

Abstract**Educational Innovation Outlook and Tasks(II)****- Primary and Secondary Education**

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The Korea Educational Development Institute planned a 2-year project in 2016 for the better future of primary and secondary education and supportive policies to realize this vision assuming the year 2030 is the time for a predictable future. In 2016, we set a future vision of the primary and secondary education and explored areas to be innovated for realizing the vision. This year, in the year 2, the purpose of this research 'Educational Innovation Outlook and Challenges' in the areas of primary and secondary education' mainly focuses on the big picture of the primary and secondary education in 2030 and policies to be implemented during the years 2018 to 2030. This research also puts emphasis on innovation that Korea's primary and secondary education can contribute to potential development for each individual and to sustainable development of society that make learners to feel happiness of learning in the end.

Chapter 2 presents the result of research conducted in 2016 and analyzes examples of major countries. First, to understand the background of this research, the result of the year 1 research is the following(MiKyung Chung etc., 2016: 177–182). In year 1 research, we explored outlook for the future society from now to 2030 based on each area of STEEP (Society, Technology, Economy, Environment, Politics) analysis. We discussed changes in the future school education discovered by previous research and reviews the future education visions and the related policies in major countries. In line with this, we investigated into newly proposed innovation tasks along with constantly raised current issues from the government by analyzing the education innovation tasks of the last three governments. Based on this, we drew up and examined major current issues and the related policies in terms of how to solve fundamental problems that Korea's education has been faced.

Based on the analysis result, we set the future vision of Korea's primary and secondary education as 'Education focusing on individual potentials development and sustainable development of society'. To realize it, we set the objective of Korea's primary and secondary education as 'Learner-friendly education which learners can feel happiness from learning', 'Education for responding to society change', and 'Education for social integration'. To this end, we explored innovation areas of Korea's education.

In line with this, we presented examples of major countries' innovative school operation to get an idea about policy tasks. In line with this, we presented examples of major countries' innovative school operation to get an idea about policy tasks. The example schools selected are the ones that introduced by the press or education industry by their outstanding innovation in the areas of the Korea's primary and secondary education in the year 1 research. Eight schools including Ørestad Gymnasium in Denmark, Steve Jobs School in Netherlands, MET High School in America which organize and manage curriculum based on personalized learning and focus on the development of students' sociability and emotion, Science Leadership Academy in America, Nan Chiau Primary School in Singapore, Quest to Learn School in America, and Wisconsin eSchool Network

which emphasize on the future-oriented innovative teaching method using technology and flexible school system operation, and new role of teaching staff, and Innova School in Peru which puts an effort to realize education for society integration by reducing school fees thanks to introduction of a blended learning system.

Chapter 3 presents a big picture of Korea's primary and secondary education in 2030 based on the result from the year 1 research and case analysis of major countries and presents a supportive system including curriculum, teaching method, teaching staff, and governance that are core factors to implement the big picture.

Considering functional changes of future schools, keywords that characterize future Korea's primary and secondary education will be 'learner-oriented curriculum and method', 'teaching and learning method based on intelligence and information technology', 'flexible education system', 're-establishment of teaching staff's role', 'healthy and safe school', and 'expending and implementing education welfare'.

Learner-oriented education should be enabled so that learners feel happy from learning. To do so, intelligence and information technology-oriented education and more flexible education system are prerequisite. In line with this, changes in teaching and learning method and school function should include changes in teaching staff's role, the school function changes should promote health and safety across school members, and education welfare should be expanded. However, when using intelligence and information technology in education for sustainable society development and educational objective, we should have methods to limit the application and scope and furthermore make a legal limitation for the application that threatens social order. In addition to this, educational application scope for intelligence and information technology should be limited by financial support.

We can expect the future primary and secondary school in 2030 as below. Children will start schooling at the age of 6 officially and can start school earlier or later than that based on the children's development stage. They can complete 12-step education curriculum before entering university and it may take about 12 years, but it may take

longer or shorter based on the circumstances where requiring time exploring career path or taking a semester off or their development stage. Therefore, the school will be a form that integrates primary, secondary and high school together. The integrated school here means a harmonious integration between curriculum not a physical space integration.

All information an history regarding students' learning management, school life guidance, health care, career path guidance will be managed and collected into AI-embed leaner management system. Therefore, information on school life of students from the moment when the students come to school will be collected in the system automatically and provided to each teacher.

After they come to school, they will do various activities and take various classes based on their own personal curriculum schedule based on their level of learning and selection. The curriculum is developed from the national educational curriculum based on core competencies, but it ranges from step 1 through step 12 and is not based on school grade. It includes a variety of modules even between same subjects and same steps. The learners can learn based on their own class schedule composed of modules available for a specific step in a specific subject according to their aptitude, interest, career path, and learning achievement level. Guidance for each subject and module will be offered and students can set their class schedule with the help of learning consultants(teachers). Student age group may vary in the class, and the step promotion is not decided by the progress of course but by the completion of specific module of a class in s specific step and completion of all required credits. Therefore, there may be different age ranges in the same class and the age of students may differ when they complete a specific step. The history of students' education will be stored and recorded in learner management system. Students can get back to school after exploring their career path based on their will, so the time required for compulsory education may differ by each student. The school operation and system will be managed flexibly so that leaner-oriented education is enabled.

The class is operated in various forms. It also includes classes with virtual reality system using intelligence and information system along with original learning method and

group classes through on-line community or off-line gathering. In terms of the amount of education contents are reduced to implement various education methods. If the modules are not open in school or the contents of e-learning are difficult, students can take the class in an associated organization of a local community and the class is regarded as credits when the level is satisfactory.

Menus for school meals are decided by students, students' parents, and nutritionists and menus that harm students' health based on the students' condition of that day are excluded and substituted menus should be available. After school, students can enjoy various activities in and out of school based on their selection.

School teachers are composed of subject teachers and learning consultants and classes that teachers cannot handle will be done by special lecturers by adopting WISE: Working in School check. This system proposed by this research means a system that certifies the special lecturers whether to check they are fully qualified to work in school. The subject teachers can be both homeroom teachers and learning consultants. The roles of homeroom teachers are monitoring students' learning and school life based on the information from learner management system and preparing and managing overall plans for school life of students in negotiation with learning consultants, nutritionists, and school doctors. Learning consultants perform consultations for how to select modules and subjects, design learning plans, and select learning method. They advise out-of-school physical activities, learning activities, and future career path as well.

In this context, we present how to structure contents of learning as a core factor in school education, a basic direction for implementing innovation tasks in the areas of education methods, how to draw innovation tasks as teachers, and a basic direction for changes in supportive system. As for how to structure contents of learning, first, education for nurturing core competencies. Second, widening selection right for learners. Third, national education curriculum as a basis of learning contents selection. Fourth, reducing the amount of learning contents.

The following is the basic direction that the education method has. First, personalized

education activity management. Second, personalized class operation. Third, making diversified on and offline community. Fourth, education information associated system establishment: a major change comes from application of intelligence and information technology. However, we should keep in mind that there will be some issues caused by the application and the following protective mechanism should be prepared in advance. First, limiting potentials for human right infringement when using personal information. Second, securing teachers' autonomous education activities (legal discretionary authority). Third, limiting unhealthy access due to unexpected malfunction. Fourth, preventing work overload due to information input and prevent not to neglect the original teacher's role. Fifth, legalize measures to mitigate social polarization and education information gap.

In the meantime, we expect the role of teachers based on the changes in school. In other words, the main role of teachers was to provide learning opportunities in the past, but in the future, teachers not only provide learning opportunities but also do many other roles. This may include caring, mentoring, coaching, and guiding students in the areas where technology cannot reach.

The school education mentioned above may not be realized if there is no innovation in changing current school education frame and education supportive system. Therefore, the education supportive system change should come from the following. First, the education supportive system that is flexible, learner-oriented, and personalized. Second, making school education system more flexible. Third, establishing a productive education system and sharing and cooperative governance among various educational organizations. Fourth, establishing a proper education welfare for a new system.

Chapter 4 presents policy tasks to be implemented during the year 2018 to 2030 by each implementation period. Above all, we present the process of drawing tasks and the result of urgency and priority survey for the policy tasks targeted at education specialists and the degree of concurrence for the policy tasks targeted at the public. Refer to the

summary as below.

To set the priority for a total of 28 policy tasks, we conducted a priority and urgency survey targeted at education specialists. In consideration of universality of education policy tasks since it is applicable for all people, we conducted a survey targeted at the public to understand their concurrence on the policy tasks(proposed). Lastly, based on the survey result, our research team selected policy tasks to be implemented by dividing two terms: the first term (from 2018 to 2022) and the second term (from 2023 to 2030). We also considered tasks which should be implementing constantly.

The tasks to be implemented for the first term include establishing school safety management system, drawing core concept for each subject and clarifying core achievement standard, establishing career management system, establishing learning and school life consulting system, reviewing 2015 revised curriculum systematically, preventing problems that may be caused by school transfer, supporting e-learning education system for marginalized students, flexible operation for school transfer by students and Gap Year, allowing pre-teachers to obtain a double major and adopting a certifying system for special lecturers.

The tasks to be implemented for the second term include expanding workforce for education welfare, operating master-level graduate schools and internship program for pre-teachers, establishing an education association system in and out of school, adopting a module per learning unit, setting teaching and learning completion standard per each step, operating a program for nurturing primary school teachers and secondary school teachers respectively in one teacher nurturing institution, establishing various on-line community, structuring a teaching and learning certification committee(tentative), nurturing teachers with the following two tracks: subject teacher and learning consultant, setting compulsory education to step 9 in the teaching and learning process, classifying the teaching and learning level from step 1 to step 12. The constantly implementing tasks include proactive support and management for compulsory education, learner-oriented contents development, supporting out-of-school learning and accepting academic degree,

intensifying teacher training of graduate schools of education, and operating integrated schools(primary, secondary, and high school).

To implement the above policies, revising or renewing related laws is required. In this context, we predict how to enact the related laws and the required financial capacity.

Chapter 5 presents a detailed roadmap by each task based on the period.

Key words: Education innovation, learner-oriented education, educational application of intelligence and information technology, WISE, module, Gap Year