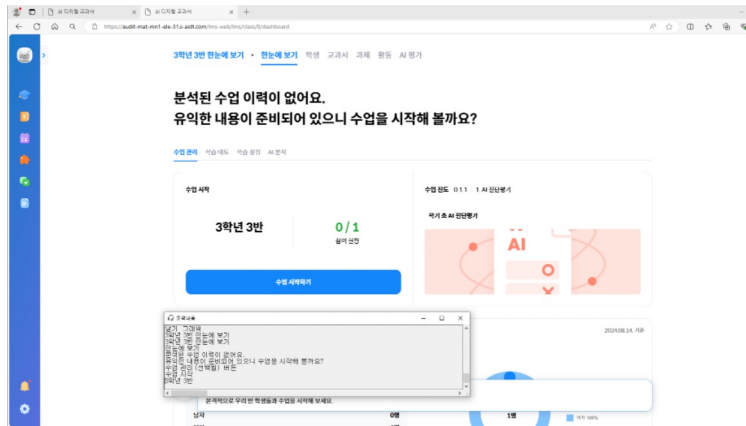


To ensure that students with disabilities can receive digital education without discrimination, we add our unique UDL\* and barrier-free\*\* services on top of the AI digital textbook learning platform and content.



**\* Universal Design for Learning (UDL)**

Derived from Universal Design (UD), which is also known as design for all or inclusive design, UDL applies the principles of accessibility and usability to teaching and learning contexts. Its aim is to provide flexible materials and methods that offer accessibility for all learners, present appropriate challenges, and engage students in learning.

Source: Wikipedia, Education Policy News (<https://www.edupolnews.com>)

**\*\* Barrier-free**

Refers to the movement and policies aimed at removing physical obstacles or psychological barriers that hinder the social life of vulnerable groups such as people with disabilities, the elderly, and pregnant women.

Source: Wikipedia

# Problem

More than 4,000 students with visual and hearing impairments in South Korea will not be able to receive proper education through the AI digital textbooks, which will be expanded starting in 2025.

필수 준수 사항 • 개발사는 다음의 접근성 가이드라인을 필수 준수해야 함(연차별로 단계적 확대 적용)

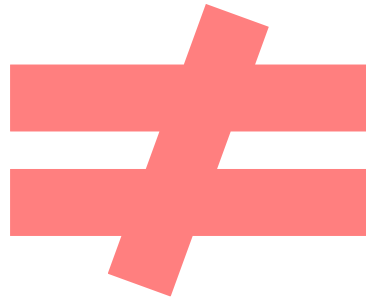
구분	필수 준수 사항	단계		
		2025년 적용	2026년 적용	2027년 적용
시각장애 사용자를 위한 접근성 준수	시각자료 접근을 위해 대체 텍스트를 제공해야 함	○		
	가독성이 좋은 고딕 형식의 서체를 제공해야 함	○		
	시각자료, 멀티미디어 자료에 학습 과제 또는 문제 해결을 위한 정보를 포함하고 있는 경우 대체 텍스트가 아닌 화면 해상 스크립트를 제공해야 함	○		
	초점 이동과 기능 제어를 위한 접근 가능한 조작을 지원해야 함	○		
	표의 행과 열의 맨 첫부분에는 해당 수치에 대한 정보를 제공하는 헤더를 삽입함		○	
	텍스트가 포함된 이미지가 스캔되어 있는 경우 이를 스크린리더가 접근할 수 있도록 함		○	
	정보를 조직적으로 탐색할 수 있도록 단축키 또는 메뉴를 포함함		○	
	단락 구분을 해야 할 상황이라면 단락대로 스크린리더가 접근할 수 있도록 함		○	
	동영상이나 음성 콘텐츠에는 동등한 내용의 자막을 제공해야 함		○	
	화면 확대 프로그램(Fusion, Flowy, Zoomtext 등)과 같은 보조공학 기기(기술)를 활용하여 AI 디지털교과서에 접근할 수 있도록 개발함			○

Screen description scripts must be provided instead of alternative text.

## 8.2.1 시각장애를 가진 사용자 위한 접근성 준수

- 접근성 지침에 기반한 시각장애 학생의 콘텐츠 접근을 보장함
- AI 디지털교과서는 기본적으로 웹 기반 플랫폼을 이용하여 제작하되, WAI(Web Accessibility Initiative)의 웹 콘텐츠 접근성 가이드라인(WCAG 2.2)과 과학기술정보통신부 (한국지능정보사회진흥원)의 정보 통신 접근성(웹 접근성) 지침을 기본으로 콘텐츠 접근성을 확보
  - ↳ 웹 사이트의 경우 '한국형 웹 콘텐츠 접근성 지침 2.2'를 기준으로 함
  - ↳ 모바일 애플리케이션의 경우 '모바일 애플리케이션 접근성 지침 2.0'을 기준으로 함
- 시각장애 학생이 사용하는 보조공학 기기(기술)와 스마트 기기의 접근성 기능을 활용하여 AI 디지털교과서에 접근할 수 있도록 개발함
- 화면 읽기 프로그램(센스리더, NVDA, JAWS 등)과 같은 보조공학 기기(기술) 화면 확대 프로그램(Fusion, Flowy, Zoomtext 등)과 같은 보조공학 기기(기술)

Ensure accessibility based on WAI(Web Accessibility Initiative) guidelines.



UDL, Barrier-free  
(Effective Implementation Level)

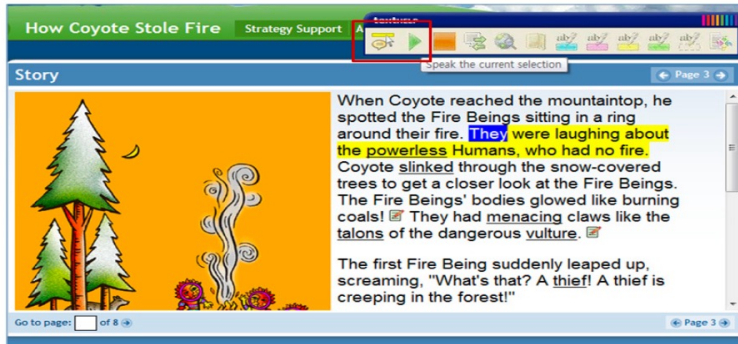
Web Accessibility Initiative  
(Participants' level of awareness)

• Number of registered persons with disabilities in 2023 (Ministry of Health and Welfare website): [https://www.mohw.go.kr/board.es?mid=a10503000000&bid=0027&list\\_no=1481120&act=view](https://www.mohw.go.kr/board.es?mid=a10503000000&bid=0027&list_no=1481120&act=view)

학습 내용을 음성으로 읽어주는 기능 제공

example

- UDL Editions(<http://udleditions.cast.org>)
- UDL Editions에서는 제시된 텍스트를 음성으로 읽어주는 기능을 제공하며, 음성지원 기능은 자동 재생, 선택 재생 등의 여러 옵션이 있음



They are actually making it this way!

Web Accessibility Initiative



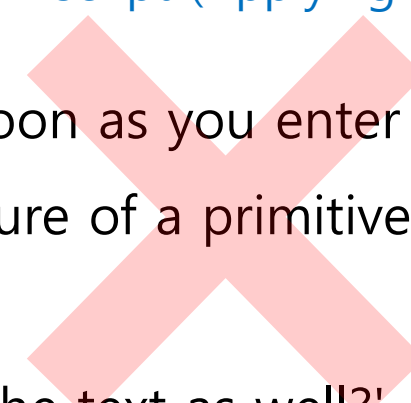
Press Tab to navigate to 'Picture 1'

Screen description script (Applying UDL and barrier-free)

Auto-play as soon as you enter the page:

'There is a picture of a primitive man making a fire next to a tree.'

Shall we read the text as well?'



# Problem

## 정부, 장애인 방송접근권 확대 움직임... 유료방송·OTT는?

디지털데일리 | 발행일 2022-08-13 10:36:27

유료방송과 OTT 사업자들은 단장은 나세를 표하고 있다. 장애인방송 의무편성 규제가 적용될 경우 상당한 비용 부담이 수반될 수 있어서다. 업계에 따르면 국내 OTT 전체 콘텐츠 자막 제작에는 수백억원이 필요한 상황이다.

If regulations are applied, significant costs will be incurred, and hundreds of billions of won(₩) will be needed for subtitle production.

## 장애인방송 편성의무 '빈껍데기'

윤현민 기자 | 승인 2022.06.10 10:01 | 댓글 0

의무위반 사업자 13곳 중 11곳이 지상파  
KBS전주 등 7곳 2년 연속 편성의무 위반

## "화면해설 품질 높아달라"... 방통위, "소관아니다" 90일만에 답변

박예지 기자 | 승인 2020.06.24 13:48 | 댓글 0

시각협회, '방송통신심의위원회는 자신의 잘못으로 장애인방송을 무너뜨리지 않게 하라!' 성명서 발표



[소셜포커스 박예지 기자] = 방송통신위원회가 "화면해설의 품질을 높여달라"는 시각협회의 민원을 "소관이 아니다"라고 회피해 빈축을 사고 있다.

## "이쯤 되면 이 방송은 '화면해설방송'이 아니라 '자막 낭독 방송'이죠"

김혜미 기자 | 입력 2018.04.02 14:43 | 댓글 0

시각장애인을 위한 화면해설방송, 이것저것 '특정 문제' 제작업체의 낮은 전문성, 10% 비율조차 제반

Low expertise of production companies, broadcast stations that fill even the 10% quota with reruns, and the Korea Communications Commission, which is doing nothing.

# "High-quality UDL and barrier-free services:

# What about the production costs and time?

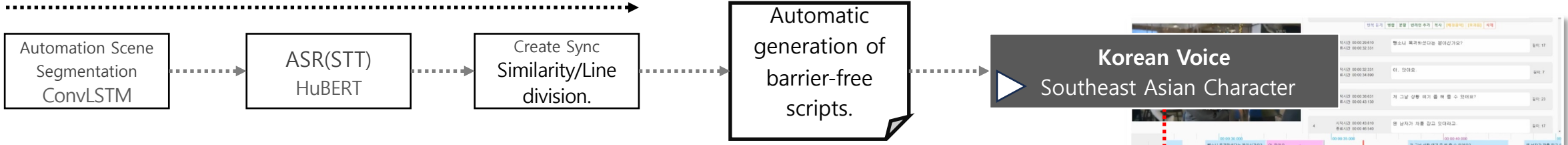
The reason why even after more than 10 years of legislation\*, screen description broadcasts are not enforced 100% on TV, let alone VOD and OTT platforms!"

\* Article 69, Paragraph 8 of the Broadcasting Act, and Article 21, Paragraph 3 of the Act on the Prohibition of Discrimination Against Persons with Disabilities and the Provision of Remedies.

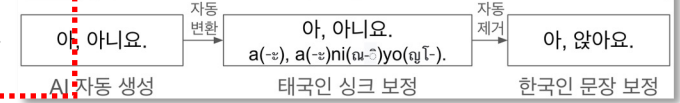
# Solution

To maximize the 'capabilities and strengths of production experts,' utilize local workers in Southeast Asia for simple/repetitive tasks with the support of a 'production-assist AI solution.'

## 1. Reduction in production time: AI models that have obtained certified test results.

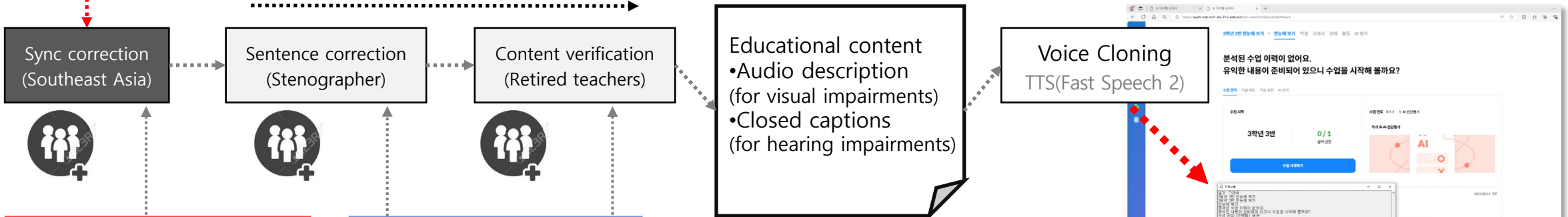


## 2. Cost Optimization: Reducing unreasonable labor costs by utilizing the local workforce in Southeast Asia.



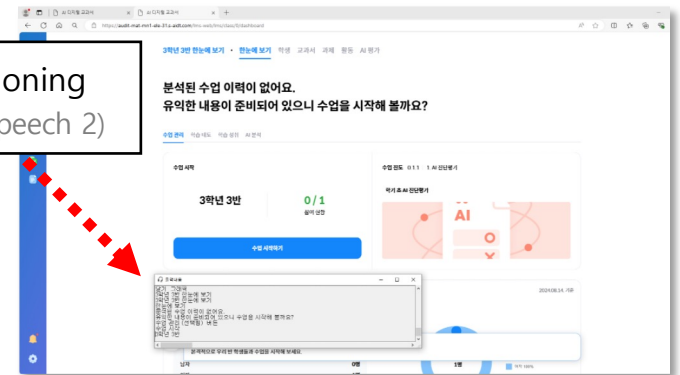
SaaS-based production solution

## 3. Ensuring High Quality: Stenographers, retired teachers, and quality software and processes.



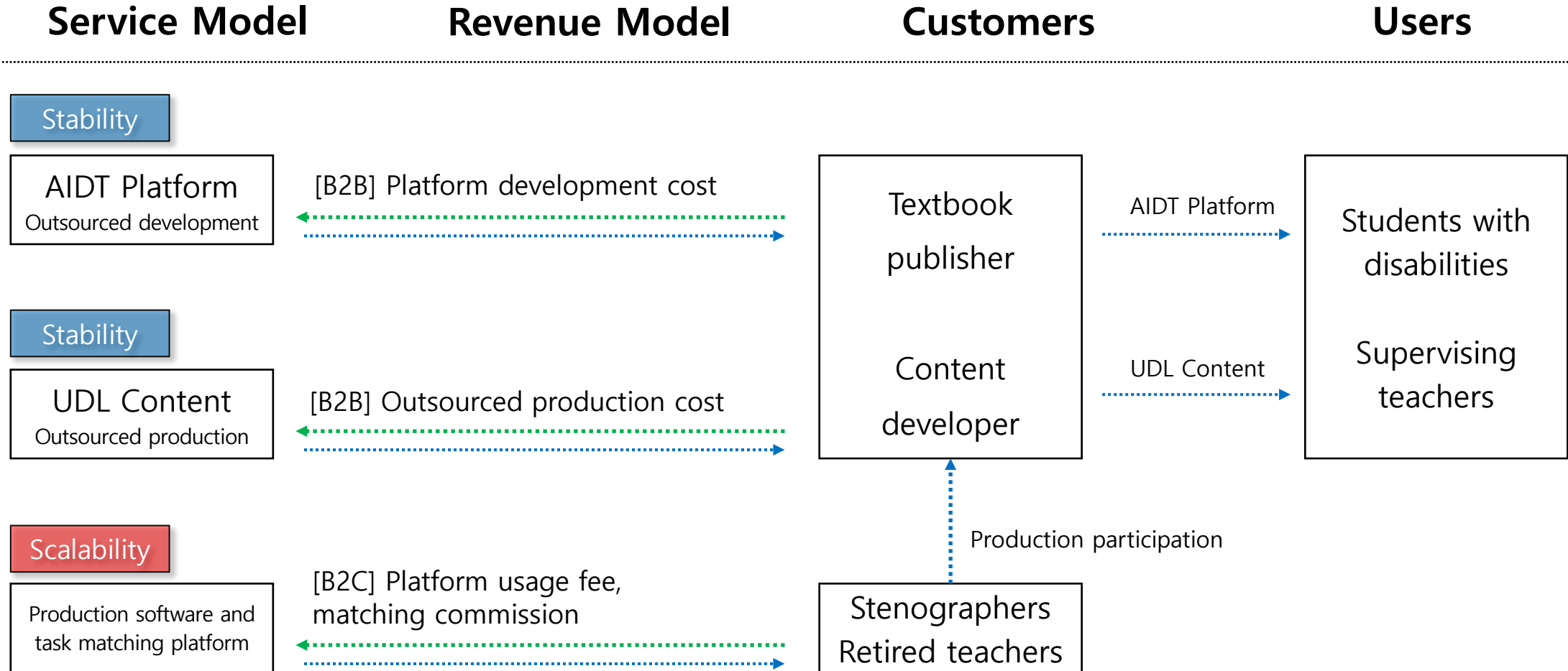
Handle 'simple/repetitive tasks,' which make up 70% of the total workload, at half the cost.

Not video content editing and production, but the convenience of 'document editing level.'



AI digital textbook

# Business Model



## Market size

### TAM : Total digital education

- **Global : 46.7** billion USD(2026)
- **South Korea : 3.27** billion USD(2026)

### SAM : South Korea digital education

- **1 year : 2.05** billion USD

### SOM : AI digital textbooks

- **1-year : 769.23** million USD
- 1-year government budget: approximately 384.62 million USD
- Private market size: approximately 384.62 million USD

### KISTI(Korea Institute of Science and Technology Information) : ASTI MARKET INSIGHT(2022-046)

The global digital education market size was 11.5 billion USD in 2021, and it is expected to grow at an average annual rate of 32.3%, reaching 46.7 billion USD by 2026.

In South Korea, the market is expected to grow from 810 million USD in 2021 to 3.27 billion USD by 2026.

### Maeil Economy (<https://www.mk.co.kr/news/it/10985379>)

The industry estimates that textbook publishing, including supplementary study books, workbooks, and exam preparation books, accounts for more than half of the entire publishing market. According to the Ministry of Culture, Sports, and Tourism's content industry survey, the sales revenue of the textbook and educational book publishing sector reached 2.6692 trillion KRW in 2022. The "2022 Leisure White Paper" shows that in the domestic publishing market, valued at 3.8728 trillion KRW, textbooks, supplementary study books, workbooks, and exam preparation books account for nearly 60% of the market.

### Korean economy (Fierce competition in the AI digital textbook market, <https://www.hankyung.com/article/2024060309771>)

The AI digital textbook market, set to launch next year, is expected to make the greatest impact. AI textbooks will provide personalized education by using devices such as tablets. Starting from next year, AI textbooks will be introduced first for 3rd and 4th graders in elementary school and for 1st graders in middle and high school in subjects like math and English. Once AI textbooks are fully implemented, traditional paper textbooks will be phased out.

Currently, the recommended price for a paper textbook is between 6,000 and 9,000 KRW, and the annual market size is around 500 billion KRW. AI textbooks are expected to cost between 60,000 and 100,000 KRW per year based on subscription. Korea is the first country in the world to introduce AI across its public education system. In preparation for the introduction of AI textbooks, the Ministry of Education allocated a budget of 533.3 billion KRW this year, with 380 billion KRW designated solely for teacher training. Masspress, which operates a learning platform, has entered the market by developing a digital textbook platform and is partnering with other companies like Google, which is focusing on cloud-based textbooks. The Ministry of Education expects AI textbooks to open new markets for EdTech companies, including services such as student management solutions that leverage AI and digital devices.



## 온라인 강의에서 소외당하는 장애인 대학생들 ‘학습권 보장’ 촉구

A 박승원 기자 | © 입력 2020.06.04 17:53 | 댓글 0

코로나19로 수업 위에 오른 장애인 학습권 문제 “똑같이 수업 듣고 싶다”  
장애인 대학생들, 교육부와 대학에 배리어프리 체계 마련 요구



## Social Impact

- The impact of universal learning rights in digital education on the lives of 4,000 students with disabilities in South Korea.
- The community that suffers alongside one person with a disability includes their family, teachers, and children participating in group activities.
- We must consider not only the individuals with disabilities and their communities, but also the companies and market sizes affected by institutionalization.