Japan (3)

In Nanatsumatsu Yochien, Japan, the **ICT to Expand Children's Learning Experiences** initiative (2019) illustrates the ways in which one ECEC setting is supporting 0-5 year-olds learn through direct experiences via a balance of digital and non-digital activities. As part of the initiative, children have access to a range of digital tools within their ECEC setting and teachers have access to related guidance material. Staff also regularly use digital tools to communicate with parents, other kindergartens and universities, to disseminate information and gain feedback and advice on ICT-based activities in the local area.

Curriculum and pedagogy

Workforce development

Family and community engagement

Equity and diversity

Reference name: Case study JPN_3

A. Policy goals and design

A.1. Vision and broad objectives

The OECD Learning Compass 2030 shows the "Core Foundations " that form the prerequisites for further learning across the curriculum. Unfortunately, practices that foster data and digital literacy are rarely performed in early childhood education, which is a current issue. In the future digital society, early childhood education using ICT will foster children's abilities to obtain correct information, think critically, and work creatively.

The National Curriculum Standard for Kindergartens shows Social Participation as one of the attitudes that infants should acquire by the end of early childhood. Social Participation is defined as follows: in a variety of environments both inside and outside kindergartens, infants learn to act using information, for example, they take in information necessary for play and life, make decisions based on the information, communicate information, and utilise it. It is important for them to collect information and utilise it, for example, to interact with people or explore something based on the collected information. In doing so, they will acquire the attitude of Social Participation. Even in the case where direct dialogue is prohibited to prevent the COVID-19 infection, ICT allows children to dialogue online. In other words, the use of ICT complements infant experiences.

The role of teachers is also crucial for ICT practices. Through practice, teachers should improve their ICT skills required for Japanese-style school education in the Reiwa era.

A.2. Coverage and eligibility

All certified early childhood education facilities are subject to any of the National Curriculum Standard for Kindergartens, the National Curriculum Standard for Nursery Schools, and the National Curriculum Standard for Nintei-Kodomo-En (Integrated centre for ECEC). The "attitudes that infants should acquire by the end of early childhood " and the importance of direct experiences in early childhood are common to all three guidelines. Depending on the type of facility, staff are required to have either or both of a kindergarten teacher license and a childcare worker qualification.

This programme is comprehensive and not targeted at enrolled children. All staff who are in charge of children aged 0 to 5 years can access resources. It is designed to be flexible enough to adapt to the different needs of children aged 0-5 years.

We use subsidies provided by the national and local governments to purchase ICT equipment.

With reference to the WHO guidelines, we do not allow infants aged 2 to 5 years to continuously engage in ICT-based activities for more than 30 minutes. For 0-year-olds and 1-year-olds, we place a greater emphasis on direct experiences and limit ICT-based activities to prevent them from engaging in ICT-based activities too much.

Implementing this programme requires us to have tablet terminals and a WiFi environment in place. We have set up kindergarten-specific security when accessing the outside or introducing new applications. This allows us to impose restrictions flexibly.

A.3. Policy tools

We prepared an ICT implementation report on how each teacher practices ICT, and also prepared an ICT equipment operation manual. Teachers looked back on their ICT-based activities and shared better practices.

Regarding the training, we invited a university teacher who is familiar with ICT-based activities by infants to give a lecture, and received advice, instead of conducting training among the kindergarten staff.

In particular, we keep the following in mind when implementing the training.

- Teachers reflected on ICT-based activities that are difficult to create direct experiences from and changed them. We exchanged information with other kindergartens on SNS about the ICT-based activities although such information exchange was limited to members.
- We opened our childcare to the public online (open childcare) so that our practices can be seen by teachers in other kindergartens. After the open childcare, we exchanged opinions with the viewers so that we could learn from other kindergarten activities. We also refer to presentations at academic conferences. More specifically, they include cases introduced at presentation or symposiums at the Japan Society of Research on Early Childhood Care and Education, and the Japanese Society for the Education of Young Children, and an international symposium "Digital in early childhood education: its role and potentiality" co-sponsored by the Centre for Early Childhood Development, Education, and Policy Research and the All Japan Private Kindergarten Association.

A.4. Funding and resources

The Ministry of Education, Culture, Sports, Science and Technology commissions research and study projects among school networks and local governments. This school network applied for this research and study project and was approved. The cost of this research project accounts for most of our funds. When we need a large amount of money to purchase or maintain equipment, we use subsidies for emergency environment maintenance projects for early childhood education.

Japan is working to provide each child in elementary schools and junior high schools with one device. This has increased the demand for tablets, but unfortunately, semiconductors were in short supply. Under these circumstances, it sometimes took us about two months to procure tablets. To establish the WiFi environment in the kindergarten building(s), we had discussions with experts in advance, and had a contractor carry out construction work and made subsequent adjustments. It took about three months to set up a stable WiFi environment.

Regarding the training of staff, we repeated practice and reflection. This allows our staff to successfully use ICT devices in the WiFi environment. We did not have a specific time for implementing the programme and it did not take much time.

In ECEC in Japan, ICT has been introduced to free teachers up from the work necessary to operate kindergartens and reduce their workload. Once the workload has been reduced through the introduction of ICT, they should secure more time to study teaching materials for ICT-based activities by infants in their daily work.

A.5. Stakeholder engagement

We inform parents of the Programme and related matters through letters from the kindergarten, blogs on our website, emails, videos, newspaper articles or books that introduce our activities, and our SNS.

We also inform the community (universities, private companies, foundations), other kindergartens, elementary schools, and governments of our practices by creating videos introducing our ICT-based activities and widely disseminating newspaper articles or books containing ICT-based activities. We also actively accept requests from interested parties to visit us.

We conduct activities using video or video conferencing systems on a daily basis. In order to realise a smooth transition from early childhood education to elementary school education, we have children watch a school introduction DVD sent from elementary schools. We also use the video conference system to interact with parents, other kindergartens and universities.

At workshops organised by the Sony Education Foundation and learning opportunities on SNS limited to members, we actively disseminate information and actively interact with other kindergartens.

A.6. Future developments, sustainability and scalability

In order to further develop this Programme, we need to continually learn about practices from hub organisations or members, such as Sony Education Foundation, the UNESCO Associated Schools Network (ASPnet), and deepen our practices. We were selected as a Candidate School in the UNESCO Associated Schools Network in September 2022 (link).

We also plan to have a connection with public kindergartens that aim to carry out similar activities in order to learn from each other in a workshop format. We believe that this is an effective initiative.

To ensure the sustainability of activities, it is important for infants to be able to use ICT naturally in their daily kindergarten life. We do not force direct experiences to be associated with ICT-based activities. Infants should use ICT as a learning material, just as they use paper, glue, and scissors. We prevent ICT-based activities from becoming unilateral teaching activities by teachers.

In order to expand these efforts, kindergartens and local communities (including parents, communities, other kindergartens, elementary, junior high and high schools, universities, business establishments, private companies, and governments) should be engaged with through practice, which is important from the perspective of Education for Sustainable Development. In other words, kindergartens and communities need to get connected easily via networks established with the community using ICT, just as they normally do by making a phone call.

B. Types and roles of digital technology

B.1. Digital resources

This Programme promotes the deepening of children's learning through using ICT. Our infrastructure to facilitate learning includes tablets, digital cameras, digital microscopes, projectors, LCD TVs, applications and programming robots. We have a WiFi environment in place so that these devices can be operated in a connected manner. We use not only tablets but also Google for Education (cloud service) to record children's learning activities. This also facilitates data management and information sharing. For free applications installed on tablets, we regulate the display of ads to prevent children from being exposed to stimulating ones.

B.2. Digital competencies

Teachers need to ensure that ICT-based activities do not end up with indirect experiences in which infants merely use digital equipment, which are not tied to direct experiences.

Following the World Health Organization (WHO) guidelines of "connecting digital experiences to direct experiences", we do not allow infants to engage in ICT-based activities for long periods of time (for example, for more than 30 minutes), allow them to use it when needed and encourage them to finish it in a short time. It is a teacher's primary responsibility to prevent infants

from seeing inappropriate images or overly stimulating information, that is, to protect infants from them. The teachers are also required to have the ability to comply with basic laws and regulations, such as portrait rights and copyrights.

B.3. Uses of digital technology

In implementing this Programme, we consider how ICT practices relate to infant experiences so that they can complement their kindergarten life by giving them experiences that are hard to obtain there. The ICT practices eliminate temporal and spatial constraints.

Technology that eliminates temporal constraints

Temporal constraints can be eliminated by saving information in various forms using applications, such as photos, videos, and browser search. Video applications include, for example, time-lapse and slow-motion videos. Capturing and recording the growth and movement of animals, plants, etc. using these functions allows learners, i.e. children, to observe them in a short time. Teachers can collect information in a short time according to the interests of children and use the information collected to interact with them or explore something else, for example. Such information can be used repeatedly.

Relationship with non-digital activities

When utilising digital information in non-digital activities, children transform the digital information into creative and concrete pieces of work using products, handmade picture books, photographs, etc. In this process, children can become aware of the diversity of selected digital and non-digital information and deepen or expand their learning. When handling this information, teachers do not always edit everything using digital techniques and use it for learning. An application is available that allows children to edit photos and videos. Children can create things like slideshows and puppet shows and present them to other children on a large screen. They can be used repeatedly. Children who see this presentation can understand the procedure, understand the situation, predict danger, understand natural events and changes in animals and plants based on the information, and carry out activities from different perspectives.

Technology that eliminates spatial constraints

Spatial constraints can be eliminated by using applications, such as microscopes, map applications, and video conference systems. Activities using a microscope allow children to magnify and see natural and artificial objects that are difficult to see with the naked eye, and notice colour diversity and fractal structures. Tablets allow them to store what they see on the spot. Activities using the map applications allow them to see three-dimensional images of local and national buildings and the natural environment that they cannot visit alone. Activities using the video conference system allow them to remotely meet adults that they cannot meet in their daily lives, remotely exchange with children in other kindergartens, or see places that they cannot access or places to go on excursions. Unlike on-demand video viewing, activities using this video conference system allow them to gather information based on real-time dialogue and allow conference participants to be more responsive to the questions and learning of the children. The video conference system also allows videos to be recorded and edited, making it possible to deepen and expand learning by using them repeatedly.

Digital literacy

In these activities, learners, that is, children, use a lot of data and digital techniques, which help them develop data and digital literacy together with teachers. However, teachers need to support younger children more to develop data literacy. Repeating this process enhances data and digital literacy of learners, allowing them to obtain correct information, think critically, and work creatively. Teachers also need to be flexible about this combination of digital and non-digital activities, depending on each child's actual state. Teachers should sometimes consider how to obtain cooperation from parents, communities and distant professional adults, improve their own data and digital skills, foster their data and digital literacy, and build a curriculum.

Balance with non-digital activities

Digital technology has a great impact on children's five senses, including visual and audio senses so teachers need to pay attention to the length of time they engage with digital media. Of the five senses of human beings, touch, taste and smell are crucial for infant development. However, stimulating these senses and children's long-term memory is difficult. So, when exposing children to digital techniques, teachers need to supplement their digital activities with non-digital activities that stimulate these senses by giving them direct experiences, such as touching, tasting, and smelling before and after learning using digital techniques. Regarding the combination and balance of digital and non-digital activities at a certain age, the proportion of digital activities may be higher than that of non-digital ones for children around the age of 5. For younger children, the proportion of non-digital activities should be higher.

B.4. Support systems

Institutions that support us include the Centre for Early Childhood Development, Education, and Policy Research, Hyogo University of Teacher Education, Gakushuin University, Kansai University of International Studies, and Sonoda Women's University. Many of these institutions train kindergarten teachers. The members of the Sony Education Foundation can consult with communities on SNS, but the number of consultations is limited.

C. Evaluation

C.1. Does this policy initiative/programme include an evaluation component?

Regarding activities using ICT, we select some practices from monthly activities and prepare a practice report on them. This report records the practices and how children react. Teachers look back on the recorded content and evaluate their activities. We prepare a photographic document on how children reacted or behaved in the practices. The evaluation of their reaction or behaviour is partially described in the guidance record. Of the "attitudes that infants should acquire by the end of early childhood" described in the National Curriculum Standard for Kindergartens, whether or not children have acquired "Social Participation" or "Fostering Thinking Abilities" or "Cooperation", etc. can be evaluated by teachers who closely observe their behaviour.

We open our childcare to the public so that parents and other school officials can evaluate us.

There are some ICT-related items in the Early Childhood Environment Rating Scale (ECERS), but we found that some did not correspond to the practices covered by this report.

C.2. Is there any available evidence on outcomes and impact, generated by either internal or external evaluations/research?

We summarise the ICT-based activities in this Programme in a report of the research and study commissioned by the Ministry of Education, Culture, Sports, Science and Technology, a research paper, and a book (see additional information section).

C.3. What success factors and barriers have been identified with regard to the implementation of this policy, and from what sources (e.g. evaluation reports, stakeholder feedback, research studies, etc.)?

In order to expand and link infant experiences, setting up an online WiFi environment and procuring ICT equipment, such as tablets, are crucial in this Programme.

The existence of teachers who have the skills to operate ICT equipment, the director of a kindergarten who leads this Programme, and the mid-career teachers who play the role of middle leaders are important. Training in the kindergarten is also important to create an atmosphere in which the entire organisation works on the Programme and teachers share ideas. In order to work on ICT throughout the kindergarten, having a cooperative relationship with parents and the community is also crucial.

On the other hand, challenges include complicated device operations, unfamiliarity with device operations, difficulty in understanding how to use various applications, and the possibility of increased workload due to the need for data management. In order to deepen children's learning so that ICT-based activities do not end up as indirect experiences, we need to fully understand/review the National Curriculum Standard for Kindergartens.

However, there are few training opportunities to mitigate such issues, and even schools that train kindergarten teachers do not provide a curriculum on ICT-based childcare practices. On the whole, little practical training on ICT is currently available.

Additional information

o   Kiyomi Akita, Shoko Nozawa, Yukari Hotta, Yoko Wakabayashi. Literature Review of Research on Digital Media for Early Childhood Education and Care Bulletin of the Graduate School of Education, The University of Tokyo, Vol. 59, 2019 (link).
o   Hideo Kameyama. Initiative Not to Stop Learning in Covid-19 Catastrophe and Creating an Environment that Supports it. Monthly Elementary Education Material, March 2021, 86
o   Hideo Kameyama [Case] Utilization of ICT Equipment that Leads to Voluntary Learning by Infants. Monthly Elementary Education Material, December 2021, 096
o   Hideo Kameyama, Chieko Shikata, Chieko Satake. Practice Reports on and Issues of Interactive Online Training for Childcare Workers - Measures to Use ICT to Prevent the Spread of COVID-19 Infection. Infancy Education WEB Journal 04 (link).

o Hideo Kameyama. Minervashobo, Development 170: Development of Non-cognitive Abilities and Childcare/Education. Non-cognitive Abilities Fostered in Nursery Schools: From the Perspective of Devising Environment in Kindergarten and Utilizing ICT (link).

o Tomoko Nasukawa, Osamu Fujii, Motoaki Hagiwara, Ayuko Fujisaki, Hideo Kameyama, Masako Yoshizu, Keiko Yamamura (2022), How and What Should ESD/SDGs Aim at in Infancy? - Using OMP ESD Rating Scale as a Clue – A collection of papers presented at the 75th Annual Meeting of the Japan Society of Research on Early Childhood Care and Education, J43-J44.

o Edited by Kiyomi Akita, Mariko Miyata, Shoko Nozawa. Chuohoki Publishing, Enrich childcare with ICT. 28 practices that connect and spread excitement (link).

o School corporation Nanatsumatsu Gakuen. 2020: Research and Study on Enhancement of Teaching Methods, etc. for Addressing Issues of Early Childhood Education. Practice of Early Childhood Education that Connects Infants, Parents, and Teachers Using ICT. Early Childhood Education Using ICT during the COVID-19 Pandemic (leaflet) (link).

o School corporation Nanatsumatsu Gakuen. 2021: Research and Study on Enhancement of Teaching Methods, etc. for Addressing Issues of Early Childhood Education. Utilization of ICT in Early Childhood Education (leaflet). Casebook on ICT Practices that Enrich Infant Experiences (leaflet). Research and Study on Enhancement of Childcare Content Using ICT and Sharing Inside and Outside Kindergarten (link).

o Report on Improving the Attractiveness of Childcare Sites and the Profession of Childcare Workers (2020), prepared by the Ministry of Health, Labour and Welfare (link).