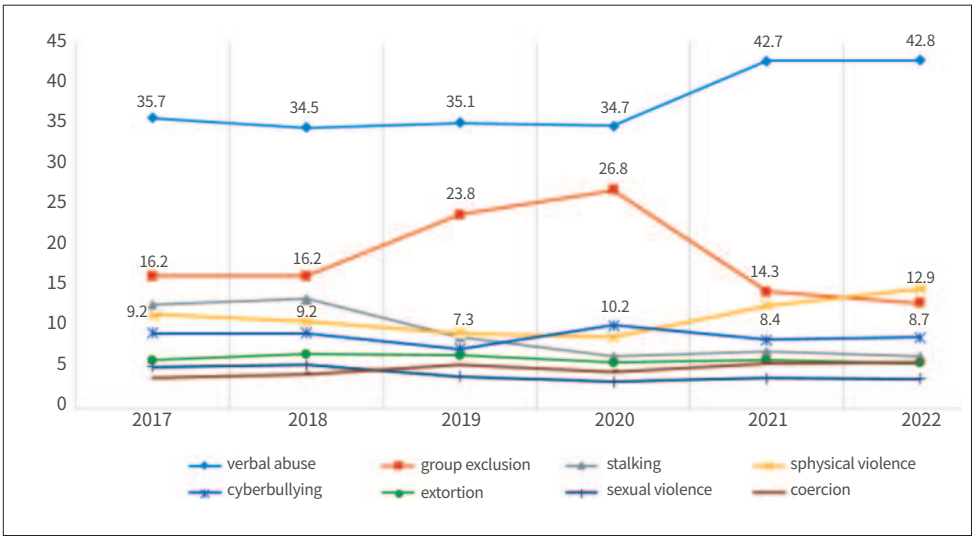
2) Progress toward Indicator SDG 4.a.2

Percentage of students experiencing bullying in the last 12 months in primary and lower secondary education

Due to the absence of available data regarding students experiencing bullying, the values have been reported as missing in the UIS (UNESCO Institute of Statistics) database. However, utilizing domestic data sources, a comprehensive overview of bullying among Korean adolescents has been examined.

According to the results of *The 2022 School Violence Reality Survey (first wave)* conducted by the Ministry of Education among elementary, middle, and high school students (4th grade of elementary school to 3rd grade of high school) in South Korea, it was found that 1.7% (53,800) of all students reported having experienced school violence. When examining the incidence of school violence victimization by educational level, the survey results show that the prevalence of such incidents was 3.8% (41,600) among elementary school students, 0.9% (9,600) among middle school students, and 0.3% (2,400) among high school students. In addition, in terms of the distribution of victimization types, the survey responses indicated that the proportions were as follows: verbal abuse (41.8%), physical violence (14.6%), group exclusion (13.3%), cyberbullying (9.6%), stalking (5.7%), extortion (5.4%), and coercion (5.3%). These proportions represent the ranking of victimization types from highest to lowest. Over the past five years (2018-2022), the trends in the proportion of victimization types among Korean elementary school students are depicted in Figure 2.

<Figure 2> *Proportion of victimization types among Korean elementary school students*



Sources: Kim (2023).

3) Progress toward Indicator SDG 4.a.3

Number of attacks on students, personnel, and institutions

The number of attacks on students, personnel and institutions in Korea has been consistently reported as 0 for last 5 years (Table 2).

<Table 2> *Number of attacks on students, personnel and institutions in Korea*

Year	Number of attacks
2015	0
2016	0
2017	0
2018	0
2019	0

The indicator shows that there have been no reported incidents of violence, aggression, or harmful actions directed towards students, educational staff, or educational institution. In other words, no documented cases of attacks, bullying, harassment, threats, or any other forms of violence have occurred within the educational environment being examined. It implies a safe and secure atmosphere for learning, where students and staff can engage without fear of violence or aggression. However, it is essential to be mindful that the result does not necessarily mean that there are no challenges or concerns in the educational environment.

4) Progress toward Indicator SDG 4.a.4.

Proportion of school attending children receiving school meals

Because Korea has not participated in the survey, the indicator value has not been included in the UIS database. While there may be issues related to international comparability, utilizing domestic data would enable us to gain insights into the overall status of school feeding programs in Korea. According to the data from the Ministry of Education regarding the status of school meals, as of the year 2021, out of a total of 11,976 primary, middle, high, and special education schools nationwide, 100% were reported to provide school meals. Among the total student population of 5,346,000, it was reported that 99.9% of students (5,344,000 students) participated in the school meals program (refer to Table 3).

<Table 3> *Proportion of school attending children receiving school meals in Korea*

Educational level	Total number of schools attending children	Number of schools attending children receiving school meals'	Proportion of Schools Attending Children Receiving School Meals (%)
Level of education	2,680,000	2,679,000	99.9
Lower secondary school	1,346,000	1,346,000	100
Upper secondary school	1,293,000	1,292,000	99.9
Special school	27,000	27,000	99.9
Total	5,346,000	5,344,000	99.9

Source: MOE (2022).

4. Current Issues in regard to Implementation of SDG 4 Target 4.a.

1) Education Infrastructure: Educational Accessibility for Students with Disabilities

In order to ensure inclusive and equitable access to high-quality education and opportunities for all, it is crucial to establish and enhance educational facilities that consider children, individuals with disabilities, and gender disparities. Although Korea has legislated laws[1] explicitly aiming to provide equal educational opportunities for students with disabilities, the accessibility of education for these students remains limited.

The school-age population is on a declining trend; however, the number of students receiving special education[2] has been increasing each year, partly due to changing perceptions regarding disabilities and special education. Particularly, there has been a notable increase in demand for special education at the early childhood level[3]. The trend in the ratio of special classes in regular classes for the last 5 years can be shown in Table 4. Seventy-two point eight percent (72.8%) of special education recipients are receiving their education in both special classes within mainstream schools and regular classrooms, and this proportion continues to rise. Over the past five years (2019-2023), there has been an expansion of special classes in regular schools. However, students attending special schools with a one-way commute of more than one hour constitute 6.6% of the total, indicating a significant percentage. Additionally, there is still an imbalance in the distribution of special classes across different

1 The law stipulates the need to establish policies for "inclusive education" (Article 59 of the Elementary and Secondary Education Act) and specifies the requirement for placement "nearest to the place of residence" (Article 17 of the Special Education Act) for individuals such as people with disabilities. Furthermore, in the case of implementing inclusive education through presidential decree, the law mandates "the provision of necessary facilities, equipment, and teaching materials" (Article 21 of the Enforcement Decree of the Special Education Act) required for such inclusive education, including individuals with disabilities.

2 The number of individuals eligible for special education services was 90,780 in 2018, 95,420 in 2020, and 103,695 in 2022 (https://kess.kedi.re.kr).

3 The number of children has increased from 17,007 in 2018 to 19,906 in 2022.

school levels (MOE, 2022.11.28).

<Table 4> *The establishment rate of special classes in regular schools by level of education*

(Unit:%)

Year	Primary	Lower- secondary	Upper- secondary
2019	70.3	56.9	45.6
2020	71.9	57.8	45.4
2021	74.0	59.5	46.4
2022	77.1	61.9	47.4
2023	78.2	63.3	47.9

Therefore, it is necessary to diversify the operation of special schools by considering the provision of local commuting options and addressing various educational needs through small-scale and single-course offerings. Also, there are plans to continuously support the creation of an educational environment using digital innovation technologies and operate a remote education platform (Open Learning Space) that takes into account the types and degrees of disabilities. This includes designating and operating AI-led educational pioneering special schools[4], as well as utilizing intelligent robots for education by leveraging regional and private resources (MOE, 2022.11.25).

Furthermore, there is a pressing need to improve the facilities within schools catering to students with disabilities and reinforce the support mechanisms directed towards them. As part of these comprehensive efforts, recent educational institutions are mandated to acquire the "Barrier-Free (BF)" certification, in accordance with Article 10-2 of the revised "Act on the Promotion of Convenience for Persons with Disabilities, the Elderly, and Pregnant Women" from 2015. This certification obligates the creation of an environment that is devoid

4 The number of AI-led educational pioneering special schools is expected to increase from 5 schools in 2023 to 17 schools in 2025 and further to 34 schools in 2027.

of obstacles. Conversely, for existing schools with multi-story buildings, particularly those possessing more than two floors, the installation of elevators and other facility investments becomes indispensable to ensure the accessibility of students with disabilities to educational resources. Hence, it is crucial to sustain ongoing monitoring of the facility improvement initiatives aimed at serving students with disabilities.

2) School Facility Safety

The increasing occurrence of various disasters and accidents has led to a growing emphasis on school facility safety and heightened societal awareness. To address this concern, the "Regulations for the Certification of Educational Facility Safety" and the "Operating Standards for the Assessment of Educational Facility Safety" have been established and are currently in operation. Through the "Regulations for the Certification of Educational Facility Safety," a comprehensive assessment of the safety of educational facilities is conducted. Based on this assessment, regional education offices and schools are prompted to formulate improvement plans for vulnerable areas. Construction companies are also required to conduct safety evaluations before commencing construction both inside and outside the school premises, with a focus on preventing cracks, and subsidence, and ensuring the safety of commuting routes. Regional education offices and schools are also empowered to verify the compliance of these measures by construction companies (MOE, 2021.5.12).

In addition, Article 42 of the Building Act, along with Article 32 of the Enforcement Decree of the same Act, mandates seismic design for buildings of a certain size or larger. In the case of public facilities, including schools, projects for securing seismic performance through retrofitting of existing buildings are currently underway. Recently, with the occurrence of relatively significant earthquakes, there has been an increased societal interest in the seismic safety of school facilities. The recent 5-year status of seismic performance assurance for school facilities is shown in Table 5. Due to the significant societal concern for the safety of school facilities, the seismic retrofitting rate for school buildings

has increased substantially from 24.9% to 66.3% over the past five years.

<Table 5> *The status of seismic performance assurance for school facilities*

year	target schools	The cumulative status of seismic performance assurance	seismic retrofitting rate (%)
2017	32,846	8,163	24.9
2018	32,896	12,070	36.7
2019	31,905	15,637	49.0
2020	33,817	18, 878	55.8
2021	33,497	22,205	66.3

Source: Ministry of the Interior and Safety (2018-2022).

In order to ascertain the safety of students within educational environments, it is imperative to gradually elevate the proportion of school buildings that adhere to secure standards, thereby enhancing the safety level of the school environment. It is crucial to consider the seismic performance assessment results, including whether seismic performance has been ensured and the ratio of seismic performance assurance, as metrics to facilitate the continuous monitoring of the seismic safety level of school buildings.

3) A Secure School Environment

A secure school environment encompasses various factors that contribute to the well-being and safety of students, including protection from bullying, violence, discrimination, harassment, and other forms of negative experiences. It also involves the implementation of preventive measures, supportive policies, effective communication channels, mental health resources, and appropriate interventions to create a setting where students can focus on their studies, personal growth, and social development without being hindered by concerns about their safety and well-being.

School Violence

The proliferation of 'verbal abuse' and 'cyberbullying' has led to a shift in the landscape of school violence towards a lower age group and a more covert nature, while the prevalence of reported incidents involving stalking, extortion, and physical violence has decreased (Figure 2). Starting from 2020, the proportion of victimization due to 'group exclusion' has decreased, while the incidence of 'verbal abuse' has shown an increase. This trend can be attributed to the impact of the COVID-19 pandemic. With a reduction in physical attendance at schools, incidents of 'group exclusion' that primarily occur in a collective and organized manner within school premises have diminished. Conversely, as remote learning has expanded, instances of 'verbal abuse' in the online realm have surged (Kim, 2023).

Based on recent analyses of school violence patterns, it has become evident that a significant emphasis is required not only on real-world scenarios but also on the dynamics of school violence in the cyber domain. There is a pressing need for heightened attention to the manifestation of school violence in online spaces. Furthermore, the need for concrete measures to establish effective strategies for preventing after-school school violence has been underscored. Furthermore, despite the current mandatory implementation of school violence prevention education at least once per semester within the current curriculum, it is evident that students' awareness levels regarding school violence remain relatively low. This discrepancy underscores the need for clear conceptual definitions and societal dissemination strategies to enhance public awareness regarding school violence. It also highlights the necessity for effective measures to improve the efficacy of school violence prevention programs that are interconnected among homes, schools, and local communities.

Adolescents in Crisis

In order to ensure a secure school environment for children and adolescents, it is essential not only to address school violence but also to identify adolescents in crisis early and enhance support systems that enable them to adapt to both

the school environment and society at large.

According to OECD, adolescents in crisis are defined as students with special educational needs, such as poverty, absence of parental care and supervision, runaway and homelessness, abuse, and neglect. Efforts are required to identify and support these students early on. There is a need for strengthening systems to protect and support marginalized children and adolescents who face difficulties adapting to the changing social and school environments. In Korea, policies are being pursued through the School Safety Integrated System ('Wee Project') to identify and support crisis children and adolescents who are vulnerable to adaptation challenges. The Wee Project is structured intoa three-tier safety network consisting of Wee Class, Wee Center, and Wee School. It systematically supports school education, mental health, and student welfare management by identifying crisis students and providing counseling, education, and other services. The recent status of Wee Class establishment can be suggested in the table below.

<Table 6> *The status of Wee Class, Wee Center, and Wee School establishment*

Year	Wee Class	Wee Center	Wee School
2018	6,965	213	13
2019	7,230	216	14
2020	7,631	231	15
2021	8,059	238	15
2022	8,619	238	16

**Reference*: https://www.wee.go.kr/home/cms/cmsCont.do?cntnts_sn=22

As of 2022, there are 8,619 Wee Classes, 238 Wee Centers, and 16 Wee Schools operating nationwide. However, considering the total number of primary, middle, and high schools, which is 11,794, there is still a need for both quantitative and qualitative expansion of the Wee Project (Table 6).

5. Impact of the COVID-19 Pandemic on Progress of SDG 4

The spread and resurgence of COVID-19 have brought about significant changes in the educational environment, primarily through the widespread adoption of remote learning. In response to these changes in the educational landscape, the South Korean government has implemented various policies to build physical education infrastructure and support online education in both the primary and secondary education sectors, as well as higher education. In the primary and secondary education sectors, efforts have been made to establish high-performance wireless networks in all classrooms by the year 2021. This initiative also includes the replacement of outdated computers and laptops used in schools, improvements to the functionality of public learning management systems (e.g., EBS Online Classes and e-Learningter), and the operation of pilot schools that innovate teaching and learning through the use of online content in a blended learning approach, combining both online and offline instruction. In the higher education sector, the government has supported emergency measures for non-face-to-face university education, the replacement of university computer networks, the operation of remote education support centers, and the development of online open courses and edu-tech platforms (MOE, 2020.7.3).

These initiatives reflect the government's commitment to adapting to the evolving educational landscape and ensuring that students and educators have access to the necessary tools and infrastructure to thrive in a changing environment, especially in the context of the COVID-19 pandemic.

6. Future Tasks

In the "Reimagining Our Futures Together" report, the importance of schools as the paramount educational environment in our society, emphasizing inclusiveness, equity, and their role in supporting the well-being of individuals and communities, is highlighted (UNESCO, 2021). That is, schools must provide

an educational environment that meets the physical, social, and emotional needs of students. They should serve as places for educational innovation, where teachers can develop their expertise and capabilities and engage in high-quality educational activities. Ensuring educational opportunities for vulnerable populations, ensuring the safety of school facilities and school life, and providing a conducive learning environment are essential prerequisites for enhancing the quality of universal education.

The Republic of Korea is committed to producing disaggregated statistics for various vulnerable student groups, such as multicultural students, students with disabilities, and crisis youth, to ensure ongoing monitoring of equal educational opportunities and to provide a discrimination-free and safe educational environment. With the advent of the digital transformation era, technology-based education using intelligent information technology can enhance the efficiency and effectiveness of teaching and learning while expanding educational opportunities for students who face limitations in offline education. Accordingly, policy efforts will be directed towards creating an inclusive and efficient smart learning environment.

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Monitoring SDG 4 Target 4.b.

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1. Introduction

SDG 4 target 4.b is "By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrollment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries", and this target is related to the means of implementation for achieving the SDG 4 goals and outcome targets. The detailed objectives of SDG 4 target 4.b are set to foster high-quality human resources in the science, technology, and engineering fields for the sustainable development of developing countries at the global level. Therefore, to achieve SDG 4 target 4.b, it is encouraged to expand the number of international scholarships for developing countries substantially by 2020.

The Korean government provides scholarships for students from developing countries to study in Korea through the Ministry of Education's Global Korea Scholarship (henceforth, GKS) and the Korea International Cooperation Agency (henceforth, KOICA)'s Scholarship Programs (henceforth, SP). The GKS Program is the international scholarship of the Korean government to provide international students with opportunities to conduct advanced studies at higher educational institutions in Korea. The KOICAs SP is a project that establishes master's courses in specific fields through cooperation with Korean universities and provides opportunities for students from developing countries to obtain degrees.

2. Adaptation and Monitoring of SDG 4 Target 4.b. and Indicators

Target 4.b and its indicator are shown in the following <Table 1>. SDG 4.b.1, which is a global indicator of target 4.b, is "Volume of study". official development assistance flows for scholarships by sector and type of SDG 4.b.1 is defined as the "Gross disbursements of total official development assistance (ODA) for scholarships in donor countries expressed in US dollars at the average annual exchange rate".

<Table 1> *SDG 4 Target 4.b and Indicator*

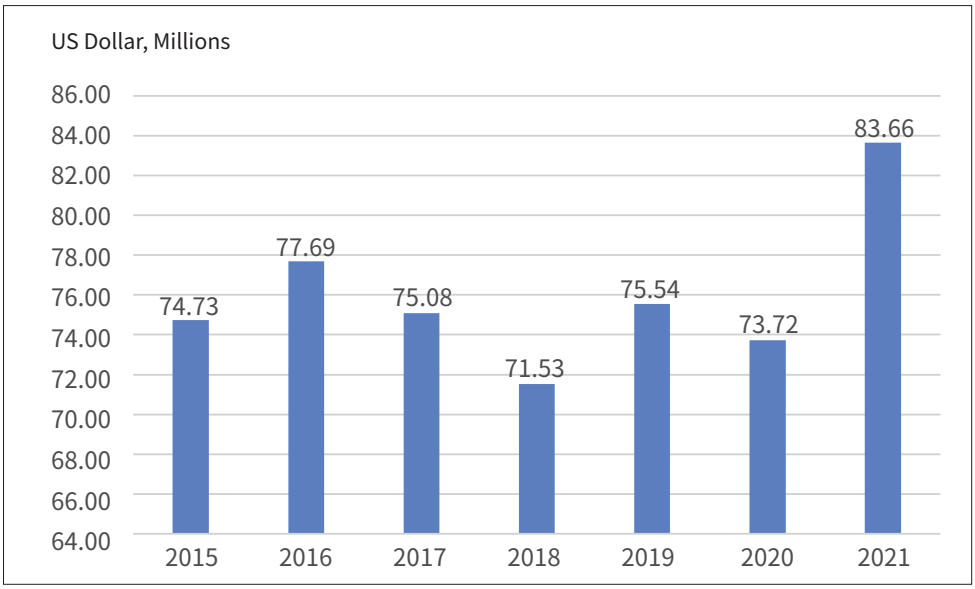
	Contents
SDG 4.b	By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrollment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries
SDG 4.b.1	Volume of official development assistance flows for scholarships by sector and type of study

SDG 4.b.1 is as a global indicator, that The Organization for Economic Co-operation and Development (OECD) collects and manages the amount of ODA expenditures for scholarship purposes for developing countries. Scholarships are financial aid awards for individual students and contributions to trainees. The beneficiary students and trainees are nationals of developing countries. Financial aid awards include bilateral grants to students in institutions of higher education following full-time studies or training courses in the donor country.

Overall aid to support student mobility (global indicator 4.b.1) rose by approximately 20% between 2015 and 2021, from US$3.7 billion to US$4.4 billion (OECD CRS). In Korea's case, there is no data that officially reports SDG 4.b.1 indicator to the UN, but the scholarship support for developing countries can

be found through OECD CRS statistics. According to the OECD CRS database, the Korean government spent $74.73 million on scholarships for international students from developing countries in 2015, and the amount of support increased by $83.66 million in 2021. Korea has been expanding the amount of scholarship support, but the proportion of scholarships out of the total ODA support amount is approximately 3.41% as of 2021. The detailed trend of Korea's scholarship support scale is as shown in the following <Figure 1>.

<Figure 1> *SDG 4 Target 4.b and Indicator*



Source: OECD CRS (https://stats.oecd.org/Index.aspx?DataSetCode=crs1 2023.9.1.)

3. Monitoring Progress of SDG 4 Target 4.1.

1) Relevant Policies and Innitiatives

Target 4.b is a goal of development cooperation in that it requires international cooperation to expand higher education opportunities in developing countries, but from the perspective of internationalization of higher education, it can also be said to be a goal that Korean higher education must achieve. The Korean government has been increasing scholarships for inter-

national students, primarily from the perspective of domestic higher education reform. For example, the Ministry of Education implemented the 'Study Korea 2020' project in 2012 and set a goal of increasing the number of international students to 200,000 by 2020 (MOE, 2012). As an extension of this initiative, the 'Study Korea 300K Project' was recently implemented (MOE, 2023). The Korean government and universities, which are facing the difficult problem of a population cliff, expect international students to act as a positive factor in securing finances.

The Korean government provides scholarships for those students from developing countries to study in Korea through the Ministry of Education's GKS and KOICA's SP. The GKS is designed to provide international students with opportunities to study at higher education institutions in Korea, both undergraduate and graduate level. The scholarship aims to enhance international education exchange and strengthen mutual friendship between Korea and participating countries. Launched in 1967 with six students from three countries, the program has supported accomplished individuals in their undergraduate and graduate programs for over the past 50 years. From a total of 11,115 foreign students from 156 countries, the GKS Program supports their one year language training and general expenses such as tuition, living fee etc. during their corresponding academic course.

The GKS accounts for about 71.1% (746.2 Billion won) of the total ODA budget of the Ministry of Education in 2023 (CIDC, 2023), and consists of the GKS degree program, the GKS Non-degree Program for Foreign Exchange Students, and Short-term training for international students. The detailed information of the GKS is as shown in the following <Table 2>.

<Table 2> *The Global Korea Scholarship (GKS) Programs*

Program	Participants	Scholarship Benefits
Degree program	Undergraduate Graduate (Master's and Doctoral degree)	1 year Language Courses + Degree Courses Round-trip Airfare, Settlement Allowance, Monthly Allowance, Language Training Fee, Tuition, Medical Insurance Fee, Research Support Fee, Thesis Printing Fee, Degree Completion Grants
Non-Degree program	Undergraduate Graduate(Master's degree)	4 months(one term) to 10 months(two terms) The grants cover the expenses for accommodation, settlement, airfare, and insurance fee
Short-term Training Program	High school students Undergraduate	Round trip air ticket, allowance during the program, individual field expense, and medical insurance

Source: National Institute for International Education (NIIED) (niied.go.kr).

As already mentioned above, the GKS degree program is for international students, especially at undergraduate and graduate levels. The scholarship supports 1-year Korean language courses and 2-6 years of degree courses and provides round-trip airfare, settlement allowance, monthly allowance, language training fees, tuition, medical insurance fee, and degree completion grants. The GKS Non-Degree Program for Exchange Students offers financial support for selected international exchange students at partner universities in Korea. The grants cover the expenses for accommodation, settlement, airfare, and insurance fees for 4-10 months. Lastly, the Short-term Training Program is designed to invite excellent students from the major partner countries of Korea and to provide them with valuable experience in Korean culture and tradition.

Because the GKS programs were not planned from the beginning as an international development cooperation project, the selection of international students and study areas was implemented independently without being linked to the national ODA strategy or other ODA projects. Although the National Institute for International Education is responsible for the overall management of scholarships and support of international students, the universities are also responsible for supervising individual international

students, so it is difficult to manage scholarships as the national ODA framework. To overcome these limitations, the recent policy is more focused on linking the GKS programs with other ODA projects.

The KOICA Scholarship Program (SP), is the master's degree course designed to offer future leaders in developing countries opportunities to learn Korea's development experiences and best practices and help develop their professional and academic skills. For this purpose, the KOICA supports the establishment and operation of master's degrees in specific fields for student from developing countries through cooperation with selected Korean universities. The KOICA SP targets government officials from developing countries, and about 400 students are selected for this program every year. Through this, the Korean government expects them to contribute to the socio-economic development of their home countries.

Starting with the 'Korean Economic Development Studies' course at Korea University's Graduate School of International Studies in 1997, KDI Graduate School of International Policy in 1998, Graduate School of International Studies at Kyung Hee University in 2001, Korea Advanced Institute of Science and Technology (KAIST) in 2003, Graduate School of International Studies at Ajou University in 2004, International Graduate School at Ewha Womans University in 2006, Graduate School of International Studies at Seoul National University in 2008, Graduate School of Government Administration at Sungkyunkwan University, Graduate School of Fisheries Science at Pukyong National University in 2010, Hankyong National University, Graduate School of International and Area Studies at Hankuk University of Foreign Studies, Graduate School of Public Administration at Seoul National University in 2011, Yonsei University Wonju Campus, Korea University of Technology and Education, and Handong Global University in 2012. Since changing to an open competition system in 2013, KOICA has been supporting 24 graduate programs (22 Master's courses, 2 Doctoral courses) in 2023. The detailed information of the KOICA SP is as shown in the following <Table 3>.

<Table 3> *The list of the KOICA Scholarship Programs (SP)*

No	University	Course Title	Quota	Target Countries
1	KDI SCHOOL OF PUBLIC POLICY AND MANAGEMENT	Master's Degree Program in Economic Development Policy for Sustainable and Inclusive Growth	15	81 Countries
2	PUKYONG NATIONAL UNIVERSITY	Master's Degree Program in Fisheries Science	15	81 Countries
3	HANDONG GLOBAL UNIVERSITY	Master's Degree Program in Techno-Entrepreneurship Competency based on EE&ICT Convergence	15	81 Countries
4	KOREA NATIONAL UNIVERSITY OF EDUCATIONs	Master's Degree Program in Global Education Leadership	15	81 Countries
5	SEOUL NATIONAL UNIVERSITY	Master's Degree Program in Capacity Building for SDGs	15	32 Asia/ Pacific/CIS Countries
6	AJOU UNIVERSITY	Master's Degree Program in Civil Society Leadership	15	32 Asia/ Pacific/CIS Countries
7	EWHA WOMANS UNIVERSITY	Master's Degree Program in Civil Society Leadership	15	32 Asia/ Pacific/CIS Countries
8	KAIST	Master's Degree Program in Social Economy	25	81 Countries
9	INCHEON NATIONAL UNIVERSITY	Master's Degree Program in Capacity Building for Response to Climate Change	25	81 Countries
10	HANYANG UNIVERSITY	Master's Degree Program in Digital Innovation	25	81 Countries
11	YONSEI UNIVERSITY	Master's Degree Program in Control of Infectious Disease	25	81 Countries
12	SOONGSIL UNIVERSITY	Master's Degree Program in Digital Transformation Technology	25	81 Countries
13	KDI SCHOOL OF PUBLIC POLICY AND MANAGEMENT	Master's Degree Program inTrade and Industrial Policy for Innovative Growth and Resilience	15	81 Countries
14	UNIVERSITY OF SEOUL	Master's Degree Program in Urban Development	15	81 Countries

15	KANGWON NATIONAL UNIVERSITY	Master's Degree Program in Agricultural Economics	15	81 Countries
16	KYUNGPOOK NATIONAL UNIVERSITY	Master's Degree Program in Agricultural Engineering	15	81 Countries
17	KDI SCHOOL OF PUBLIC POLICY AND MANAGEMENT	Master's Degree Program in Sustainable Regional Development	15	81 Countries
18	HANDONG GLOBAL UNIVERSITY	Master's Degree Program in Policy Competency Based on ICT Convergence	15	81 Countries
19	YEUNGNAM UNIVERSITY	Master's Degree Program in Water Resources Management	15	81 Countries
20	SEOUL NATIONAL UNIVERSITY	Master's Degree Program in Energy Policy	15	81 Countries
21	YONSEI UNIVERSITY	Master's Degree Program in Global Health Security	15	81 Countries
22	KYUNGPOOK NATIONAL UNIVERSITY	Master's Degree Program in Agricultural Production	15	81 Countries
23	KYUNGPOOK NATIONAL UNIVERSITY	Doctoral Degree Program in Agricultural Production	3	81 Countries
24	YONSEI UNIVERSITY	Doctoral Degree Program in Global Health Security	3	81 Countries

Source: KOICA Fellowship Program (koica.go.kr/ciat)

4. Current Issues and Future Tasks

Based on Korea's status of achieving the SDG 4 target 4.b, challenges are presented as follows.

First, it is necessary to increase the volume of scholarships for students from developing countries. Scholarship programs can play a vital role in providing opportunities for young people and adults who would otherwise not be able to afford to continue their education. Although the Korean government has increased the amount of scholarships, it is still approximately 1.8% of total scholarships by the donor countries. Therefore, there is a need to further expand the volume of scholarships in the future.

Second, it is necessary to expand the number of scholarships for international students from developing countries. The target 4.b aims to expand the number of scholarships for enrollment in higher education including vocational training. However, the Korean government's scholarships are mainly focused on universities rather than vocational colleges. Considering that it contributes to immediate development for developing countries, more diverse types of scholarship support are needed, such as junior college, distance learning, and short-term training. In particular, due to the COVID-19 pandemic, there have been many changes in the way of teaching and learning in universities and in providing degree courses. Therefore, there is a need to expand the number of scholarships to meet various needs and types of learning.

Third, there is a need to consider various beneficiaries and their needs. Expanding scholarships does not mean to ensure the educational opportunities for everyone in developing countries. One concern is that most scholarships benefit only a few select groups, even in developing countries. The KOICA's SP has the advantage of being highly correlated with the government's ODA strategy, such as considering the key partner countries or priority areas (health, education, agriculture, forestry and fisheries, public administration, environment, energy, etc.) for aid policy. However, because students are mainly selected from government officials or public sector workers and degree courses are delivered in English, there is a limitation for participants. Therefore, there is a need to find ways to ensure that scholarships benefit more beneficiaries.

Lastly, there is a need to make efforts to contribute to the development of developing countries through scholarships. Scholarships provide learning opportunities for individuals but ultimately aim to provide further benefits by contributing to the achievement of development goals. Where developed countries offer scholarships to students from developing countries, these should be structured to build the capability of the developing country (UNESCO, 2016). However, the Korean government's scholarship programs are not only intended to provide higher education opportunities for students from developing countries and contribute to the socio-economic develop-

ment of their home country but are also used to strengthen international educational exchange and as part of the Korean higher education strategy. Additionally, recent international student policies emphasize settling down in Korea after graduation. This approach has limitations in that it poses a risk of brain drain from developing countries. Therefore, it is necessary to find ways to overcome these limitations.

5. Conclusion

Even amid the COVID-19 pandemic, Korea provided uninterrupted education and flexible educational opportunities in a variety of ways, including untact distance education. To achieve, SDG 4 target 4.b goals, it is significant to think beyond from the traditional concept of scholarship support based on student mobility and consider ways to provide more flexible and diverse higher education opportunities to students in developing countries. For this, above all, it is necessary not only to increase the volume of scholarships but also to diversify the types of scholarships for international students from developing countries. All universities also need to participate in efforts to achieve the target 4.b, and at the same time the government should also support universities' efforts to attract international students from developing countries. In addition, in order for international students from developing countries to increase their expertise through studying in Korea and ultimately grow into professionals who contribute to the development of their home countries, a supportive plan needs to be established carefully for the entire process from the students' selection to return to their countries. Through these efforts, the Korean government will be able to contribute to achieving the SDG 4 target 4.b as well as SDG 4-Education 2030.

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Monitoring SDG 4 Target 4.c.

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1. Introduction

Teachers are pivotal agents in the transition to the future of education and in the innovation of the education system. In recognition of this, the Republic of Korea has proactively revamped teacher education programs and bolstered support and training for both current and prospective educators. These efforts aim to equip teachers with the necessary expertise and competencies for the evolving landscape of education.

2. Adaptation and Monitoring of SDG 4 Target 4.c. and Indicators

Korean law mandates that all teachers undergo pre-service and in-service training. As a result, Korea has successfully achieved the goal outlined in Target 4.c.1 of SDG 4: ensure 100% of teachers possess the minimum required qualifications for pre-primary, primary, lower secondary, and upper secondary education. With this baseline achievement secured, the country now focuses on enhancing the qualitative aspects of target 4.c nationally. By identifying priority areas for action within the country, Korea is taking significant steps toward achieving its educational goals for quality education at all levels.

<Table 1> *Implementation and Adaptation of SDG 4 Target 4.c in Korea*

SDG 4.c		Priority Areas for National Action	
Benchmark indicator	Progress	National Indicators	Goal for 2030
4.c.1 Proportion of teachers with the minimum required qualification in (i) pre-primary, (ii) primary, (iii) lower secondary, and (iv) upper secondary education	Achieved (100%)	Pupil-qualified teacher ratio in (i) primary, (ii) lower secondary, and (iii) upper secondary education	Decrease
		Proportion of childcare teachers with ISCED 5 or higher	Increase
		Number of students with special needs per special education teacher	Decrease
		Deployment rate of counseling teachers in primary and secondary schools	100%

3. Monitoring Progress of SDG 4 Target 4.c.

1) Progress toward Benchmark Indicator for Target 4.c

The 4.c.1 indicator for Korea was not initially reflected in the SDG 4 database, due to the lack of an internationally agreed-upon definition of qualified teachers and insufficient data available. Certain OECD countries, however—including Korea, with its well-established teacher training system—consistently urged the UIS and OECD to incorporate this indicator. During the post-TCG meeting in March 2022, member countries reached an agreement to gather metadata on "trained" and "qualified" teachers, including national definitions, the minimum ISCED qualifications required for teaching at each educational level, and minimum pre-service practice requirements (UNESCO, 2022). As a result, the data now reflect Korea's achievement of 100% across all ISCED levels, since Korean law mandates pre-service teacher education and in-service training.

Though Korea has met the SDG 4.c.1 indicator target, continued efforts are still needed to enhance teacher quality across all education levels. Korea

has a strong number of high-quality teachers at the primary and secondary levels. However, there is a shortage of childcare teachers at ISCED 0, as well as special education teachers and counselors within schools. Additionally, the qualification requirements and duration of pre-service education for childcare teachers are relatively low compared to other education levels. As national priorities, Korea has set goals to 1) reduce the pupil–teacher ratio in primary and secondary education, 2) increase the proportion of childcare teachers with qualifications of ISCED 5 or higher, 3) decrease the pupil–teacher ratio for special needs students, and 4) increase deployment of counseling teachers in primary and secondary schools.

This section provides an overview of the implementation status for each of these indicators as national priorities for enhancing teacher quality in South Korea.

Pupil–teacher ratio

Securing an adequate number of teachers is essential to providing high-quality education. The pupil–teacher ratio is a vital indicator that sheds light on the allocation of educational resources and the availability of teaching personnel. A lower pupil–teacher ratio increases the likelihood that students will receive greater individual support and attention; therefore, Korea has consistently worked to reduce this ratio.

In terms of the pupil–teacher ratio, the Republic of Korea aimed to reach the OECD average for both primary and secondary education by 2022 (Park et al., 2019). This goal has been achieved at the secondary level, with a decline in the school-age population. As of 2020, however, the pupil–teacher ratio for primary education still exceeds the OECD average and the average for high-income SDG countries, which stands at 14.4. Thus, it is imperative to continue securing a greater number of primary school teachers.

<Table 2> *Pupil-Qualified/Trained Teacher Ratio (ISCED 1-3)*

Year	2015	2016	2017	2018	2019	2020
Primary	16.6	16.3	16.3	16.4	16.5	16.2
Lower secondary	15.1	14.2	13.6	13.1	12.7	12.9
Upper secondary	13.9	13.6	13.0	12.1	11.3	10.8

Source: SDG 4 database.

According to the "Mid- and Long-Term Teacher Recruitment Plan (2024–2027)," unveiled in 2023, the Ministry of Education expects the pupil–teacher ratio and average class size in primary schools to fall below the OECD average by 2027. This will significantly improve the educational environment. Furthermore, as part of the national agenda to "Strengthen National Educational Responsibility," additional remedial teachers will be deployed for grades 1–2 in primary schools where learning gaps have been identified, to provide tailored support for foundational skills (Ministry of Education, 2023a).

The government is actively recruiting the teaching staff needed not only to improve the pupil–teacher ratio but also to implement key national initiatives, including enhancing balanced regional development, strengthening national educational responsibility, and fostering digital skills (Ministry of Education, 2023a).

Childcare Teachers for ECEC Services

In Korea, early childhood education and care (ECEC) operates under a dual system, with separate legal foundations, governing bodies, teacher qualifications, and training systems for kindergarten and childcare teachers. Kindergarten teachers are governed by the Ministry of Education under the Early Childhood Education Act. They obtain teaching certification by completing teacher training programs at ISCED level 5 or 6. In contrast, childcare teachers are governed by the Ministry of Health and Welfare under the Child Care Act. They attain teaching certification after completing one, two, or four years of teacher training. Though childcare teachers may also hold qualifications at

ISCED 5 or 6, individuals with an ISCED 3 diploma or equivalent and who have completed specific childcare teacher training courses are also eligible for this role.

This bifurcated system has led to disparities in qualifications between kindergarten and childcare staff. As of 2021, 60.9% of kindergarten staff had completed at least a bachelor's degree, compared to just 27.7% of childcare teachers. Furthermore, 25.9% of childcare teachers obtained their qualifications through one-year courses, and 40.7% were qualified through two-year college programs (Yang et al., 2021).

To improve early childhood education quality and minimize gaps between institutions (kindergarten or childcare center), Republic of Korea has set a goal of continually increasing the proportion of childcare teachers with ISCED 5 or higher qualifications by 2030. As evidence of progress toward this objective, the percentage of childcare teachers with ISCED 5 or above rose from 77.2% in 2015 to 82.8% in 2021.

<Table 3> *Proportion of childcare teachers with qualifications of ISCED 5 or higher*

Year	2015	2018	2021
	77.2	77.1	82.8

Source: Yang et al., (2021). Survey on the current status of nationwide childcare in 2021. Ministry of Health and Welfare.

Ensuring high-quality, universal early childhood education requires standardizing and raising qualification requirements for both kindergarten and childcare teachers, including a minimum of a bachelor's degree. This necessitates 1) developing a plan to upgrade existing teachers' qualifications through further education and in-service training, and 2) establishing a unified preservice training system that increases the minimum education level for all ECEC teachers. In particular, the current credit-based certification system for childcare teachers needs reexamination, as those teachers receive a certificate by completing required credits, regardless of obtaining an early childhood

education degree. Because early childhood education quality depends significantly on teacher–child interactions, the credit approach should transition to a department-focused teacher preparation model (Na & Moon, 2003; Park et al., 2019).

Special Education Teachers

Despite a declining school-age population, the number of students with special education needs in Korea has risen annually, due to changing perceptions of disabilities and special education, along with expanded services. The number of special education students increased from 88,067 in 2015 to 103,695 in 2022; in addition, the proportion of special education students in mainstream schools (72.8%) now exceeds special schools—a trend that continues rising (Ministry of Education, 2022a). Given this, enhancing special and inclusive education quality requires more professional special education teachers.

In 2022, South Korea had 24,962 special education teachers—about 5% of all teachers (Ministry of Education, National Institute of Special Education, 2022). But only 1.1% of inclusive classroom teachers were certified in special education (Ministry of Education, National Institute of Special Education, 2019). Although regulations mandate inclusive education policies, and special classrooms in normal schools have grown significantly (Statistics Korea, 2022), recruitment of qualified teachers has been insufficient. In 2022, only 83.4% of the special education teacher quota was met (Ministry of Education, 2023b).

In response, Korea chose "Number of students with special needs per special education teacher" as an indicator, aiming to reduce it continuously by 2030. This ratio decreased from 4.4 in 2015 to 3.9 in 2022, a noteworthy downward trend.

<Table 4> *Number of students with special needs per special education teacher*

Year	2015	2016	2017	2018	2019	2020	2021	2022
ISC1-3	4.4	4.3	4.3	4.2	4.2	4.0	3.9	3.9

Source: Korean Education Statistics Service (kess.kedi.re.kr).

Ongoing efforts must be made to increase special education teacher placements in mainstream schools and enhance teacher professionalism and responsibility for inclusive education. As directed by the 6th Five-Year Special Education Development Plan (2023–2027), the government will work to implement inclusive education practically, including developing and disseminating inclusive education manuals by education level, creating teaching and learning content, and strengthening teacher capacity for effective inclusion (Ministry of Education, 2023b). Creating a stable inclusive environment in mainstream schools requires accountability among general teachers in eucating students with special needs. This necessitates greater emphasis on special education training for general teachers and more inclusive education support in mainstream classrooms.

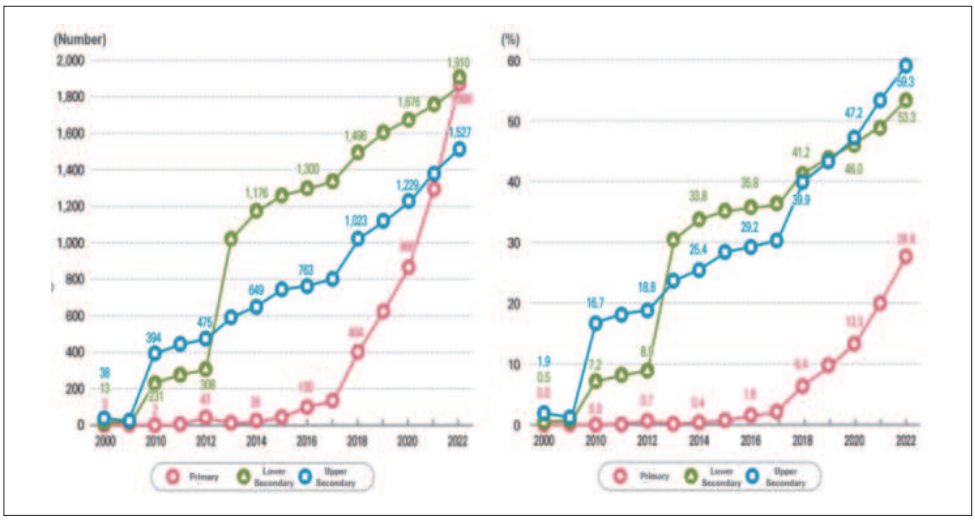
Counseling Teachers

It is vital to strengthen protective and support systems to address challenges that students face adapting to changing school environments. As part of integrated school safety efforts, the Korean government operates the Wee (We + Emotion + Education) Project to identify and support vulnerable students. The government is also increasing the number of school counseling teachers. South Korea plans to deploy specialized counseling teachers in all schools by 2030, monitored by the "deployment rate of counseling teachers in primary and secondary schools." As Figure 2 shows, the percentage of schools with counseling teachers rose substantially from 2015 to 2022—from 0.8% to 28.9% of primary schools, from 35.2% to 53.3% of middle schools, and from 28.4% to 59.3% of high schools (Ministry of Education, Korean Educational Development Institute, 2022a). However, these remain far below the desired level of 100%, indicating the need for still more counseling teachers.

Providing specialized counseling and support to vulnerable students is important for student welfare. Thus, the placement of counseling teachers who understand developmental characteristics and are capable of sensitively detecting students in crisis is needed.

<Figure 1> *Total number of counseling teachers by level of education (2000–2022)*

<Figure 2> *Deployment rate of counseling teachers by level of education (2000–2022)*



Source: Korean Education Statistics Service (kess.kedi.re.kr).

Note : Deployment rate of counseling teachers = (Number of schools with at least one counseling teacher Total number of schools) x 100.

2) Progress toward Other Indicators for Target 4.c

Within the framework of Target 4.c, which encompasses four key concepts—qualification (4.c.3 and 4.c.4), training (4.c.1 and 4.c.2), motivation (4.c.5 and 4.c.6), and support (4.c.7)—this section will review "motivation," evaluated through teacher salary and attrition, and "support," assessed through in-service training.

Teacher Salary and Attrition Rate (4.c.5 & 4.c.6)

Attracting and retaining high-quality teachers is vital to enhancing the

standard of education, and salaries play a significant role in drawing these professionals to the teaching profession (OECD, 2005). In Korea, teachers are selected through a competitive examination process, resulting in higher salary levels than for other professions with equivalent educational background. However, this salary gap narrows as education level rises, because more teachers at advanced levels acquire higher qualifications, as shown in Table 6.

<Table 5> *Average teacher salary relative to other professions requiring a comparable level of qualification, by education level*

SDG 4 4.c.5	2017	2018	2019	2020	2021
Pre-primary	1.41	-	1.30	1.29	1.27
Primary	1.41	-	1.25	1.24	1.22
Lower secondary	1.41	-	1.22	1.22	1.20
Upper secondary	1.39	-	1.19	1.19	1.19

Source: SDG 4 database.

<Table 6> *Educational attainment of teachers by level of education*

	Pre-primary				Primary				Lower secondary				Upper secondary			
	ISC 5 or below	ISC6	ISC7	ISC8	ISC 5 or below	ISC6	ISC7	ISC8	ISC 5 or below	ISC6	ISC7	ISC8	ISC 5 or below	ISC6	ISC7	ISC8
2017	45.3	39.9	13.9	0.9	0.5	70.0	28.8	0.8	0.3	62.3	36.4	1.1	0.2	60.0	37.9	1.9
2018	44.3	40.7	14.0	1.0	0.4	69.6	29.2	0.8	0.3	62.5	36.1	1.1	0.2	60.4	37.5	1.9
2019	43.0	41.6	14.4	1.0	0.4	69.4	29.4	0.8	0.3	63.3	35.4	1.1	0.2	61.1	36.9	1.8
2020	40.8	43.8	14.5	1.0	0.4	69.5	29.3	0.8	0.2	64.1	34.6	1.1	0.2	62.1	35.9	1.8
2021	39.1	44.9	15.0	1.0	0.4	69.1	29.7	0.9	0.2	64.3	34.4	1.1	0.2	62.4	35.7	1.8

Source: Ministry of Education, Korean Educational Development Institute, 2022b.

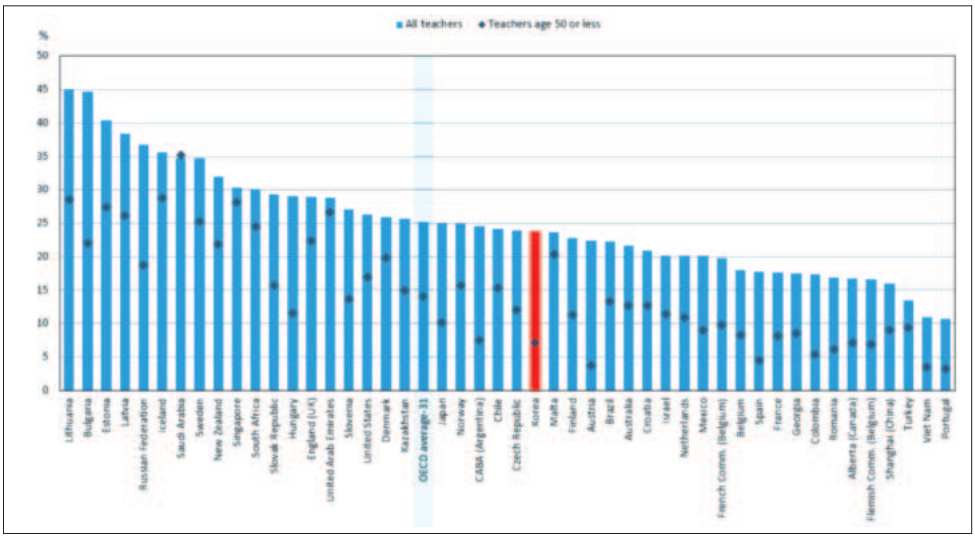
Compared to other professions in Korea, the teaching profession offers unique benefits, such as guaranteed status and job stability, thanks to the Education

Public Servant Law and other related laws. Additionally, as teachers progress in their careers, they can achieve advanced qualifications that lead to higher salaries (Kim & Han, 2002). Because of such stable working conditions, the teaching profession has been very attractive in Korea, and teacher attrition has not traditionally been a concern domestically (Park et al., 2019). Recent data, however, show a continuous, albeit small, increase in teachers leaving their positions due to early retirement, career changes, health, marriage, etc. (Ministry of Education, Korean Educational Development Institute, 2022a).

Though no data are currently available for the teacher attrition (4.c.6) indicator, TALIS 2018 results suggest the risks of teacher attrition. Figure 2 shows the percentage of teachers who responded that they intend to leave the teaching profession within five years. The data indicate that 23.8% of Korean teachers intend to leave teaching within five years, slightly below the 25.1% OECD average. Considering Korea's high job stability and guaranteed retirement for teachers, this figure seems high. Korean teachers also have relatively lower job satisfaction, and more regret their career choice (OECD, 2020), which underscores the need for attention to teacher attrition.

<Figure 3> *Teachers wanting to leave teaching within the next five years*

Percentage of lower secondary teachers wanting to leave teaching within the next five years



Source: OECD, TALIS 2018 Database, Table II.2.63.

Teacher attrition should be taken seriously, as it may lead to an imbalance in teacher supply and thus a decline in the quality of school education. Therefore, it is essential to explore ways to collect available data on the "Teacher Attrition (4.c.6)" indicator and monitor it from a policy perspective.

Professional Development of Teachers (4.c.7)

Korea emphasizes teacher professional development. According to TALIS 2018, 99.2% of primary and 97.8% of lower secondary teachers participated in at least one professional development activity in the previous 12 months, exceeding the 94.5% OECD average (OECD, 2019).

<Table 7> *Percentage of teachers who received in-service training in the last 12 months*

	Primary			Lower secondary		
	M/F	M	F	M/F	Male	Female
2018	99.2	-	-	97.8	96.0	98.7

Source: SDG 4 database.

Two types of in-service training programs are generally available for Korean primary and secondary school teachers: qualification training programs and expertise training programs (Ministry of Education, 2022b). One notable qualification training is the Grade I certificate teacher program. To attain this, in-service teachers with a minimum of three years of experience must complete a rigorous professional development program, exceeding ninety hours, during school breaks. This comprehensive program covers areas such as assessment, leadership, and classroom management. Acquiring a Grade I certificate can elevate teachers to senior roles. Participation is not mandatory, but most Korean teachers pursue and attain this qualification.

In addition, Korean teachers are required to develop their expertise by participating in professional development programs. These programs focus on refining subject content knowledge, strengthening teaching methodologies,

and introducing emerging competencies to meet evolving needs. In light of the post-pandemic shift toward digitalization, for example, the Korean government has advocated for developing and implementing pre-service and in-service teacher training programs that emphasize digital competencies (Ministry of Education, 2022b).

4. Current Issues in Regard to Implementation of SDG 4 Target 4.c

The COVID-19 pandemic has prompted significant transformations in the format, spaces, and instructional methods within education. There has been a shift from predominantly in-person teaching models to a blended approach, integrating offline and online teaching methods to enhance personalized learning for students. The concept of the classroom has also expanded to encompass various learning environments beyond the traditional school setting, such as homes and communities.

In response to these shifts in the educational environment, the Korean government has taken steps to enhance the digital competencies of teachers. For instance, all teachers now have the opportunity for in-service training in the use of smart devices for remote teaching, remote communication skills, and digital ethics. Additionally, the methods of teacher training are evolving, with a growing emphasis on remote training systems that leverage digital technologies. This includes expanding nontraditional learning approaches like micro-learning and real-time interactive remote training, all intended to elevate the quality of teacher training (Ministry of Education, 2023a).

5. Future Tasks

As highlighted in UNESCO's "Futures of Education," teachers play a pivotal role in transforming education. To enhance teachers' expertise and competencies, it is important to have a comprehensive understanding of indi-

vidual students and the skills required for future educational paradigms. Therefore, policies that actively promote robust support and training for educators should be a priority. The Korean government's initiatives involve strengthening the content knowledge related to digital competencies in the teacher education curriculum and fostering voluntary teacher-learning communities, where teachers can exchange information and share their experiences to enhance the delivery of high-quality education.

Fostering social cooperation is essential to ensuring the continuity of educational activities and safeguarding teachers' teaching practices. To achieve this, the Korean government plans to increase the number of non-teaching staffs such as counseling teachers, and reduce the administrative burdens on teachers, allowing them to focus on their core teaching activities. Policy efforts will also be directed toward retaining high-quality teachers within the profession. This includes exploring data collection methods for "Teacher Attrition (4.c.6)" rates.

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Annex: *Relevant regulatory document, references and stakeholders and their responsibilities by SDG 4 targets and indicators*

SDG 4 target	SDG 4 indicator	Name and hyperlink of the relevant policy, strategy, other regulation	Key references in the policy/ strategy/regulation which address the target/indicator	Responsible stakeholder	Type of responsibility	Key Achievement	Challenges	Data sources
4.c	4.c.1	Elementary and Secondary Education Act Early Childhood Education Act Teacher Qualification Ordinance	Under Section 21. 2 of the Elementary and Secondary Education Act and Section 22.2 of the Early Childhood Education Act, teachers must meet certain criteria and earn a certificate awarded by the Minister of Education as prescribed by Presidential Decree.	Ministry of Education	-	Indicator values (100%) reflected in the SDG 4 database	-	Elementary and Secondary Education Act & Early Childhood Education Act

Monitoring SDG 4 in Regard to Digital Transformation in Education

Kiwoong PARK (*Korea Education and Research Information Service*)

1. Introduction

The Korea Education & Research Information Service (KERIS) has been conducting annual surveys on the status of digital education transition in schools. Analyzing the data from 2020 to 2022 using education statistics (and the Education Information Statistics System (EDS), it was observed that the number of digital devices for each student has steadily increased since the onset of the COVID-19 pandemic. In 2020, there were approximately 0.2 digital devices per student, in 2021 it increased to 0.25, and by 2022, it reached 0.34. Similarly, the number of digital devices per teacher also saw an increase, with 1.54 devices per teacher in 2020, 1.92 in 2021, and 1.97 in 2022 (KERIS, 2022a). This indicates a continuous growth trend in the digital device availability for schools post-COVID-19. Furthermore, indicators related to digital education in school settings have been gradually improving. However, curriculum changes in schools are progressing at a slower pace.

KERIS has also been conducting annual assessments of digital literacy levels and policy support for enhancing digital competencies for students from the elementary school 4th grade to middle school 3rd grade level. The national-level digital literacy assessment consists of two main domains: ICT (Information and Communication Technology) and CT (Computational Thinking). The ICT domain includes five sub-domains: information exploration, information analysis and evaluation, information organization and creation, information

utilization and management, and information communication. The CT domain comprises two sub-domains: abstraction and automation. The national-level assessment of digital literacy among elementary and middle school students is conducted by sampling approximately 1% of students nationwide, taking into account factors such as regional scale, gender, and the number of students per class in 17 different regions. In the latest assessment, a total of 11,595 students from 229 elementary schools and 14,770 students from 217 middle schools participated (KERIS, 2022b).

The results of the survey showed that the digital literacy scores of Korean students have continued to improve compared to the period before the COVID-19 pandemic. In 2022, the average digital literacy scores (equivalent scores) were 17.67 for elementary school students and 17.13 for middle school students. Overall, both elementary and middle school students demonstrated consistently higher digital literacy test scores in the 2022 assessment, following trends observed in 2019 and 2021, which indicates a steady increase in the literacy levels of students.

2. Adaptation and Monitoring of Digital Tranformation in Regard to SDG 4

(Cross-cutting)

	Goals
SDG 4	The traditional independent focus of ICT, which was previously considered a standalone field, has transitioned into a cross-cutting field. This means that ICT is no longer confined to being a standalone discipline but rather plays a role in all areas, including environmental, women's rights, and human rights. ICT now has the responsibility of providing the foundational or infrastructure support needed across all sectors. Furthermore, as a cross-cutting field, ICT not only provides the basics in all areas but is also able to take a leading role for each sector to effectively and efficiently achieve its respective goals.
K-SDG	As a cross-cutting field, ICT provides the foundational technology required for various key areas. It also promotes existing business processes to enhance efficiency, creates new processes, and develops new projects to play a central role in each sector's mainstreaming efforts.

	SDGs 4 Indicators	K-SDGs
Governance (Policy/Institutional/ Financial)	4.b.1 Volume of official development assistance flows for scholarships by sector and type of study	1.1. Whether or not master plans for periodic national education have been established. 1.1.2. The existance of national institutions responsible for promoting education informatization policies. 1.2.1. The percentage of education budget in the national budget. 1.2.2. The percentage of education informatization budget in the national education budget.
Infrastructure (Accessibility)	4.1.1 Proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex 4.2.1 Proportion of children aged 24-59 months who are developmentally on track in health, learning and psychosocial well-being, by sex 4.2.2 Participation rate in organized learning (one year before the official primary entry age), by Sex 4.a.1 Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all + 5.b.1 The percentage of individuals who own a mobile phone (by gender).	2.1. Overall status of digital device distribution. 2.2. Distribution status of digital devices in schools. 2.3. Status of wireless internet installation in schools. The number of digital devices per student. The number of digital devices per teacher. Trends in the number of digital devices owned by cities/provinces.

Digital Capability (Learner)	4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill 4.6.1 Proportion of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex	The digital literacy level. The frequency of digital device usage. Attitudes towards digital device usage. 3.3.1. The overall frequency of digital devices usage at school. 3.3.2. The frequency of digital device usage for educational purposes at school. 3.3.4. The frequency of digital device usage for educational purposes outside of school. 3.3.5. The frequency of digital device usage for non-educational purposes outside of school. 3.2. The number of hours spent digital device usage for curriculum-related lessons during a week. Digital literacy competency index.
Human Resources (Teachers and Staffs)	4.c.1 Proportion of teachers in: (a) pre-primary; (b) primary; (c) lower secondary; and (d) upper secondary education who have received at least the minimum organized teacher training (e.g. pedagogical training) pre-service or in-service required for teaching at the relevant level in a given country	4.1.1. Whether digital devices are being used. 4.1.2. Use of digital devices for education. 4.2. Support for teachers' use of digital devices. 4.3. Teachers' self-efficacy regarding digital devices.

As an SDG 4-Education 2030 objective, cross-cutting ICT (Information and Communication Technology) is becoming increasingly important in all areas of education, including early childhood, primary, secondary, vocational education and training, and lifelong learning. Previously, ICT was an independent focal

area, but it has now been designated as a cross-cutting field that extends its involvement to all areas, including environment, gender, and human rights. ICT is no longer confined to a single field; it plays a role in providing essential foundations or infrastructure needed in all areas. Furthermore, as a cross-cutting field, ICT not only provides the foundation in all areas but also takes a proactive role in leading each field to achieve its goals effectively and efficiently (UNESCO, 2015).

3. Monitoring Progress toward SDG 4 in Regard to Digital Transformation in Educatiom

The analysis framework was derived consisting of the following components: Governance (Policy/Institutional/Financial), Infrastructure Environment (Accessibility), Digital Competence (Learners), Human Resources (Teachers and Staff).

Classification	Implementation Status Framework
Governance (Policy/Institutional/ Financial)	A system of collaboration and policy, institutional, and financial support among various stakeholders, including the Ministry of Education, other ministries and institutions, local education authorities, etc., in the establishment and execution of educational information policies.
Infrastructure (Accessibility)	Various environmental factors that enable users of educational information to access and utilize resources as needed.
Digital Capability (Learner)	Indicators that diagnose the state of educational information technology, which can be used in policy formulation or policy effectiveness analysis.
Human Resources (Teachers and Staffs)	Indicators to assess the availability of teachers with digital competence, i.e., human resources, which play a crucial role in educational information technology.

1) Progress toward Governance (Policy/Institutional/Financial)

Policy/ Institutional

Governance defines educational informatization policies and related laws and systems and refers to social coordination methods between various entities such as the Ministry of Education, other ministries and agencies, and local education authorities to ensure financial support for actual implementation (KERIS, 2020).

In Korea, educational informatization refers to informatization in the educational field and was started as part of the national informatization policy (InWoo Park, 2017). With the completion of the basic plan for educational informatization (5th), which is established every five years, the Ministry of Education sought to drive systematic and efficient educational informatization by presenting future goals through the establishment of the 6th basic plan for educational informatization (2019-2023).

Korea has established an implementation plan every year to specify the informatization project and ensure timeliness by operating (deliberation and resolution) the 'Education Informatization Committee (name to be confirmed)'. Korea is promoting the 6th Basic Plan for Educational Informatization with the purpose of realizing a people-centered future intelligent education environment and is carrying out 13 major policy tasks in 4 areas. The future promotion strategy is creating an ICT future education environment that realizes dreams and hopes, sustaining innovation in educational informatization encompassing elementary, middle, and higher education, providing customized educational services for an equal start with ICT, and (sharing) Type) Building a digital infrastructure to promote communication and sharing of educational information.

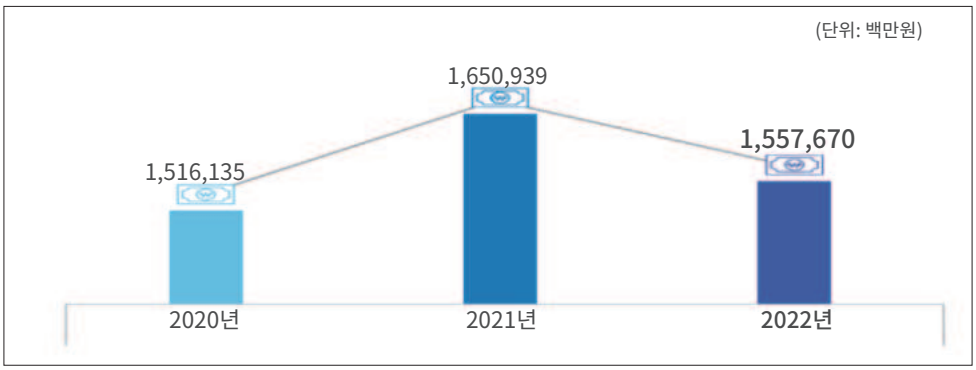
Budget

Last February, moreover, the Ministry of Education presented 'all teachers using edutech to realize customized education for everyone' as the education

vision for the digital era. And as a roadmap to realize this, the 'Digital-based Education Innovation Plan' was announced (February 23), and the government is concentrating its capabilities to transit to a digital education system, including digital education innovation as one of the three major education reform policies (Ministry of Education, 2023).

The 2022 budget is for a total of 31 organizations, including the Ministry of Education and its affiliated/affiliated organizations, 851 projects, and approximately KRW 1.5576 trillion. The budget related to the supply of school smart devices, which was increased in 2021, decreased overall in 2022.

<Figure 1> *The state of the ICT in Education Budget (Unit: millions of KRW) (KERIS, 2022a)*



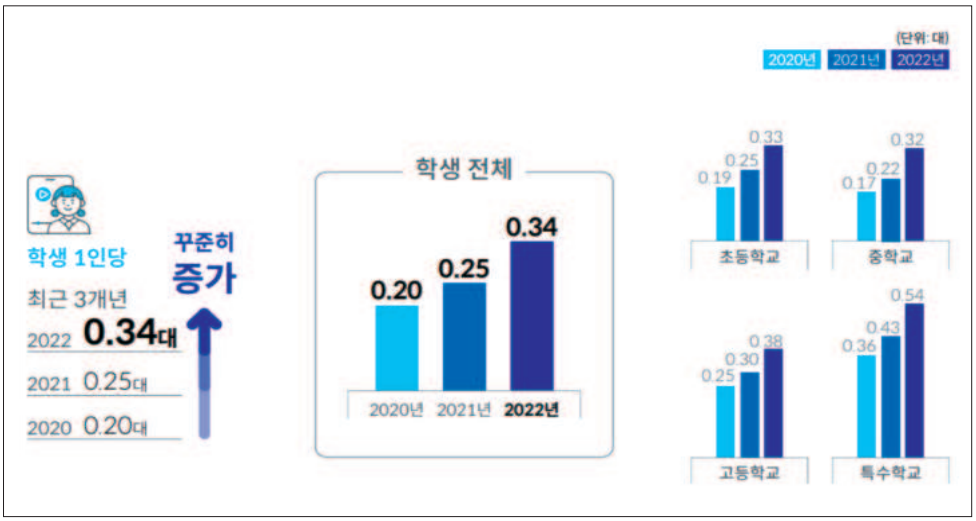
Korea's efforts to improve the digital education environment and increase the distribution of digital devices in schools reflect a commitment to advancing educational informatization. These investments are likely to have a positive impact on students' access to technology and support the integration of digital tools into the education system. Monitoring and assessing the impact of these initiatives will be crucial to ensure that they contribute effectively to educational outcomes.

2) Progress toward Infrastructure Environment (Accessibility)

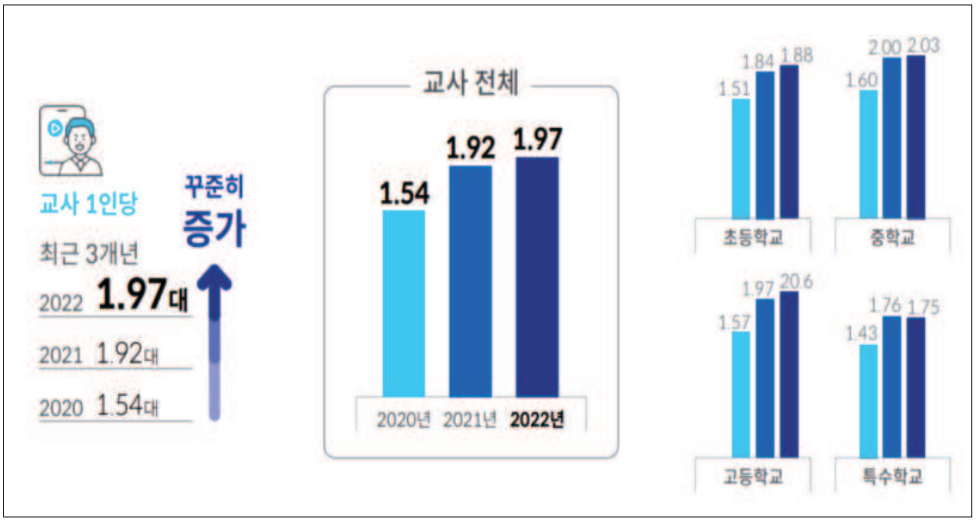
The Korea Education and Research Information Service (KERIS) has been con-

ducting annual surveys on the status of digital education conversion in elementary and middle schools. By inves tigating the educational informatization environment, we have provided basic data for policy est ablishment and digital conversion performance diagnosis according to changes in the digital edu cation environment, and have continuously managed related indicators.

<Figure 2-1> *Number of digital devices per student (KERIS, 2022a)*



<Figure 2-2> *Number of digital devices per teacher (KERIS, 2022a)*



As for the current status of digital device distribution, over the past three years (2020-2022), the total number of digital devices in schools has steadily increased to 2,020,609 in 2020, 2,470,781 in 2021, and 2,954,631 in 2022. The number of digital devices owned per student was 0.20 in 2020, 0.25 in 2021, and 0.34 in 2022, and the number of digital devices owned per teacher was 1.54 in 2020, 1.92 in 2021, and 1.97 in 2022, showing a steady trend after the COVID-19 pandemic.

The School Net project in Korea has achieved remarkable success in improving internet accessibility and quality in schools, which has had far-reaching positive impacts on education. The results of the School Net project, which is part of major accessibility-related polcies, are as follows.

First, the speed of communication lines has become surprisingly fast. Second, the basic speed of the SchoolNet project is approximately 300Mbps, which has resulted in the implementation of a highquality dedicated network without being affected by regional environments. Lastly, through the SchoolNet project, schools are able to provide students with a highquality Internet education environment at a low price while paying 1/20th of the corporate network fee. As a result, the SchoolNet project had a significant impact in resolving the educational gap and improving environmental differences between regions by providing 'non-discriminatory educational opportunities' to students. Additionally, the SchoolNet project has had a significant positive impact on online learning. In fact, the Seoul Metropolitan Office of Education provides support for distance learning, such as wireless AP and WiFi router support, to schools through the SchoolNet service.

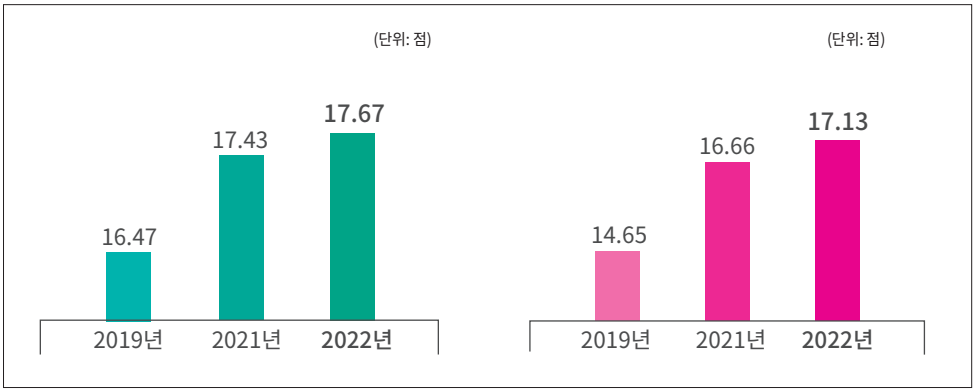
The School Net project in Korea has not only improved internet speed and access for schools but has also significantly contributed to bridging educational gaps and facilitating online learning. It serves as a successful model for how technology and infrastructure investments can enhance education accessibility, equity, and quality, aligning with the broader goals of improving education and providing equal opportunities for all students.

3) Progress toward Digital Capabilities (Learners)

The digital capabilities of Korean learners are an important indicator in the field of education in diagnosing the status of educational informatization, and are useful in establishing policies or analyzing the effects of policies through the analysis results of the indicators. When constructing indicators related to learners' digital capabilities, the data that needs to be examined most closely is the OECD's 2018 PISA data. PISA measures students' skills and knowledge in order to provide implications for developing students' capabilities. In addition to evaluating basic literacy (reading, mathematics, science, etc.)

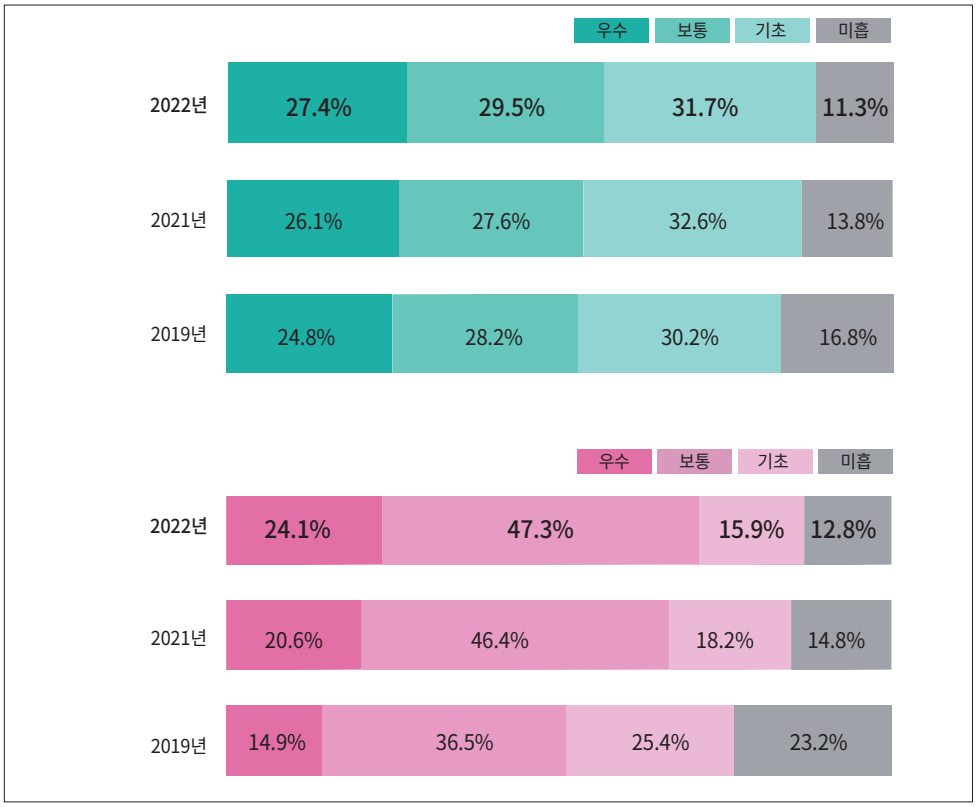
The Korea Education and Research Information Service (KERIS) conducts a digital literacy test every year for elementary and middle school students. As a result of comparing the distribution of digital literacy achievement levels over three years, the proportion of students at excellent levels steadily increased every year.

<Figure 3> *Comparing primary-lower secondary school students' digital literacy levels across years (KERIS, 2022a)*

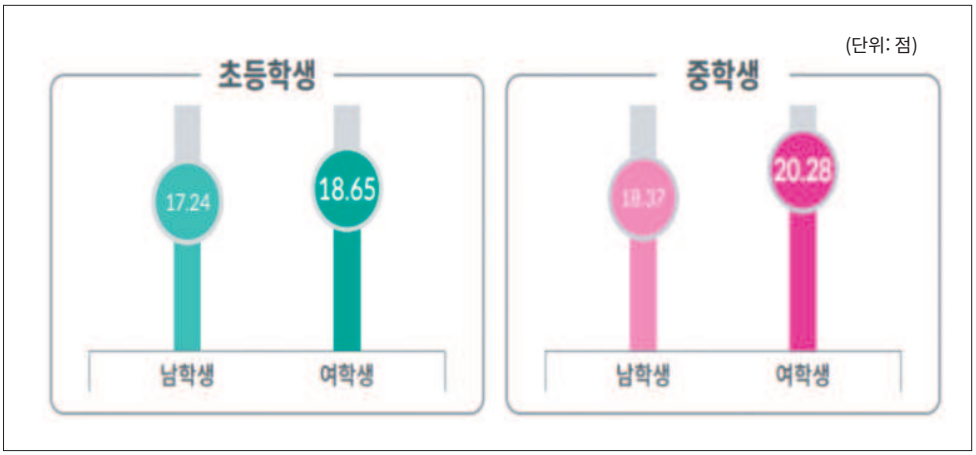


When the average digital literacy achievement of female students is significantly higher than that of male students, several factors could contribute to this disparity.

<Figure 4> *Comparing primary-lower secondary school students' achievement levels across years(KERIS, 2022a)*



<Figure 5> *Comparing primary-lower secondary school students' achievement levels upon genders (KERIS, 2022a)*

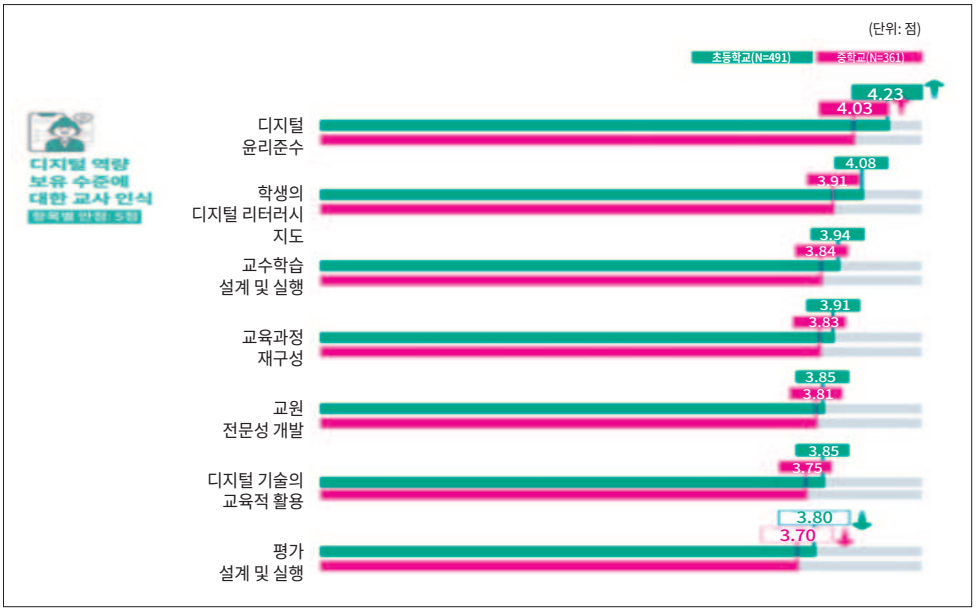


4) Progress toward Human Resources (Teachers and Staffs)

A teacher's digital competency is a critical factor in assessing the state of educational informatization and ensuring its success. Teachers with strong digital capabilities play a central role in effectively integrating technology into education and preparing students for the digital era.

Both elementary and middle school teachers evaluated their level of possession in the order of 'compliance with digital ethics' and 'guidance of students' digital literacy' as high, while 'assessment design and implementation' was evaluated lowest. In addition, overall, elementary school teachers appeared to have a higher perception of their capabilities in each item of teacher digital competency required in the era of digital transformation compared to middle school teachers.

<Figure 6> *Teacher perceptions of digital competency levels (KERIS, 2022a)*



For both elementary and middle school teachers, the demand for policy support for 'infrastructure support such as networks and devices for digital literacy education' was found to be the highest, followed by 'development and

free distribution of digital literacy textbooks and educational materials', and 'support for teacher professional development'. Demand for 'training support' was also high. Other responses included opinions such as 'securing human resources to manage digital devices', 'securing specialized digital literacy instructors', and 'training in basic computer skills'.

4. Current Issues (Impact of the COVID-19 Pandemic)

Amid the prolonged COVID-19 situation, social distancing measures, and the unprecedented shift to online learning, teachers voluntarily and enthusiastically shared remote teaching ideas and expertise. They engaged in creative teaching and collaborated with various stakeholders, including the Ministry of Education, relevant government agencies, local authorities, 17 regional education offices, and private companies, to provide tailored learning support for students in vulnerable groups, such as elementary school students, multicultural families, students with disabilities, dual-income families, and single-parent households.

Despite the support from both government and private sectors, the goal of ensuring inclusive and equitable quality education for all (SDG 4) and promoting lifelong learning opportunities faces challenges due to the ongoing COVID-19 pandemic. It is expected to result in learning disparities among students, differences in learning levels, and weakened learning opportunities. However, the experience of transitioning to full-scale online learning before COVID-19 was perceived as an improbable future classroom and learning environment. However, the transition has opened up new educational opportunities and laid the foundation for future education. It has also fostered a societal consensus that education must continue to be provided to our future generations under any circumstances. The mutual understanding and close collaboration among stakeholders, including teachers, students, and parents, have been instrumental. These experiences will serve as a crucial foundation for preparing for the era of coexistence with COVID-19 and the new normal that will follow the pandemic in our society.

5. Future Tasks and Conclusion

Of the SDG 4-Education 2030 goals, ICT (Information and Communication Technology) is increasingly recognized as essential across all levels of education, including early childhood, primary, secondary, higher education, vocational training, and lifelong learning. Particularly, SDG 4.4.1 addresses the importance of assessing how many young people and adults possess information technology skills and use them to access better job opportunities. However, ICT's significance now extends beyond employment-related issues and encompasses a role as a fundamental competency for everyday life across society. As the COVID-19 pandemic was prolonged and various sectors of society underwent rapid digital transformations, the impact of ICT as a foundational skill for essential aspects of life significantly grew. ICT competency gaps are not limited to differences in access to information but also extend to disparities in perception, and economic and cultural differences. These disparities have the potential to perpetuate societal inequalities, and it is crucial to pay closer attention to their structural implications.

The comprehensive digital policies of the government are being pursued through various initiatives such as the 2022 Education Information and Communication Technology (ICT) Implementation Plan, the Information Comprehensive Plan (2020-2024), the Convergence Comprehensive Plan (2020-2024), the National Artificial Intelligence Strategy, the AI Education Policy Direction and Key Tasks, the Digital Inclusion Promotion Plan, the Comprehensive Plan for Enhancing Digital Media Communication Competencies (Draft), and the EduTech and Digital Strategy Forum for Future Education.

Looking at South Korea from the perspective of SDG 4, efforts are being made to effectively apply ICT in the field of education to improve the quality and accessibility of education and address the issue of disparities. However, there are still challenges to overcome, and continuous efforts are required for improving ICT infrastructure and enhancing the digital skills of educators and learners.

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Annex

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Official List of SDG 4 Indicators

September 2023

FFA	Education 2030 Framework for Action
	Government expenditure on education as a percentage of GDP
Target 1.a	**By 2030, ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions**
1.a.2	Proportion of total government spending on essential services (education)
Target 4.1	**By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes**
4.1.0	Proportion of children/young people prepared for the future, by sex
4.1.1	Proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex
4.1.2	Completion rate (primary education, lower secondary education, upper secondary education)
4.1.3	Gross intake ratio to the last grade (primary education, lower secondary education)
4.1.4	Out-of-school rate (1 year before primary, primary education, lower secondary education, upper secondary education)
4.1.5	Percentage of children over-age for grade (primary education, lower secondary education)
4.1.6	Administration of a nationally representative learning assessment (a) in Grade 2 or 3; (b) at the end of primary education; and (c) at the end of lower secondary education
4.1.7	Number of years of (a) free and (b) compulsory primary and secondary education guaranteed in legal frameworks
Target 4.2	**By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education**
4.2.1	Proportion of children aged 24-59 months who are developmentally on track in health, learning and psychosocial well-being, by sex
4.2.2	Participation rate in organized learning (one year before the official primary entry age), by sex
4.2.3	Percentage of children under 5 years experiencing positive and stimulating home learning environments
4.2.4	Net early childhood education enrolment rate in (a) pre-primary education and (b) early childhood educational development
4.2.5	Number of years of (a) free and (b) compulsory pre-primary education guaranteed in legal frameworks

Target 4.3	**By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university**
4.3.1	Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex
4.3.2	Gross enrolment ratio for tertiary education by sex
4.3.3	Participation rate in technical-vocational programmes (15- to 24-year-olds) by sex
Target 4.4	**By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship**
4.4.1	Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill
4.4.2	Percentage of youth/adults who have achieved at least a minimum level of proficiency in digital literacy skills
4.4.3	Youth/adult educational attainment rates by age group and level of education
Target 4.5	**By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations**
4.5.1	Parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflict-affected, as data become available) for all education indicators on this list that can be disaggregated
4.5.2	Percentage of students in a) early grades, b) at the end of primary, and c) at the end of lower secondary education who have their first or home language as language of instruction
4.5.3	Existence of funding mechanisms to reallocate education resources to disadvantage populations
4.5.4	Expenditure on education per student by level of education and source of funding
4.5.5	Percentage of total aid to education allocated to least developed countries
4.5.6	Expenditure on education by source of funding (public, private, international) as a percentage of GDP
Target 4.6	**By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy**
4.6.1	Proportion of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex
4.6.2	Youth/adult literacy rate
Target 4.7	**By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and nonviolence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development**
4.7.1	Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies, (b) curricula, (c) teacher education and (d) student assessment
4.7.2	Percentage of schools that provide life skills-based HIV and sexuality education

4.7.3	Extent to which green policy intentions are mainstreamed in curriculum documents
4.7.4	Percentage of students in lower secondary education showing adequate understanding of issues relating to global citizenship and sustainability
4.7.5	Percentage of students in lower secondary showing proficiency in knowledge of environmental science and geoscience
Target 4.a	**Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all**
4.a.1	Proportion of schools offering basic services, by type of service
4.a.2	Percentage of students experiencing bullying in the last 12 months in a) primary, and b) lower secondary education
4.a.3	Number of attacks on students, personnel, and institutions
4.a.4	Proportion of school attending children receiving school meals
Target 4.b	**By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries**
4.b.1	Volume of official development assistance flows for scholarships by sector and type of study
Target 4.c	**By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States**
4.c.1	Proportion of teachers with the minimum required qualifications, by education level
4.c.2	Pupil-trained teacher ratio by education level
4.c.3	Percentage of teachers qualified according to national standards by education level and type of institution
4.c.4	Pupil-qualified teacher ratio by education level
4.c.5	Average teacher salary relative to other professions requiring a comparable level of qualification
4.c.6	Teacher attrition rate by education level
4.c.7	Percentage of teachers who received in-service training in the last 12 months by type of training

National Consultative Group on Education 2030

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SDG 4 Midterm, Rep.of Korea

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