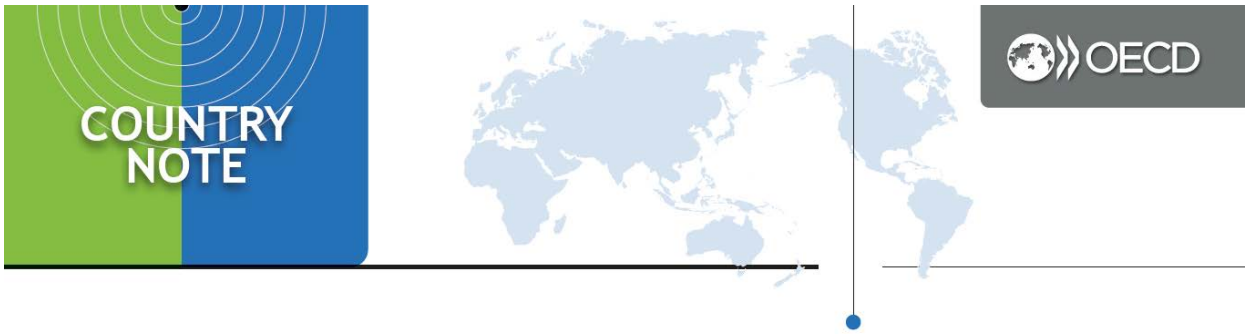


The Early Childhood Education and Care in a Digital World project was initiated to support countries and jurisdictions in investigating ways in which early childhood education and care (ECEC) can respond to digitalisation, harnessing opportunities to promote high-quality and equitable ECEC while minimising associated risks. The evidence base for the project includes responses to a policy survey, a collection of case studies across participating countries and jurisdictions, literature reviews from academic experts, and desk-based research carried out by the OECD Secretariat. The project's final report, *Empowering Young Children in the Digital Age* (2023[1]), was published as part of the OECD Starting Strong series.

Six countries (Canada, Finland, Japan, Korea, Norway and Sweden) engaged more actively in the project and its data collection. This country note provides an overview of key findings from the project as they relate specifically to digitalisation challenges and ECEC policy responses in Korea.

The report and country notes apply standardised age groups to present information for all participating countries and jurisdictions. These age groups have been standardised by the OECD and may not correspond exactly to the organisation of participating ECEC systems.

Korea

Key findings

- Protection from digital risks, including privacy and the prevention of unhealthy physical habits and socio-emotional problems, is a key theme among the policy priorities relating to digitalisation and young children in Korea, where the greatest challenge in the ECEC sector is the preparation of ECEC professionals to use digital technologies safely and responsibly in their pedagogical work. However, policy challenges relating to the meaningful and equitable use of digital technologies are also significant in Korea, such as reducing inequalities in access to digital technologies, helping young children use these technologies actively and creatively, or improving the digital infrastructure of ECEC settings and the integration of data systems. These reflect a broader range of priorities than many other countries whose reported challenges are most commonly risk oriented.
- To reduce digital risks, Korea has formally regulated standards for providers of digital services and content that may be accessed by young children. However, in Korea there are no oversight bodies with responsibilities for monitoring how young children are protected in the digital environment nor specific standards on the processing of young children's data, which are common in other countries. The Korean government has also issued guidance for families on how to minimise digital risks and how technology can be used for educational purposes at home, but similar recommendations have not been established for ECEC staff.
- Korea's *Nuri Curriculum* recognises digitalisation as a key trend shaping young children's development and sees digital technologies as one among many tools to be used in ECEC. Areas of early digital literacy to be covered with young children include digital risks and healthy habits, which is similar to most other curricula for 3–5-year-olds. When using digital

technologies with young children, the *Nuri Curriculum* advises ECEC staff to use a range of pedagogical approaches, including play-based, project-based, and cooperative and collaborative pedagogies.

- In Korea, initial preparation programmes for ECEC teachers often include a range of digital competencies, from basic operational skills to identifying digital risks and opportunities, making digital educational materials, and assessing learning with digital tools. Pre-service ECEC teachers are also generally trained in how to help young children create content, collaborate and solve problems with digital technologies, in a safe and responsible way. However, there are no formal pre-service nor in-service training requirements relating to digital competences for any types of ECEC staff at the national level.
- A range of digital tools are commonly used by kindergarten settings to communicate with families in Korea, which was the only country to report that all 7 of the means of communication included in the *ECEC in a Digital World* policy survey are used in over two-thirds of ECEC settings.
- Korea provides a wider range of support structures to tackle digital inequalities than most other countries and jurisdictions with comparable data. These include general funding measures for vulnerable children and targeted allocations of digital infrastructure and materials for families and ECEC settings in charge of children with special education needs, as well as special programmes on digital literacy for young children from minority communities and additional digital infrastructure for ECEC settings in remote areas.
- Korea's ECEC data system is one of the most comprehensive among those reported by countries in the ECEC in a Digital World policy survey, covering many data elements on children, staff, and settings. As setting-level data from all ECEC settings can be linked to both child-level and staff-level data, the data system constitutes a very useful resource for research and evidence-based policy making.

Context

Digitalisation is one of the major forces behind ongoing transformations in the world of education. On the one hand, education systems are redesigning their curriculum frameworks to respond to the challenges and opportunities of a digitalised and globalised world. On the other hand, digital technologies are increasingly permeating teaching and learning as well as monitoring and quality assurance processes. ECEC is becoming increasingly exposed and responsive to the digital transformation, in part spurred on by the experience of the COVID-19 pandemic.

In Korea, 94% of children aged 3 to 5 were enrolled in ECEC in 2020 compared to an OECD average of 83% although on average across OECD countries an additional 4% attended primary school at this age. Among children under age three, 63% were enrolled in early childhood education in Korea compared to an OECD average of 27%. In Korea, 79% of children across the ECEC age group attended private institutions in 2020, compared to 32% across the OECD (OECD, 2022[2]).

Across OECD countries, young children are using digital technologies in home environments with increasing frequency and intensity, for many different activities, and often but not exclusively in combination with or under the supervision of parents. In Korea, one study of parents conducted in 2015-16 suggested that over 96% of families with children aged 2 to 5 owned a TV, 97% owned a smartphone, and 48% owned a tablet. The median time children spent watching TV was 1.5 hours a day on weekdays, whilst 0.8 hours was spent on tablets and 0.6 hours was spent on smartphones. This increased significantly to 2 hours of TV on weekdays, 1.3 hours on tablets, and 1.1 hours on smartphones in the third wave of the study conducted in 2017-18 (Lee et al., 2019[3]).

As countries look to ensure that ECEC responds effectively to trends in young children's experiences of digital technologies and builds on the potential of digital technologies to strengthen quality, efforts may be complicated by a diverse governance landscape across the sector. ECEC governance in Korea is ultimately the responsibility of the Ministry of Health and Welfare for children in childcare up to the age of 5, and the Ministry of Education for children in kindergartens between the age of 3 and 5. Responsibility for decisions related to digitalisation and ECEC lie mainly with national and regional authorities in most of the seven decision-making areas asked about in the *ECEC in a Digital World* policy survey. These included the design of curriculum and pedagogy frameworks, the professional development on digital competences for ECEC staff and centre leaders, and funding/budget for digital infrastructure and digital educational materials. Meanwhile, the choice of digital infrastructure and digital educational materials to be used in ECEC settings are under the remit of regional authorities only. ECEC centre leaders and/or staff are, however, expected to make decisions on approaches regarding the use of digital technologies to engage with parents and families in ECEC settings.

When it comes to ensuring policy responds to the potential implications of digitalisation for young children, and for ECEC specifically, responses to the *ECEC in a Digital World* policy survey indicate that risk-focused challenges dominate policy agendas. This is largely the case in Korea, where policy challenges of "high importance" regarding digitalisation and young children relate to the protection of young children's privacy and physical and socio-emotional health, as well as the reduction of inequalities in digital literacy and access to digital technologies. Nevertheless, the preparation of young children for the future of education and the integration of data systems for information sharing and cooperation across sectors serving young children and families are also issues of "high importance". Regarding digitalisation and ECEC specifically, the highest priority is to prepare ECEC professionals in Korea for the safe and responsible use of digital technologies in their pedagogical work. Based on key related challenges, suggested policy strategies emerge from the *ECEC in a Digital World* project that could support Korea when considering future policy directions (see Table 1).

Protecting children in a digital world

As young children's engagement with the digital world becomes broader and more intense, their exposure to risks and potential harms also grows. Young children may be more vulnerable to certain risks simply due to their age, but also to their specific digital habits and the different ways in which the adults in their lives mediate their digital interactions. For Korea, protecting children from such risks is high on the policy agenda: policy challenges related to the protection of privacy, and risks to physical and socio-emotional health were rated as being of "high" importance. With regards to ECEC specifically, policy challenges related to the safe and responsible use of digital technologies by ECEC staff and young children were identified as having "very high" and "high" importance.

Approaches to combatting digital risks have traditionally placed responsibility on users themselves, emphasising self-regulation and education as key protective strategies. Recognising the heavy burden placed on individual users and the unsuitability of such approaches for the youngest users, countries are increasingly looking to engage digital service providers in efforts to enhance children's safety in digital environments. In Korea, there are formally regulated standards for providers of digital services and content that may be accessed by young children (Box 1Box 1). Despite this, there are no oversight bodies with specific responsibilities for monitoring the protection of young children in the digital environment contrary to many other countries in the *ECEC in a Digital World* policy survey, which reported that such bodies exist, whether they are formally regulated entities (in 12 out of 26 cases) or bodies providing recommendations (in 5 out of 26 cases). There are also no standards on the processing of young children's data in Korea. Most other countries and jurisdictions (22 out of 27), however, have such standards in place.

Parents, carers and guardians have traditionally been at the centre of efforts to enhance children's safety in the digital environment. Supporting parents in this role is critical for amplifying digital benefits for young children while minimising harms and curbing parental anxieties. Korea's government has issued or officially endorsed guidelines and recommendations covering four of the six topics asked about in the *ECEC in a Digital World* policy survey, including three focused on minimising risks (physical health, socio-emotional well-being and screen time) and one relating to the educational uses of technology with young children at home. However, privacy and balancing young children's right to participate in the digital environment with protection from potential harms were not covered.

As digital technologies become further embedded in a wide range of professional activities in ECEC settings, ECEC staff take on a greater role in helping to protect young children's safety, security and privacy in digital environments. However, generally across participating countries and jurisdictions, support for ECEC staff to fulfil this role is less developed. Korea was one of 19 out of 37 participating jurisdictions which reported not having guidelines or recommendations in place for any of the topics listed in the *ECEC in a Digital World* policy survey, including how to protect young children's privacy online and how to prevent risks to their physical and socio-emotional well-being.

Curriculum and pedagogy

Revisions and adaptations to curriculum frameworks will be crucial to making ECEC responsive to the changes in children's lives brought by the digital transformation. Overall, responses to the *ECEC in a Digital World* policy survey indicate that ECEC curriculum frameworks are more specific about digitalisation when they target pre-primary education. In Korea, the *Nuri Curriculum,* which covers 3–5-year-olds, recognises digitalisation as a trend shaping how young children learn and develop in our time and sees digital technologies as one among many tools to be used with young children in ECEC.

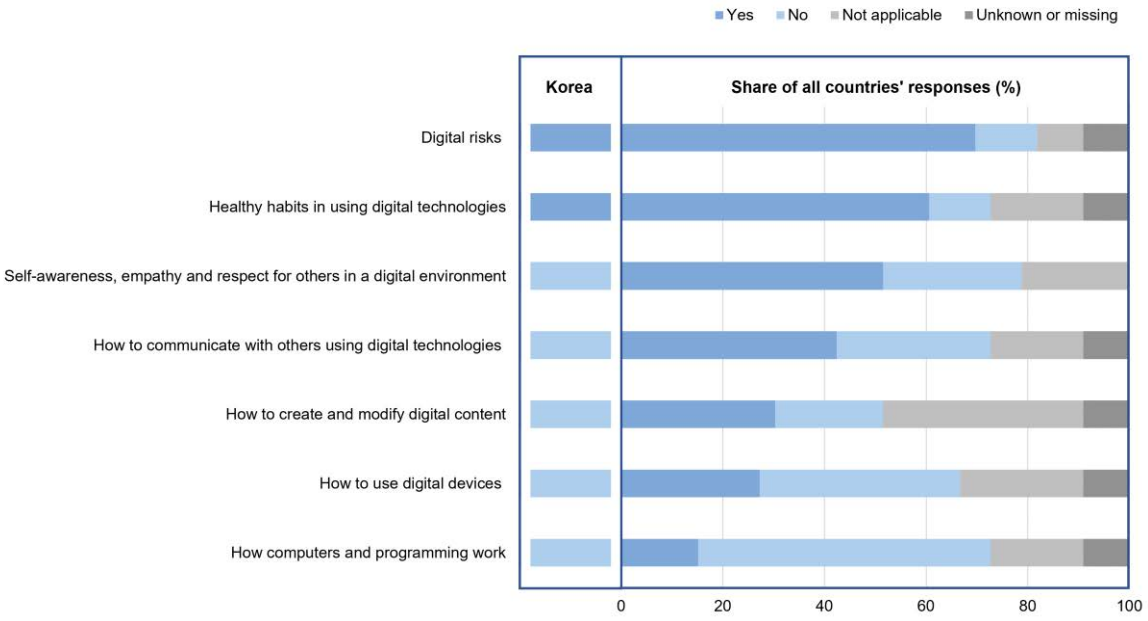
Like most curriculum frameworks in the *ECEC in a Digital World* policy survey, the *Nuri Curriculum* positions early digital literacy as an aspect to be integrated within broader learning and development areas of the curriculum framework. In contrast, the *Nuri Curriculum* places little emphasis on the importance of early digital literacy for young children's learning and development, although the majority of participants in the *ECEC in a Digital World* policy survey reported that this held "moderate" or "great" importance in their curriculum frameworks for 3-5 year-olds.

For all individuals, new skills and knowledge are required to bring about the benefits of digital opportunities while protecting against digital risks. For young children, early digital literacy can be integrated into curriculum frameworks alongside other learning and well-being areas. In general, curriculum frameworks for ages 3 to 5 more often incorporate specific dimensions of early digital literacy than those that cover the 0 to 5 age group. Like the majority of other curriculum frameworks for 3-5 year-olds, the Korean *Nuri Curriculum* makes specific mention of digital risks and healthy habits in using digital technologies as areas of early digital literacy to be covered with young children (Box 1). However, it does not include the early development of self-awareness, empathy and respect for others in a digital environment, which features in most other curricula for this age group.

While curriculum frameworks are important to set common guidelines for all ECEC staff on the goals of ECEC and on specific learning and development content and types of activities, pedagogical approaches are at the core of staff's interactions with children and therefore of mechanisms to make ECEC responsive to digitalisation. Pedagogical approaches involving digital technologies that are appropriate for young children build on play, provide options for interactions with others and give an active role to children. Korea's *Nuri Curriculum* specifies several pedagogical approaches to using digital technologies in interactions with young children in ECEC settings that are aligned with these recommended approaches. Other participating countries and jurisdictions with curriculum frameworks for 3-5 year-olds have also identified similar pedagogical approaches (see Figure 1).

Figure 1. Aspects of digital literacy specified in curriculum frameworks and other relevant documents for 3-5 year-olds

Percentage of countries and jurisdictions reporting the following, by age coverage of the curriculum framework, 2022



Note: Shares of all countries' responses are calculated on curriculum frameworks for 3 to 5 year-olds only and include Korea. Responses are weighted so that the overall weight of reported responses for each country equals one for this age group. Calculations exclude countries and jurisdictions where all answers were missing.
Aspects of digital literacy approaches are ranked in descending order of the share of countries that specified them in their curriculum frameworks and other relevant documents.
Source: OECD (2022[4]), *ECEC in a Digital World* policy survey, Tables B.6 and B.8.

In addition to the goals stated by curriculum frameworks and the pedagogical approaches followed to develop children's early digital literacy, the type of digital resources (i.e., specific devices and content) that ECEC staff and children may engage with in ECEC settings also matters. The *ECEC in a Digital World* policy survey asked countries whether ECEC authorities at the national, regional or local level provide or support the provision of digital infrastructure and educational materials to ECEC settings. Across participating countries and jurisdictions, provision or support for the provision of broadband Internet connections, digital devices, digital educational videos, films or music were most common with fewer countries and jurisdictions reporting support for materials such as digital toys, coding kits or virtual labs or other learning environments. In Korea, this type of support mostly comes from regional authorities, which provide digital devices for ECEC staff and children in ECEC settings, interactive whiteboards, broadband internet connection, virtual labs and robots. In addition, digital books for kindergarten teachers are currently being developed by Provincial Offices of Education. Educational films, videos and music in a digital format are provided by both national and regional authorities in Korea, whilst national authorities have also played a role in the distribution of robotic kits to kindergartens when robot-based learning was introduced to ECEC in 2010.

Workforce development

The ECEC workforce is at the centre of ensuring policy and curriculum goals around digitalisation are met. However, ECEC staff do not always have the necessary resources and time to embed early digital literacy and related pedagogies in their work with children, nor to capitalise on the opportunities offered by digital tools to enhance their wider work processes. Moreover, there is a need to balance ensuring that all staff have foundational competencies with digital technologies and that some staff develop a deeper level of skill and expertise, as required. Responses to the *ECEC in a Digital World* policy survey reveal that related challenges are commonly viewed as highly important by a majority of participating countries and jurisdictions. In Korea, preparing ECEC professionals to use digital technologies safely and effectively was identified as being of "very high" importance, whereas preparing them to use digital technologies effectively for professional learning and collaboration and for administrative tasks was reported as being of "moderate" importance.

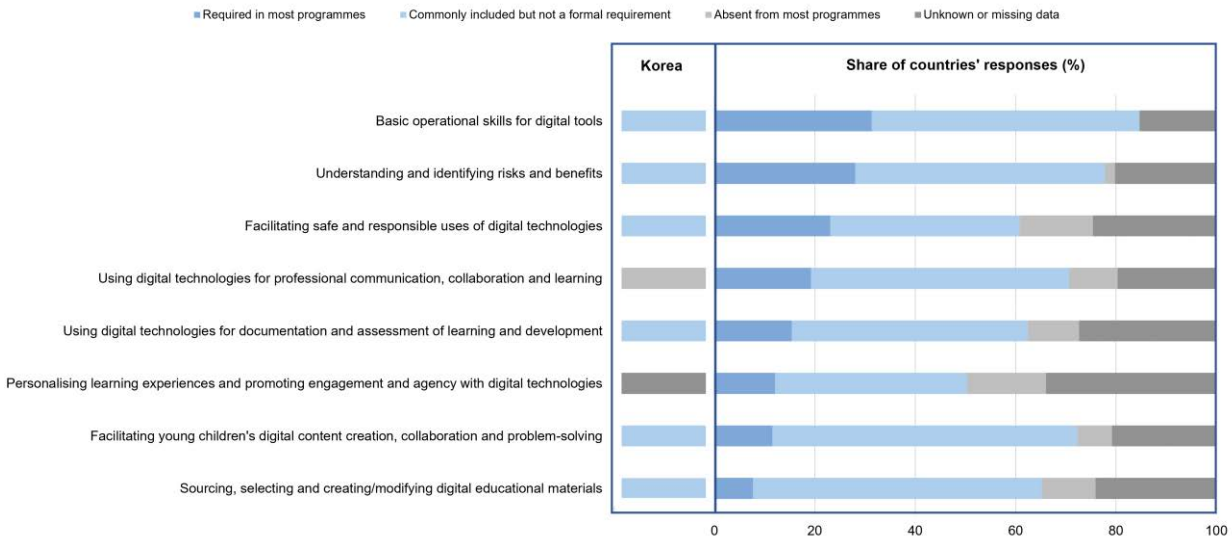
Initial education programmes are a central mechanism through which policies can shape the preparedness of staff to provide high-quality ECEC. Nevertheless, results from the *ECEC in a Digital World* policy survey show that digital competencies are not generally required in initial education programmes for ECEC teachers. In Korea, six of the eight areas included in the questionnaire are commonly included, though not required, in most programmes (Figure 2). This includes basic operational skills for digital tools, sourcing/creating digital educational materials and using digital technologies to document and assess young children's learning. Initial preparation programmes also often cover how to facilitate young children's content creation, collaboration and problem-solving with digital technologies. Furthermore, pre-service ECEC staff are usually trained to understand and identify the risks and benefits of using digital technologies with young children and facilitate their safe and responsible use. However, the extent to which the personalisation of young children's learning is covered was not known indicating that their inclusion is at the discretion of the training institution. Meanwhile, Korea reported that most programmes do not prepare pre-service staff to use digital technologies for professional communication and collaboration.

Continuous professional development (CPD) complements initial training and is critical to support staff to adapt as technologies change and new best practices emerge, both in terms of using digital tools as a professional resource and as a pedagogical tool. However, across countries and jurisdictions participating in the *ECEC in a Digital World* policy survey, requirements for CPD on digital competencies are more common for leaders and teachers, as compared with assistants. In Korea, there are no formal training requirements in place for any types of ECEC staff at the national level. Targeted funding for developing digital competences is also dependent on individual Provincial Offices of Education, which have developed a range of professional development materials, rather than national sources for all types of ECEC staff. However, ECEC authorities do provide digital solutions to facilitate data collection, administrative tasks, professional collaboration, peer-learning, communication with families, and the exchange of pedagogical materials. Many digital resource materials developed by central and local governments in Korea are available online on the i-Nuri Portal (Box 1).

As well as being an important content area to be covered, digital tools are also a mode of providing CPD to ECEC staff. However, in responses to the *ECEC in a Digital World* policy survey, countries and jurisdictions more commonly supported traditional training formats facilitated by digital tools, such as online courses, seminars or MOOCs, in comparison to formats that may have more potential to improve staff practices such as those that use digital tools for networking, mentoring and coaching. In contrast, training institutions in Korea use digital formats for a wide range of types of CPD, including online courses, hybrid courses combining online and in-person activities, and networking, mentoring and coaching, for which funding is available from ECEC authorities.

Figure 2. Digital competences in pre-service preparation programmes for early childhood education and care teachers

Percentage of countries and jurisdictions specifying digital competencies in pre-service preparation programmes for ECEC teachers, 2022



Note: Responses are weighted so that the overall weight of reported responses for each country equals one. Calculations exclude countries and jurisdictions where all answers were missing.
Digital competences are ranked in descending order of the share of countries that require them in pre-service preparation programmes for ECEC teachers.
Source: OECD (2022[4]), *ECEC in a Digital World* policy survey, Table B.11.

Family and community engagement

Essential throughout children's educational trajectories, co-operation between families and ECEC settings and professionals is especially important and can have a considerable impact on children's wellbeing and learning. At the same time, digital technologies are affecting family and community engagement in ECEC with the potential to support ECEC professionals to more effectively and efficiently communicate and collaborate with families and communities. In Korea, promoting digital channels for communication and involvement with families and parents of young children in ECEC was identified as having "moderate" importance, which may reflect that significant developments already exist in this area.

Engagement with families can help to improve staff-child interactions in ECEC, as parents have an increased awareness of the importance of ECEC and support or participate in ECEC activities. Adult interactions with children at home can also be enhanced by encouraging parenting activities. Prior to the pandemic, digital technologies were more commonly used as communication tools by ECEC staff to inform parents of day-to-day activities, allowing more immediate sharing of messages and media like photos and videos. However, lockdowns meant that digital technologies also gained major importance as a means of sharing educational materials with families.

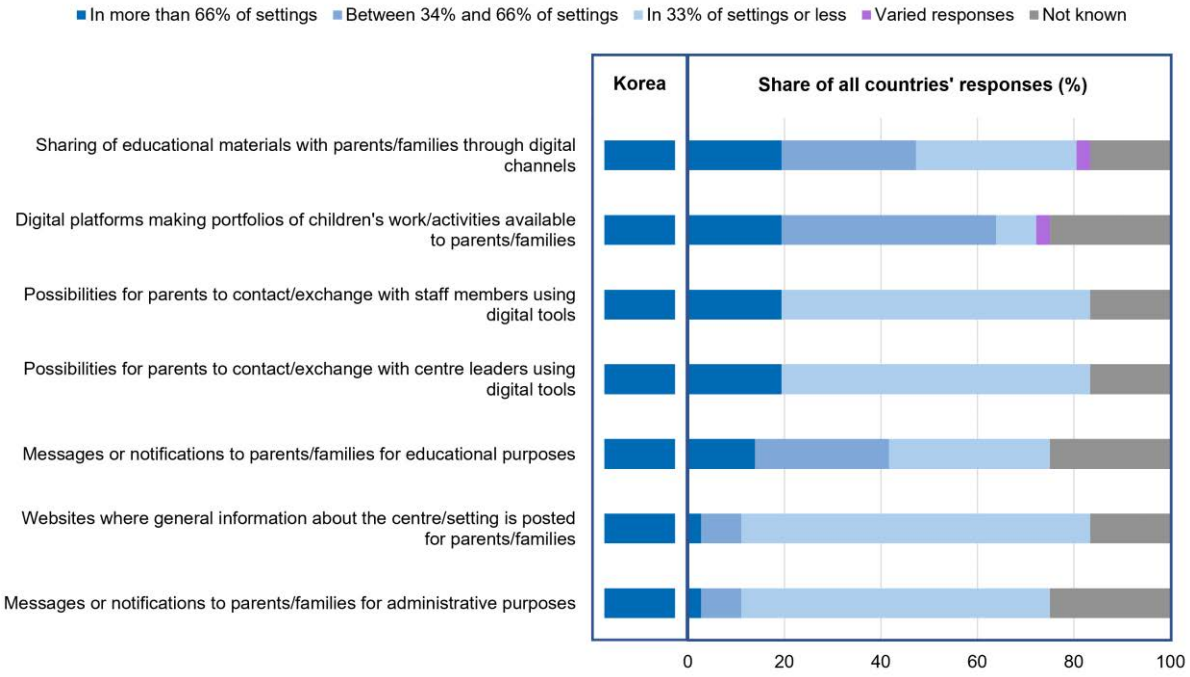
In Korea, kindergarten settings for 3-5 year-olds commonly use a range of digital communication tools to interact with families. Over two-thirds of settings were estimated to have general information websites, digital tools for contact and exchange with staff and centre leaders (e.g. email, videos calls), digital messaging or notification services for administrative and educational purposes, digital channels for the sharing of educational materials, and online platforms for sharing portfolios of children's activities

(Figure 3). Korea was the only country participating in the *ECEC in a Digital World* policy survey to report that over two-thirds of ECEC settings used all of these digital communication methods.

Figure 3. Communication with parents/families through digital technologies

Percentage of countries and jurisdictions reporting the frequency of communication in ECEC settings with parents and families in normal circumstances, 2022

In settings for ages 3-5/primary school entry



Note: Responses are weighted so that the overall weight of reported responses for each country equals one for the age group 3 to 5 year-olds. Each type of setting within a country providing ECEC for this age group is given equal weight. Calculations exclude countries where information on the age group of the setting or the method of communication was missing. *Methods of communication with parents/families are ranked in descending order of the share of countries where these are used by more than 66% of settings.*
Source: OECD (2022[4]), *ECEC in a Digital World* policy survey, Tables B.15, B.16 and B.17.

Equity and diversity

Digitalisation presents an opportunity to help mitigate existing inequalities between children by harnessing digital solutions to promote more inclusive and responsive practices for learning and development trends. At the same time, in the absence of policies with an equity and inclusion focus, the integration of digital technologies in professional and pedagogical processes in ECEC settings may exacerbate ongoing equity challenges through the development of digital divides in access, use and even outcomes. Policy challenges related to reducing inequalities in access and in digital literacy were recognised as important among countries and jurisdictions participating in the *ECEC in a Digital World* policy survey, however very few rated them as being of "very high" importance relative to the other areas of policy challenge included in the survey. This was the case for Korea, which identified both as being of "high" importance.

Besides general funding mechanisms to ensure universal access to digital infrastructure and/or materials, countries and jurisdictions may also provide targeted funding to ECEC centres or families that may require extra support in terms of accessing, using or taking advantage of the opportunities offered by digital

technologies. Responses to the *ECEC in a Digital World* policy survey indicate that such measures directed towards vulnerable children in general are common across participating countries and jurisdictions, and those that are directed specifically towards children with special educational needs are particularly common. In Korea, there are targeted allocations of digital infrastructure and materials for families and ECEC settings in charge of children with special education needs alongside general funding measures for vulnerable children in general. There are also special programmes on digital literacy for young children from minority communities, as well as additional digital infrastructure and materials for ECEC settings in remote areas, which were less commonly reported by other countries in the policy survey.

Data and monitoring

Data and monitoring are powerful levers to promote quality and support evidence-based policy making in ECEC; digitalisation brings both new opportunities and demands to these two areas. For example, digital technologies can offer enhanced approaches to collecting, linking and mobilising data in the ECEC sector. At the same time the growing role for digitalisation in ECEC provision requires integrating such aspects into quality monitoring processes for settings. Although generally viewed as being of "high" or "moderate" importance, related policy challenges were commonly seen to be less important than other aspects relating to digitalisation, young children and ECEC by countries and jurisdictions participating in the *ECEC in a Digital World* policy survey. In Korea, improving the integration of data systems for information sharing and coordination across sectors serving young children and families (e.g., education, health, social services) and across ECEC settings, programmes and/or levels (i.e., ISCED 01, ISCED 02, ISCED 1) were seen as policy challenges of "high" and "moderate" importance. Digitalising monitoring and assessment processes in the ECEC sector was also reported as being of "moderate" importance by Korea, as was often the case in other countries and jurisdictions.

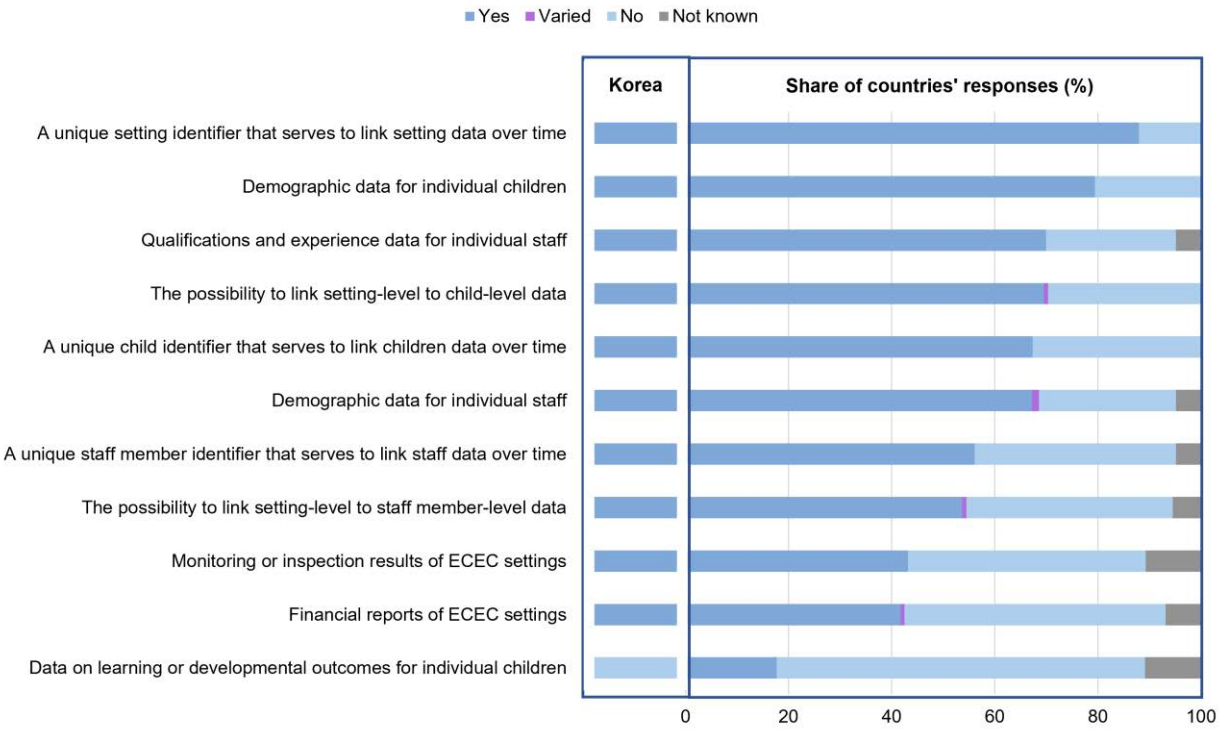
Responses to the *ECEC in a Digital World* policy survey indicate that a minority of participating countries and jurisdictions monitor digital resources or practices as part of their quality monitoring at the setting level, whether these relate to aspects of structural quality (e.g., digital infrastructure) or to process quality (e.g., the quality of interactions that young children may have with digital tools in ECEC settings). In Korea, some elements of both structural and process quality are included in quality monitoring frameworks, which evaluate the availability of digital infrastructure in ECEC settings, staff competences in using digital technologies for pedagogical purposes, and the quality of interactions that young children have with digital tools.

Among the countries and jurisdictions participating in the *ECEC in a Digital World* policy survey, a large majority have in place ECEC data systems that maintain extensive and longitudinal records and facilitate analysis for ECEC authorities, including cases where the coverage extends to all types of ECEC settings. These are generally reported to contribute to evaluation, accountability and management processes at country or jurisdiction-level. In contrast, there appears to be less focus on using them to support equivalent processes at setting-level or research and professional learning and collaboration. In Korea, all ECEC settings are required to report information to the national data system. Like the majority of other participating countries and jurisdictions, Korea reported that supporting evaluation, accountability, and management processes had "high priority" for its ECEC data system, at both the national and setting level.

The elements and functionalities of ECEC data systems vary notably across countries and jurisdictions which may be in part due to the different governance approaches and responsibilities of the bodies in charge of these data systems. Korea's ECEC data system is comprehensive in its coverage, fed by the annual data collection of the Ministry of Education and the Korea Educational Development Institute. Korea is one of only two countries, alongside Hungary, to include all of the elements from the *ECEC in a Digital World* policy survey, except for data on learning or developmental outcomes for individual children (Figure 4).

Figure 4. Common data elements and linkage possibilities included in early childhood education and care data systems

Percentage of countries where the following elements and functionalities are available in their ECEC data system, 2022



Note: Responses are weighted so that the overall weight of reported responses for each country equals one. Calculations exclude countries and jurisdictions where all answers were missing.
Elements of data systems are ranked in descending order of the share of countries that include them in their ECEC data systems.
Source: OECD (2022[4]), *ECEC in a Digital World* policy survey, Table B.21.

Policy responses and possible ways forward

Digitalisation has created a wealth of risks and opportunities for ECEC, which present countries with complex challenges through their diverse and interconnected nature. The ECEC in a Digital World project identified five major challenges for countries in balancing risk-management and the maximisation of opportunities from digitalisation: 1) protecting young children against digital risks; 2) mitigating digital divides between children and between settings; 3) developing young children's early digital literacy; 4) enhancing the quality of interactions in ECEC settings, including with families; and 5) using digital tools and data to support ECEC staff work processes (notably in professional learning and collaboration) and to enhance quality monitoring and the co-ordination of ECEC services.

The importance that is placed on these policy challenges depends on each country's vision and goals for ECEC, context, and policy priorities. In Korea, the specific challenges that were reported as having the highest significance in the policy survey suggest that the main priority areas are currently the protection of young children against digital risks, the reduction of digital divides, and the development of early digital literacy.

Countries can exploit a range of policy levers such as those outlined in the Starting Strong framework to tackle such challenges. Current/ongoing policy actions across a range of policy levers in Korea to address key challenges related to digitalisation and ECEC are summarised in Box 1.

Box 1. Korea's policy efforts to support the ECEC sector to respond to trends in digitalisation

To **protect young children in digital environments**, Korea's *Personal Information Protection Act* (PIPA) obliges DSPs to take special precautions for children under the age of 14. Under the provisions of the act, it is mandatory for DSPs to inform children about how personal information may be processed by using "understandable forms" and "plain and readily comprehensible language" (Government of the Republic of Korea, 2020[5]). Furthermore, DSPs are required to gain the consent of children's legal representatives in order to use any personal data if they are under 14. A 2020 amendment to PIPA also states that the Protection Commission shall be responsible for the data protection of children under the age of 14, "who may not clearly understand matters such as the risks and result of personal information processing and users' rights".

Regarding **curriculum and pedagogy**, Korea's *Nuri Curriculum* aims to promote the physical and mental health and development of 3-5 year-olds, by supporting their learning in the following broad areas: healthy and safe behaviours; independent problem-solving skills; creativity, curiosity and inquiry; cultural sensitivity and appreciation; communication and respect for people and nature (Ministry of Education, 2019[6]). The appropriate use of digital technologies, such as television, computers and smartphones, is specified in the section on healthy and safe behaviours. However, other aspects of digital literacy and relevant pedagogies are not yet included in the *Nuri Curriculum*, although it does emphasise the pedagogical importance of learning through play, as well as the active interaction between children, staff, and their environment.

In terms of **workforce development**, the Ministry of Education has supported various local offices of education in creating training materials and resources for ECEC staff to help them build the digital competencies of young children. The Incheon Metropolitan Office of Education, for example, has developed materials to support AI in kindergartens and training programmes relating to digital literacy, while the Chungbuk Office of Education has made resources for digitalized play environments and distance education via play packages (KICCE, 2021[7]). In addition, the i-Nuri Portal was established to disseminate resource materials developed by central and local governments for the play-based *Nuri Curriculum*. The Portal consists of five domains: 1) Nuri for Learning (disseminating materials developed at national level); 2) Nuri for Sharing (sharing materials for practices by themes); 3) Nuri for Supporting (providing up-to-date trends on play and materials to respond and prevent COVID-19); 4) Nuri for Communication (an online community among users, such as experts, teachers, parents), 5) Nuri for Parents (providing materials for parents). There are more than 2,700 materials including distance learning contents, video clips, forms for observational records, and more.

Sources: OECD (2023[1]), *Empowering Young Children in the Digital Age*; OECD (2022[4]), *ECEC in a Digital World* policy survey.

While Korea has started to implement various initiatives to make ECEC responsive to digitalisation, the policy roadmap developed by the *ECEC in a Digital World* project can help to identify areas where Korea could be more active given its priorities and the experience of other countries (see Chapter 1 of the main report). The roadmap illustrates the need to exploit multiple policy levers to ensure that responses are comprehensive and consistent. Although countries may have different goals and histories regarding digitalisation and the ECEC sector, examples from other contexts on how to tackle similar challenges can give a view of how differently the various policy levers may be exploited. This can help to guide reflection on what gaps there may be, what strategies may be possible, and in what circumstances.

For example, the preparation of ECEC professionals for the safe and effective use of digital technologies in their pedagogical work with young children is currently an issue with very high importance in Korea. However, there are no formal training requirements on digital competences for in-service ECEC centre leaders and teachers. At the national level, there are also no official guidelines for ECEC professionals on how to ensure a safe digital environment for young children regarding screen time, privacy, physical health and socio-emotional well-being. To strengthen current efforts to ensure that ECEC staff are able to protect children from digital risks and help them to develop early digital literacy, relevant policy pointers have been selected from the policy roadmap, alongside concrete examples of policy actions in other countries. The policy roadmap has also been used to identify other areas where Korea could become more active in policy making to support early digital literacy and tackle digital risks and divides, for which developing the digital competencies of ECEC teachers appears of critical importance (Table 1). Here too, initiatives undertaken to deal with similar challenges in other countries shed light on the variety of ways in which countries can make ECEC responsive to digitalisation and provide inspiration for future directions in policy making.

Table 1. Policy inspiration from other countries and jurisdictions addressing key challenges as identified by Korea

Challenge targeted	Examples of actions	Policy pointers for Korea to consider
Protecting against digital risks	**Australia** – eSafety Commissioner (2017) established as an independent regulator for online safety to ensure that industry meets Australia's Basic Online Safety Expectations, with hard powers to ensure regulatory compliance. Has a specific focus on several groups of vulnerable users including young children, handling complaints and reports of cyberbullying and investigating and overseeing the removal of harmful content. Also helps parents and ECEC staff in keeping young children safe with resources and professional learning materials. **Germany** – Youth Protection Act (2021) obliges DSPs to implement safety-by-design standards and appoint qualified Youth Protection Officers. Examples of pre-emptive measures are provided. Sanctions for noncompliance can be imposed by the Federal Agency for the Protection of Children and Young People Within Media. **France** – Action Plan for reasonable use of screens by children and young people (2022) for children, parents, and professionals. Involves a partnership between several ministries and public bodies to improve the official national website for parents (e.g., with guidance on filtering and parental control tools), to develop a network of digital parenting support services with parenting associations, and to create an annual barometer to analyse children's use of digital technologies. **United Kingdom (England)** – Online safety included in statutory guidance for schools (from age 3), inspection framework for schools, and the early years (age 0-5) statutory framework and inspection handbook. Accompanied by a guide to safeguard children in ECEC and practical resources for ECEC staff. **Netherlands** – Toolbox for Parental Mediation (2015) with age-specific fact- and tip-sheets about risks and opportunities regarding children and media for parents, education and health care professionals. Based on academic research and considers children with specific needs, as well as how to communicate with parents from different cultural backgrounds and/or limited functional literacy.	1. Ensure that guidelines to digital service providers pertinently cover young children 2. Clarify the responsibilities of the ECEC workforce for children's safety in digital environments depending on their role, children's age and type of ECEC setting. 8. Align guidelines for the ECEC sector and parents on managing risks and realising the benefits of digital environments for children.
Reducing digital divides	**Brazil** – Support Programme for the Implementation of the National Common Curricular Base (ProBNCC, 2018) to support municipal authorities in curriculum reform, embedding digital skills with transversal competencies and setting up a new curriculum area in computing in ECEC. Includes financial support for curriculum preparation, the purchase of pedagogical materials, teacher training, an online platform with examples of good practice and funds for evaluating pedagogical practice. **Czech Republic** – Innovation in education in the context of digitalisation programme (2022) to provide kindergartens with funds for digital learning equipment, and ECEC staff with materials on developing digital literacy. **Germany** – Sprach-Kitas programme (2016) to provide financial and human resources to ECEC centres with high shares of young children needing additional language support, including migrants, refugees, and disadvantaged children; includes a focus on language development with digital technologies since 2021, e.g., with multilingual digital picture books.	7. Target, tailor and sequence training support to the ECEC workforce. 14. Target funding on digital infrastructure and tools and related workforce training to centres with larger shares of vulnerable children.

	Israel – Physital Spaces (2019) initiative to ensure that ECEC providers have digital equipment and ECEC staff have professional development relating to digital competencies. All ECEC leaders received a laptop and ECEC centres with low socio-economic status also received a desktop computer.	
Developing early digital literacy	**Finland** – New Literacies Programme (2020) to describe ICT, media literacy and programming competences with examples of what staff and children should know and do by education level. Distinguishes early childhood education and preschool. Developed by the National Audiovisual Institute and the Finnish National Agency for Education in collaboration with ECEC staff, researchers and experts. **Luxembourg** – Media Compass (2020) with a framework for media literacy for children from the age of 3. Refers readers to possible approaches to teaching and learning by competence, subject theme, medium/tool, and education level. Includes examples of teaching activities for different age groups and lesson ideas for various education levels/themes. Booklets available with statements of digital competences adapted for each cycle of basic education for students to complete with examples of relevant activities. **Norway** – Framework Plan for Kindergartens gives a number of broad directions for staff such as: 1) exercise sound digital judgement (that involves following privacy rules and showing consideration for others online) with regard to searching for information, be conscious of copyright issues, critically analyse sources and safeguard the children's privacy; 2) enable the children to explore, play, learn and create using digital forms of expression; 3) evaluate relevance and suitability and participate in the children's media usage; 4) explore the creative and inventive use of digital tools together with the children. **Slovenia** – DIGICHILD project (2021-23) to build the digital competences of current and future preschool teachers and support them in scaffolding the development of computational thinking among children. Includes an elective course for pre-service teachers in bachelor studies, an in-service professional development course and an open-source MOOC (massive open online course). **Sweden** – Curriculum for the Preschool expects ECEC staff to use a variety of media with young children, including digital ones, to help them develop holistically in several broad areas. It stipulates that children should be active users of digital technologies, with opportunities "to communicate, document and convey occurrences, experiences, ideas and thought" and "to design, shape and create" with both digital and non-digital tools.	3. Set clear and comprehensive goals in curriculum frameworks. 4. Adopt a broad and age-appropriate approach to early digital literacy in curriculum frameworks.

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