

Release Date 2023. June. 7.(Wed) 15:30

Publication (Online) 2023. June 8.(Thurs) 14:00
Date (Paper) 2023. June 8.(Thurs) 14:00

MOE to unlock personalized education for all with AI-embedded Textbooks

- AI-embedded Textbook Initiative unveiled to achieve “Education for All”
- Implemented in key subjects Math, English, Informatics, Korean (for special education) starting from 2025; by 2028, the subjects will be extended to social studies, history, science, technology, home economics, etc.
- Support for a smooth implementation of AI-embedded textbooks will be offered such as professional development for teachers and designing of personalized teaching and learning methods

The Ministry of Education (Deputy Prime Minister and Minister of Education Lee Ju-Ho) announced the “AI-embedded Textbook Initiative” at the Seoul Government Complex on Thursday, June 8th.

The AI-embedded Textbook Initiative is a crucial component of the Ministry of Education’s broader education reform efforts, the Digital Transformation of Education. Starting from 2025, AI-embedded textbooks will be implemented in key subjects such as Mathematics, English, Informatics, and Korean language (for special education). By 2028, the range of subjects will be expanded to include Korean language, social studies, history, science, technology and home economics, etc. The AI-embedded textbooks offer not only personalized contents tailored to individual students based on their data, but it also provides various features such as interpretation and subtitles for students and teachers who require assistance, as well as translation capabilities for students from multicultural backgrounds.

The Ministry of Education has undertaken significant efforts to foster collaboration between textbook publishing companies, which possess expertise in textbook development and EdTech companies equipped with advanced technologies. The objective is to develop high-quality AI-embedded textbooks that align with the 2022 revised National

Curriculum. To ensure the safety and suitability of AI-embedded textbooks, a thorough evaluation process will be conducted for a period of 6 months. After the evaluations, the textbooks will be distributed to schools for implementation. To facilitate a successful implementation, professional development will be designed for teachers specializing in Mathematics, English, Informatics, and Korean (for special education). These sessions will focus on customized teaching and learning methods tailored to the AI-embedded textbooks.

In the development of safe AI-embedded textbooks for students, the publishing companies and EdTech companies will be required to adhere to ethical principals including measures to block harmful content. Concurrently, schools will further enhance students' digital literacy through education on ICT ethics and prevention of excessive reliance on technology, following the 2022 revised National Curriculum. In addition, students' opinions and feedbacks will be collected to ensure a smooth implementation, and their insights and needs will be fully considered in the design process.

The AI-embedded textbooks offer personalized education that matches their academic competency and learning pace. This approach instills confidence in students and promotes effective learning. In addition, parents can gain a comprehensive understanding of their child(ren) through access to a wide-range of educational information. Teachers, with the aid of AI-embedded textbooks, can prioritize building strong connections with their students, fostering their personal growth and development. The ultimate goal is to transform classrooms into inclusive learning spaces that cater to the needs of all students, achieving personalized education through increased student engagement.

Deputy Prime Minister and Minister of Education Lee Ju-Ho emphasized the significance and said, "Education for all can be realized when we put forth collaborative efforts and effective communication in the development of AI-embedded textbooks." He added, "But most importantly, the role of teachers in designing classroom instructions and utilizing AI-embedded textbooks are crucial to support the personal growth and development of all students."

【Attachment】 Summary of the 「AI-embedded Textbooks Initiative」

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☐ Background Information

- AI-embedded textbooks developed to realize personalized education through the use of edtech, with an aim to close the education gap and nurture all as talents
 - ※ Support self-directed learning through the implementation of edtech technologies, and pursue education innovation through diverse teaching and learning methods such as flipped learning
- Plans on the development and implementation of AI-embedded textbooks announced via the Ministry of **Education's 2023 beginning-of-the-year Work Plan** ('23.1.5) and **Digital Transformation of Education Initiative** ('23.2.23)
 - ※ (Presidential Address) "We need to shift away from the traditional textbooks that solely deliver knowledge, towards personalized education that caters to the unique needs of each individual."

☐ Development Process

Concept of AI-embedded textbooks : Textbooks utilizing ICT including AI, to incorporate various learning materials and features that provide personalized learning opportunities tailored to each student's abilities and proficiency.

- (Subjects) Introduced in Mathematics, English, Informatics, and Korean (for special education) from 2025, extended to Korean, social studies, science by 2028
 - ※ Taking into account the developmental phase and subject characteristics, first and second grades for elementary school as well as electives and arts and physical education, ethics for high school grades will be excluded
- (Scope) Based on academic data analysis, AI-embedded textbooks will encompass supplementary learning for students who are falling behind as well as intensive learning for students with high academic proficiency
 - ※ △Core concepts, supplementary learning to resolve academic deficiency, △ Projects for intensive learning provided via discussions and essays

- (Development Method) Standard web (e.g., HTML) will be created for easy access, and digital textbook platform will be established on the basis of cloud (e.g., SaaS) for convenience
- (Distribution of roles) The government and public institutes will establish an “Integrated Academic Data System” (i.e., user log-in, dashboard, etc.), and the private sector will develop the AI-embedded textbooks

□ Agendas to be pursued

- **Personalized design for all** will be pursued through the participation of students and teachers in textbook design, and UI/UX design that can be easily and conveniently used by all users

* User workshops that utilizes Design Thinking will be held in July

- (Personalized support) **Students** will encounter personalized learning contents that best fits their competency, **teachers** will design classes based on data, and **parents** will have access to comprehensive student information to enhance their understanding of their child(ren)
- (Easy access) UDL (Universal Design for Learning) for students and teachers with special needs, offering multilingual features for students from multicultural backgrounds
- (Resolve negative side effects) Digital literacy content and support for monitoring of students’ activities will be granted, blocking harmful websites to alleviate concerns about the negative side effects of digital technology
- (Professional development for teachers) By 2025, teachers specializing in AI-embedded subjects (i.e., English, Mathematics, and Informatics) will be given training to enhance their understanding and utilization of AI-embedded textbooks in addition to innovative teaching.

※ Collaboration with the private sector under the supervision of local education offices to

focus on training teachers in subjects targeted for implementation (2nd Semester of '23)
30% of all targeted teachers → (1st Semester of '24) 60% → (2nd Semester of '24) 100%

- A rational system for the qualification system of **new technologies** and pricing system will be established, creating an environment where ICT can be applied in all textbooks
 - (Qualification) Textbook qualification criteria will be eased, allowing publishers to jointly participate in the development process through consortiums with EdTech companies (e.g., 1:n possible).
 - ※ EdTech companies that participate in the development of AI-embedded textbooks by forming consortiums with publishers will be granted benefits in the future ('29~).
 - (Pricing system) The pricing system will be changed to subscriptions, considering the limitations of developing high-quality AI-embedded textbooks under the existing cost preservation methods as well as taking into account opinions of experts
 - ※ For the initial implementation in 2025, an “alternative subscription method on a temporary basis” that evenly distribute profits to promote the participation of small and medium-sized publishers will be considered
- Data sets and contents that can be utilized to meet the demand of AI-embedded textbooks will be identified to support companies
 - * Supporting features to enhance the accessibility such as multilingual support systems
 - (Data set development) Relevant ministries such as the Ministry of Science and ICT will collaborate with the private sector to promote the development of AI learning data sets for advanced AI adaptive learning services
 - * Data sets provided through the development of “AI Knock! Knock! Math Expedition” and mathematics, English, and informatics prototypes (1st half of '24) and projects carried out by the Ministry of Science and ICT
 - (Joint utilization of contents) Contents such as evaluation items and immersive contents that can be utilized in the development of AI-embedded textbooks will be offered
 - (Collaboration) Cooperative relationship between publishers and

EdTech companies will be supported through events such as the AI-embedded Textbook Matching Day

- * Create opportunities for publishers and EdTech companies to exchange information and collaborate through various events including matching tables (3 times in '23).
- (Approval System) Due to the integration of edtech technologies such as learning analysis, a dual evaluation system will be implemented with subject-specific content evaluation and technology evaluation.
- An improved evaluation and modification system will be established to ensure error-free operation of AI-embedded textbooks in schools, and the operational support system will be developed
- (Suitability review) A suitability review (~6 months) of AI-embedded textbooks will be undertaken with a focus on teachers to test the functionality and stability of textbooks before distribution to schools
- (Support system) The AI-embedded Textbook Support Center at the Korea Education and Research Information Service (KERIS) will be created to monitor the operation status of AI-embedded textbooks and to further address the needs
- (Modification and improvement) Modification and improvement system will be established for prompt review and approval of requests and renewing of AI-embedded textbooks
- (Policy monitoring and feedback) Monitoring team for AI-embedded textbooks will be established, where pre-service teachers can conduct monitoring and incorporate the result in policies
- Relevant laws and regulations will be amended including the “Regulations on Textbooks” (President Decree) to define and improve the system for AI-embedded textbooks

□ Tentative plan

