

APPENDIX D Addition to Asia Internet History, Third Decade (2000s)

Section 4.6 Japan is added to Chapter 4 Internet Governance, and Section 8.4 South Korea is added to Chapter 8 Online Education of Asia Internet History, Third Decade (2000s).

4.6 Japan

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(1) Management of Critical Internet Resources

Internet Protocol (IP) addresses and domain names are often called Critical Internet Resources. In Japan, IP address allocation has been managed by Japan Network Information Center (JPNIC) and its preceding bodies from the 1980s until now. JP domain names had been managed by JPNIC from the 1980s until Japan Registry Services Company, Ltd. (JPRS) took over the role in 2002.

In designing the policies for managing IP addresses and JP domain names, users of such resources, as well as board directors and staffs of JPNIC, participated in working groups designed to study and develop policy. Namely, policies have been designed through the involvement of outside experts. In a sense, this means a multistakeholder process has been employed in Critical Internet Resources area from an early period.

As use of the Internet proliferated in the business area, the perceived value of domain names changed. In the late 1990s, in order to raise the value of JP domain names in this situation, JPNIC sought to determine how domain name policy and management structure should be changed. The study and design were elaborated by various stakeholders. Following the results of this study and design, JPRS was established in 2000 as a for-profit private company to succeed the management role of JP domain names with the new policy.

IP Addresses

As of 2016, IP address allocation in Japan is managed by JPNIC. The policy of address allocation largely impacts the operation and the use of the Internet, and further impacts the evolution of the Internet itself and its application. In light of this, JPNIC has actively invited various stakeholders to its working groups and committees and decided policies regarding IP addresses. In addition, mailing lists and face-to-face meetings, which have been open to any

interested participants, have been employed intensively. A face-to-face meeting, called “JPNIC Open Policy Meeting” (JPOPM), has been held bi-annually and its host was transferred from JPNIC to a group of volunteers from the community, with the result that it became more neutral with a bottom-up structure.

Domain Names

Transfer of JP domain name management from JPNIC to JPRS was completed in April 2002. One of the biggest differences between IP addresses and domain names is that domain names can be easily perceived and memorized because they have high affinity with natural language words and strings people use daily. This means policies of domain name management have a strong influence on the usability and security of domain names. Because of these characteristics, the policy of JP domain name management has been discussed and designed through cooperation and coordination among various stakeholders. This was true during the management by the public benefit corporation JPNIC and also during management by the for-profit private company JPRS.

JPRS declared the establishment of JP domain name advisory committee, which is responsible for fairness and neutrality of JP domain name registration, in its bylaws. The membership of the committee is reviewed every other year. As of 2016, the committee has members from the following seven fields: (1) JPNIC, (2) registrars, (3) ISPs, (4) general users (consumers), (5) business users, (6) academic experts, and (7) the Japanese government, where the government joined in 2015 to incorporate its view into the JP domain name policies even though a for-profit private company manages .JP.

Participation in Global Governance of Critical Internet Resources

In 1998, ICANN was established and started technical coordination of Internet resources such as IP addresses and domain names. Some of its initial objectives were to establish an alternative dispute resolution policy, which is referred to as Uniform Domain Name Dispute Resolution Policy (UDRP), to enhance the competition of the registration business, and to introduce new gTLDs.

JPNIC and other Japanese Internet-related organizations have sent participants to ICANN meetings since its first meeting. In order to liaise the Japanese community with the global ICANN community, JPNIC and Internet Association Japan (IAJapan, formerly called IAJ) have hosted readout meetings after each ICANN meeting since 2001 (three times a year). In the readout meetings, participants of the ICANN meetings share the substance of the ICANN meeting and opinions are sought to bring voices from the Japanese community to the coming ICANN discussion.

From the early days, ICANN readout meetings played an important role in liaising the Japanese community and the ICANN global community regarding discussions held in the global arena. Notably, the business sector showed strong interest in the ICANN discussion and more participants from this sector joined the meetings around the time of the new gTLD application launch.

Among those who attended ICANN meetings and reflected the Japanese community's voice to ICANN were Jun Murai and Masanobu Katoh, who were ICANN Board members in the early days. Other participants have been from JPNIC and JPRS, who manage IP address allocation and domain names registration respectively, gTLD registrars, Japanese government department related to Internet Resources, and civil society. In addition, as new gTLD discussion progressed, gTLD registrars and gTLD back-end registry providers in Japan also became more involved in the reporting and discussion of ICANN-related issues.

(2) Internet Governance in General

Internet Governance Forum (IGF) has held annually since 2006 following the Tunis Agenda, which was outcome of the 2005 Tunis meeting of World Summit on Information the Information Society (WSIS). Discussion topics in over 100 sessions of each IGF meeting cover diverse aspects including security, openness, privacy, diversity, access, and internet resource management. Recently human rights activities on the Internet and helping developing countries build Internet and information infrastructure have become intensely discussed topics.

In order for stakeholders to share information about and give input to the global discussion, meetings and mailing lists regarding Internet Governance are employed in Japan. Such activities involve the participation of and cooperation among various stakeholders including private companies, civil society, technical community, academia, and government. As in the global discussion, the opportunity for the discussion is given by the government, by bottom-up private initiatives, or even by cooperative efforts between the government and the private sector. In any case, the opportunities of multistakeholder discussion are growing in both quality and quantity. There are two typical activities that are private sector driven; annual general meetings and bi-monthly theme-specific meetings. They are introduced below.

Internet Governance Forum Japan (IGF-Japan)

Although some Japanese participated in IGF meetings from government, JPNIC, JPRS, private companies, and civil society, there were no appropriate fora for information sharing and discussions with the Japanese community. In order to provide such a place, IGF-Japan was established and a meeting was hosted by Japan Internet Providers Association (JAIPA) in 2011 following a preliminary meeting in 2010. Basically, meetings have been held annually. The

Initiative of JAIPA as a host of IGF-Japan brought Asia Pacific regional Internet Governance Forum (APrIGF) to Tokyo in 2012. However, it has been perceived that it has not been easy to assemble various stakeholders every year and annual meetings have not been sufficient for the Japanese community to form and send out messages to the global arena.

Internet Governance Conference Japan (IGCJ)

Observing the situation described above, individual volunteers from various sectors jointly established Internet Governance Conference Japan (IGCJ) in April 2014 and started to meet every other month. IGCJ was planned, managed, and operated with the following aims;

- (i) No specific organization acts as host and individuals from various stakeholders act as core members in designing IGCJ, and
- (ii) Output-oriented activities will be embraced.

For (i), the IGCJ Coordination Team was made up of volunteers who responded to public invitation to the team. This team designs the overall IGCJ activities including theme setting and discussion process. As of 2016, the team consists of five members whose knowledge and experience are from diverse sectors, i.e., the business sector, technical community, international non-profit organization, end-user community, and the government. The secretariat is provided by JPNIC.

For (ii), it usually is not easy to make one voice for IGCJ, although a unified voice has more persuasive power. To solve this dilemma, the “Supporter Solicitation Model” was proposed in IGCJ. In this model, the first IGCJ has a discussion regarding a theme, and then if there are IGCJ participants who have a similar opinion they will make a drafting team. A draft statement crafted by the team is then discussed and amended by all IGCJ members, and the supporters of the draft are solicited and signed up as supporters of the statement. Using this model, two documents have been yielded from IGCJ so far (as of September 2016): “concept for security” and “comments on the ICG Consultation on IANA Stewardship Transition Proposal”. The first was proposed to become the IGF2016 workshop together with Internet Society and was selected successfully. The second was submitted as a public comment to the comment forum prepared by the IANA Stewardship Transition Coordination Group.

8.4 Online Education – South Korea

Okhwa Lee

(1) The infrastructure Development for the ICT Applications in Education

The Republic of Korea started to apply information and communication technology (ICT) in education since 1980s and continued to focus on Information Education. As the South Korean government recognized the potential of the new technology ICT, a major plan to transform the country into an information society, which was later referred to as a knowledge society, began with a group of scholars and experts opening a new government agency, Korean Information Agency (KIA). KIA developed a master plan for the country for the coming knowledge society.

The plan started with five backbone networks (finance, defense, transportation, administration, and education) and the development, execution, and operation of the education backbone was delegated to the education sector. This education sector has a big presence when education takes care of nearly one quarter of the whole population (basic and higher education students, teachers, and parents). In 1988, the Ministry of Education opened a new government agency called the Korea Educational Resources Information System (KERIS) to delegate the function of developing and executing ICT applications in education. KERIS was mandated to develop the plan for all levels of formal education at primary and secondary schools as well as higher education. The initiation of ICT applications in education placed priority in establishing infrastructure at primary and secondary schools and teacher education, curriculum embedding, and instructional material development with the support from the five ministries and Korea Telecom. A major plan for educating teachers and students for awareness of ICT as well as digital literacy was conducted. The plan was developed with a top-down approach since not many people from the educational community understood the potential of ICT at the time. The infrastructure first was developed on schools in rural and remote areas, as they were manageable sizes, to understand the complexity of the plan before massive execution of the plan was conducted later.

It became a problematic when the infrastructure needed to be updated. The initial supply of infrastructure facilities experienced difficulties when the next government was occupied by the opposite party. Education should be neutral from the politics that is why the education government election is done without political party signature. However, the recent COVID-19 made the supply of ICT infrastructure in the whole nation regardless the region and school levels. Online learning was recommended to cope with the virus infection in schools if hundreds of students and teachers get together when the protection for COVID-19 was not available. All school received the WiFi connection and smart tablet. Ministry of Education provided three types of online instruction during the COVID-19 period. Contents of video are provided from the educational broadcasting as well as teachers developed by themselves. Providing all schools with ICT infrastructure was done two years earlier than scheduled.

(2) Master Plans for e-learning

Ever since the introduction of the national plan for education, KERIS developed master plans for ICT in education based on their experience. The first master plan for ICT in education was

developed in 1996. The plan included the launch of EduNet service (computerization of school records) the same year followed by education for teachers to improve their capability to utilize information technology in 1997. EDUNET has since provided a nationwide education information service that supports the normalization of public education and school education activities. Information like subject learning, creativity and character building, progress in education policy, progress for comprehensive education, and related information of the practice for curriculum were uploaded on EduNet.

In 1998, the research information sharing service (RISS) was launched for higher education. In 1999, an implementation plan for a certification system for students' capability in information technology was developed. In 2000, the plan to support children of low-income families was executed. In this first master plan, emphasis of the educational service was placed on learning and teaching at the primary and secondary school levels. The first master plan was executed with the help of the five ministries, and Korea Telecom contributed hardware, software, and a network for all kindergartens and primary schools as well as high schools in the nation. As technology developed, the master plan was updated up to the fifth plan, followed by Smart Education in 2014 and now Software Education in 2015.

The second master plan for ICT in education was developed in 2001. Like the first master plan, the hardware, software, and network were distributed, and the ICT-enhanced school curriculum was updated. The instructional content was developed and distributed along with the teacher education. During the period of the second master plan, the National Educational Information System (NEIS) was developed. Two pillars of ICT in education are instruction (learning and teaching) and administration. The first pillar for instruction with learning and teaching is EduNet, and the other pillar for administration is the National Educational Information System (NEIS), which was developed in 2003. For schools, the instruction is the core activity, and it should receive the primary attention. The system for teaching and learning is called EduNet, and it was developed for storing instructional materials as well as curriculum information. Later, this system also provided cyber educational support for any student in the country wishing to received feedback from any teacher.

The second master plan had ten goals to be accomplished by 2005.

1. Support the development of ICT application competence
2. ICT applied instructional methods and content reform
3. ICT support for lifelong learning and vocational education
4. Training labor for the ICT industry
5. System development for educational knowledge and information transaction
6. Enhancing sound information culture environment
7. Distributing informatization benefits
8. Index development for educational informatization and evaluation

9. Enhancing the educational informatization infrastructure

10. E-government in education

Soon after providing the service of EduNet, NEIS, an administration support system was developed. NEIS has three major roles: Educational administration, learning progress, and finance. For the educational administration, information about teachers (promotion, performance evaluation, and salary) and official documents (regional board of education office, schools, and institutions) are included. For learning records, curriculum management (instructional activities), evaluation records for university admission and comprehensive student activities records are included. For finance, school budget operation (purchasing management, income, and expense records, and others) are included.

NEIS provoke a social issue of private information protection as NEIS was planned to store information about individual teachers. Teacher's union demonstrated against storing the digital information of individual teachers. It was the first time in South Korea that there was a wide discussion on the meaning and power of accumulating digital data. After long negotiations and the change of the Minister of Education (the Minister himself resigned to take responsibility for the social turmoil), teacher union agreed to store teachers' information in NEIS under the condition that individual teacher information should be accumulated and processed in such a way that administrators beyond the level of local government cannot recognize individual's information. The portal system for local educational systems operated by the Ministry of Education, EduInfo (www.eduinfo.go.kr), is a disclosure portal system for local education finance to bolster innovation of local education finance.

The following two figures show the e-learning policies conducted in South Korea from 1980 to 2015.

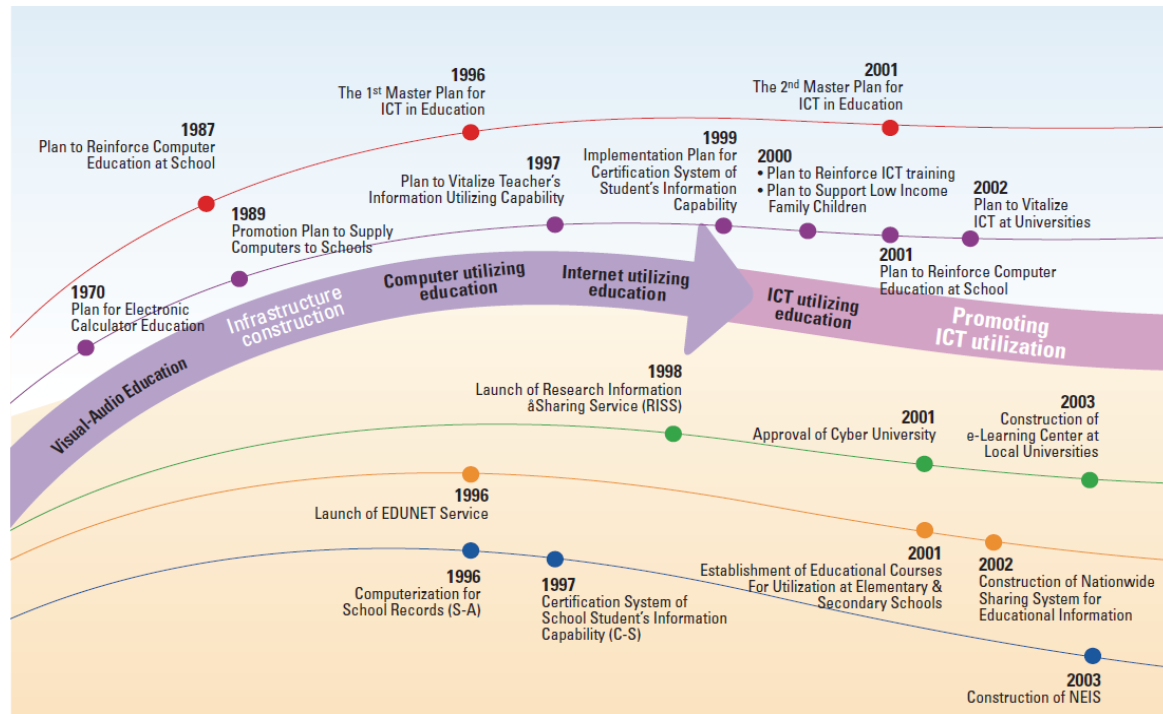


Fig.8-2 National policies for e-Learning in South Korea, 1980-2003 [KERIS 2016]

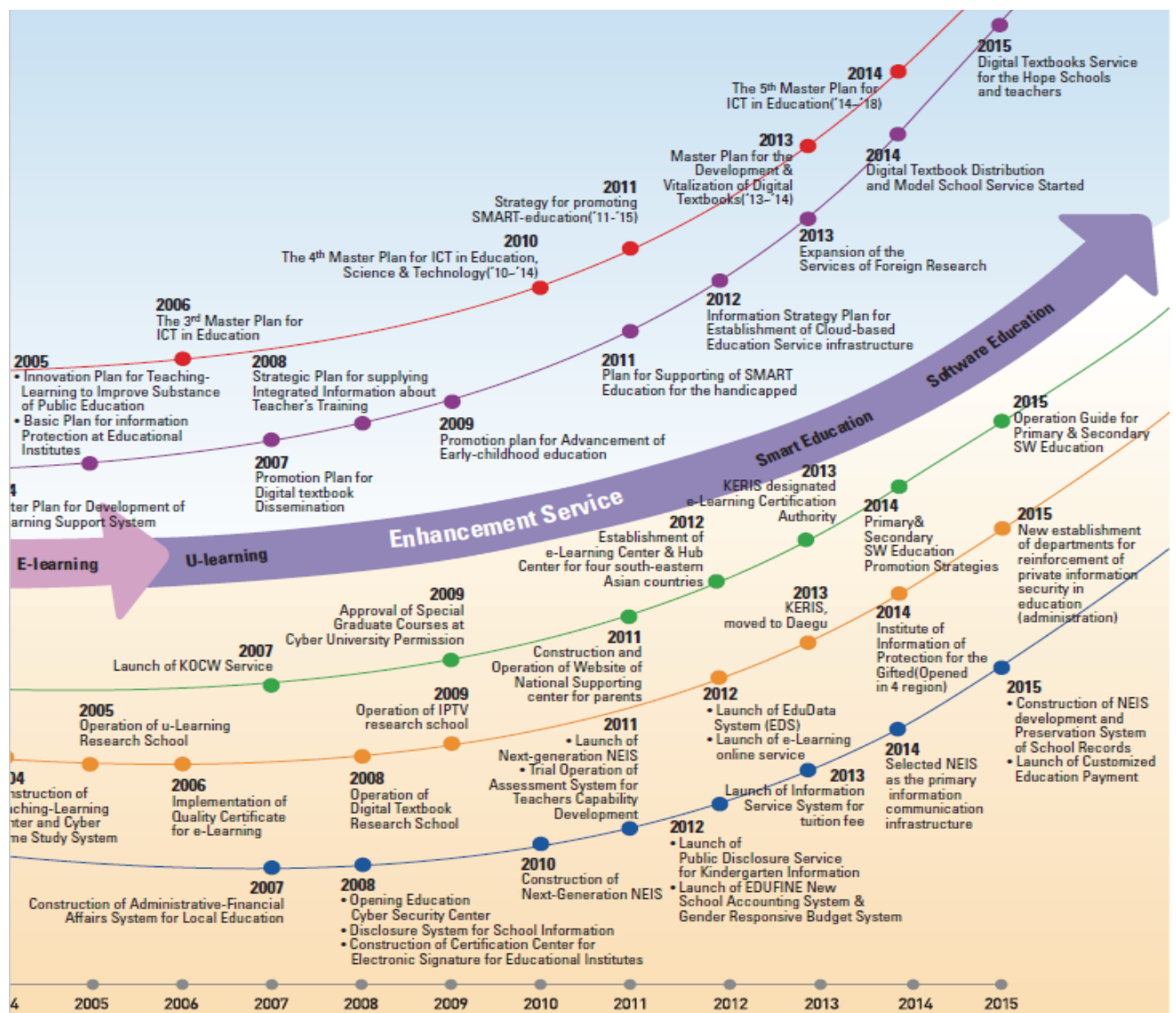


Fig. 8-3 National policies for e-Learning in Korea, 2004-2015 [KERIS 2016]

The update of NEIS is under discussion for the 4th revision. The function of NEIS is to keep students' academic activities in school and the student activities information is sent to university for the entrance screening. EduFine, school financial administration, is also the target for update.

(3) Information Education at primary and secondary schools

The basic form of the master plan for ICT in education continued in the third master plan developed in 2006, the fourth in 2010, and the fifth in 2014 to build infrastructure of hardware, software, curriculum development, teacher education, and educational content development. In 2013, a master plan for ICT in education has been announced. This plan was made with the

collaboration with ICT plans in other ministries. The SMART plan was geared for the transformation of South (Fig. 8-4).

The SMART Education plan was developed in 2011 and executed from 2013, emphasizing five subprojects (Fig. 8-5) of which digital textbooks along with printed textbooks became the most dominant. The aim of SMART Education is to build an intelligent customized learning system to strengthen the competencies of learners in the twenty-first century and to be a driving force for innovating the education system, including the educational environment, content and methods, and assessment. The big issue in developing digital textbooks is copyrights for multi-media materials. The copy right law and guidelines are complicated in application as the copy right policies are not clear and the applications of copy right law has been generous in educational use but the environment was changed. Funding to provide copy righted materials for the development of national text books became a practical issue.

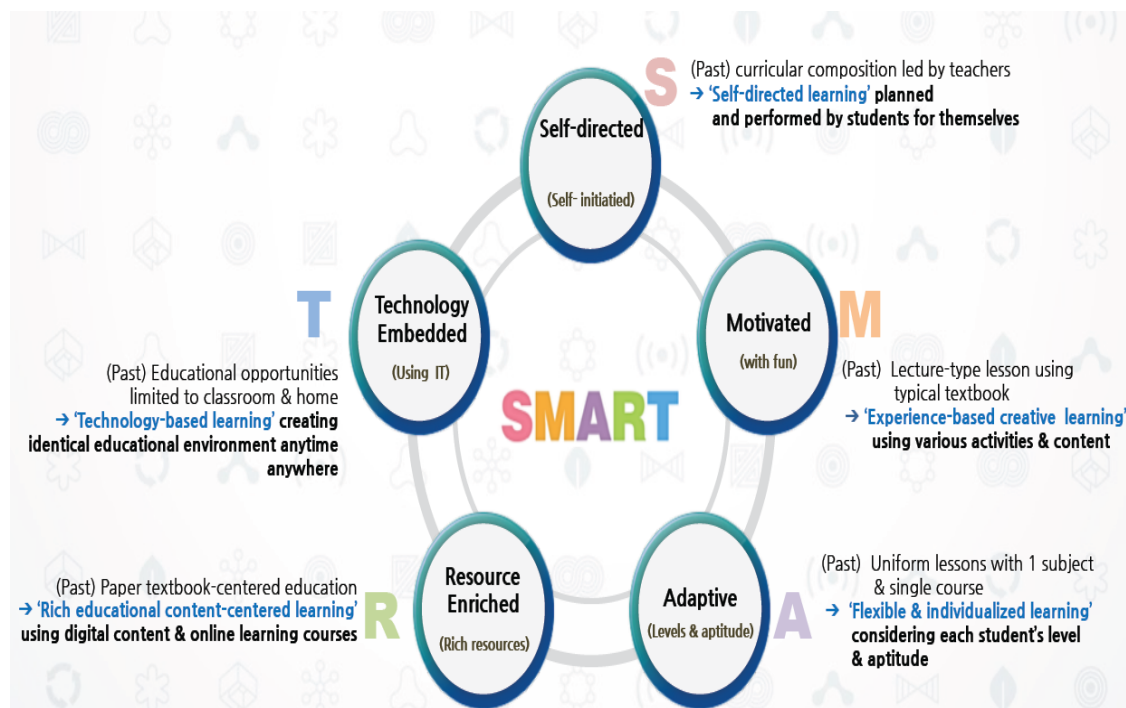


Fig. 8-4. SMART Education, Adapting Education to the Information Age [KERIS 2013]

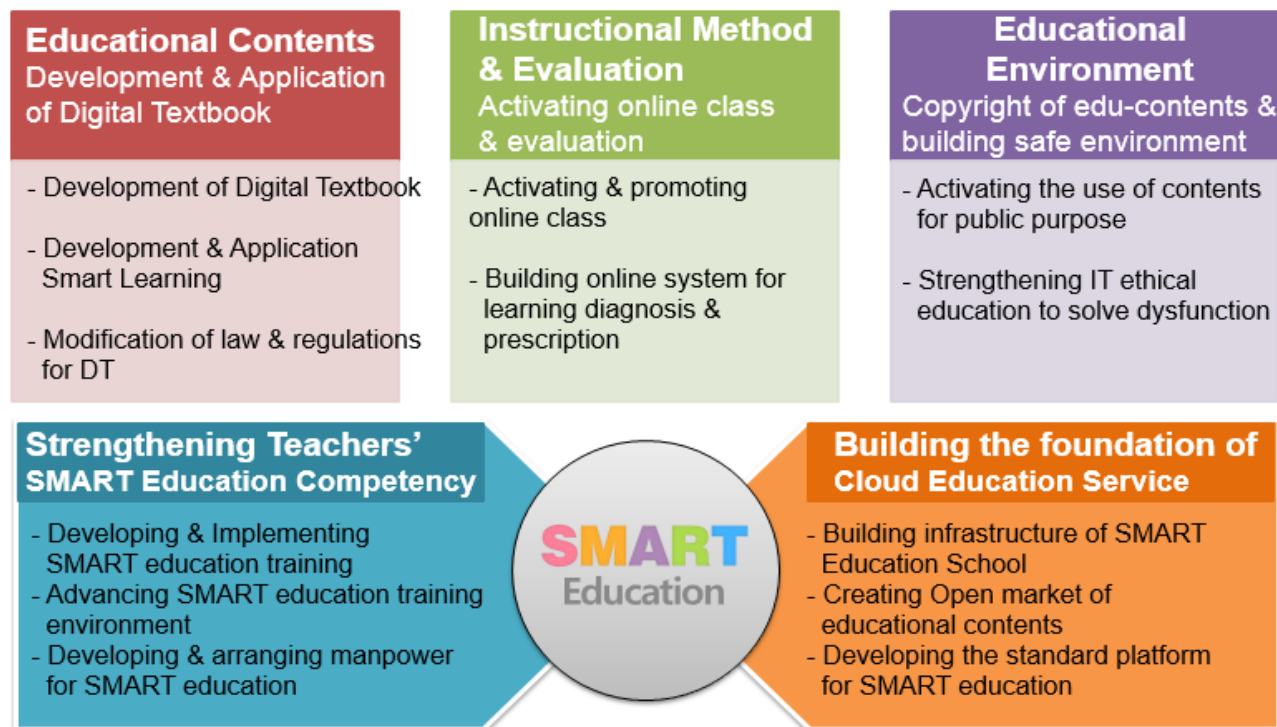


Fig.8-5. SMART Education with its subgroups [2011 MEST]

Following pilot studies of digital textbooks in 2011, digital textbooks will be distributed at all school levels from 2018 for a few subjects. Through software education, information education will become a compulsory subject in junior high school curriculum from 2018. In primary and high school curricula, software education received big attention but it is still optional. The subject called information education is compulsory in junior high school and in other school levels, it is optional. For the software education, teachers' learning opportunities are provided and learning community activities are promoted by local governments.

However, with the different government, the plan was not taken seriously and neglected for a long time. With the COVID-19, infrastructure for online learning for all primary and secondary schools were provided and higher education institutes also equipped ICT facilities for online learning. It seems that using online periodically will be emphasized as a alternative instructional method to cope with emergency situation like COVID-19. Still now the COVID-19 is still a problem and keeping social distance is on practice. Online learning was forced in schools without the long-term mater ICT plan in education but will be new norm in school instruction.

Information study as a subject was restarted from 2018 at primary and secondary schools. The subject "Information study" is a compulsory subject of science domain. Science domain includes earth science, biology, physics, chemistry and Information as well as home life and technology. The subject "information study" has teaching time, 36 weeks (36 hours a year) and individual

school can choose when to teach the subject. Government started to hire teachers for Information science from 2018 [MEST 2015].

(4) The Open Education Resource Platforms for Higher Education

For higher education, cyber universities were allowed from 2005, and now there are 18 cyber universities in total as well as Korea National Open University at present. Other existing universities may also offer e-learning, but the major instructional form of the existing universities is face to face instruction. However due to the COVID-19, higher education institutes also had to provide online learning to their students. It became an opportunity to compare the quality of contents from conventional universities and cyber universities. Cyber universities have far more experience and system to support to produce quality contents. Universities recommend to use any of three instructional models: two-way video conferencing class (usually using Zoom or that kind app), multimedia contents use with evaluation, project based individual learning. Students preferred the multimedia contents use the most as they can study whenever they want where ever they wish. Students liked the project based learning the least Teachers prefer the two-way video conferencing instruction as it is similar to the classroom activities.

Students experienced the content delivery can be done any one and it is OK. Now in education, the teacher's role is changing: they have to focus more on supporting student instruction, not content delivery. It is the time that the identity of teachers are not from teaching. Teachers can do better with support their own students. Teachers understand how to invent their students, how to support students learning processes by questioning based on their needs and interests. Video star internet lecturers cannot take care of students as the local teachers do.

Korean open courseware (KOCW) and Korean massive online open courseware (KMOOC) will be encouraged to empower students more with high quality contents. Flipped learning is welcomed as an alternative instruction and instructional video are in a great demand.

As mentioned earlier, the use of OER in conventional instructional environment requires a new instructional model. With the introduction of flipped instruction, the implementation of open educational resources in education shows the feasibility of separating teaching from lecturing. It can revolutionize education and OER will play as a disruptive innovator in education. The COVID-19 prove it can come rather suddenly than expected.

References

[KERIS 2013] Adapting Education to the Information Age (Whitepaper)

[KERIS 2016] White book of educational information.

[Koller 2021] Daphne Koller, Digital learning coming to life, Invited Talk, AAAI, 2021.

[MEST 2011], The strategic plan in SMART education, 2011.

[Krishnan 2015] Mangala Sunder Krishnan and Srinivasan Ramani, “Snapshots of the Internet around 2000,” *An Asia Internet History - Second Decade (1991-2000)*, 2015.

[MEST 2011] MEST, *The strategic plan in SMART Education*, 2011.

[MEST 2015] MEST, 2015 national curriculum, 2015.12.

[Nepal 2015] *Nepal Wireless Networking Project*, 2015.

[NPTEL 2015] NPTEL, *National Programme on Technology Enhanced Learning*, 2015.

[So 2008] Hyo-Jeong So, Insu Kim, and Chee-Kit Looi, “Seamless Mobile Learning: Possibilities and Challenges Arising from the Singapore Experience,” *Educational Technology International*, vol. 9, no. 2, 2008, pp.97-121.

[Young 2010] Jeffrey R. Young, “College 2.0: A Self-Appointed Teacher Runs a One-Man 'Academy' on YouTube,” *The Chronicle of Higher Education*, Jun. 2010.