

Kosen Student's Inspiration  
Changes the Society!

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# Social Implementation Education

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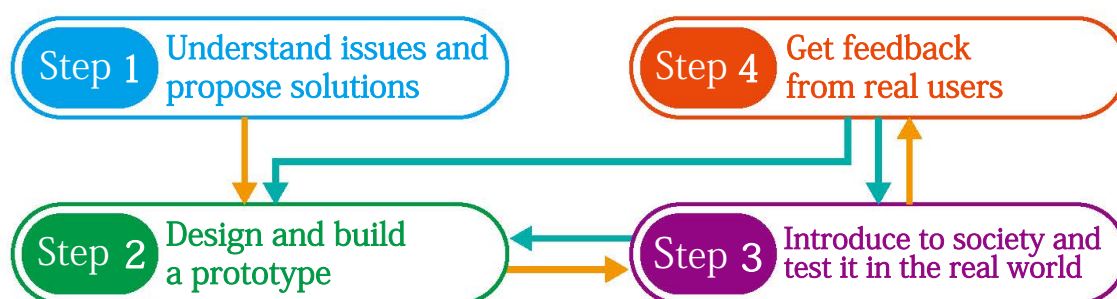
National Institute of Technology (KOSEN),  
**Tokyo College**



## About Social Implementation Education

“Social Implementation Education” aims to nurture engineers who can make innovation, by repeating the process of (1) understanding issues, (2) designing and building prototypes, (3) introducing them to society, and (4) getting feedback, while involved with the society. This is a completely new educational program, providing students with the skills to be active and experience the importance of being with society. Through this experience, they will learn to think and act on their own, and the importance of connecting with users.

### The 4 Main Steps of the Social Implementation Process



## The Social Implementation History of Tokyo Kosen

2012~2016

As part of our efforts to innovate the education of Kosen, we started the “Innovative Japan” Project which was funded by the Ministry of Education, Culture, Sports, Science and Technology's Inter-University Cooperative Education Promotion Program.

Aiming to contribute to innovation and the creation of new industries from the educational perspective, this project worked on “creating a foundation for social implementation education methods” and “Kosen education research.”

- Establish basic concepts
- Establish methods
- Present results in competitions, etc.

2017~2020

The project was adopted as part of the “KOSEN 4.0” initiative implemented by the National Institute of Technology, and was known as the “Social Implementation Education Center Project in the Greater Tama Area.”

- Improve the level of the presentations
- More participants and expansion of the fields of the Social Implementation Education Forum
- Further corporate collaboration, etc.

2021~

Based on the efforts of the “KOSEN Innovative Japan Project” and the “KOSEN 4.0” initiative, a new curriculum with a new perspective was formed at Tokyo Kosen. This new curriculum was introduced to the fourth and fifth grades of all departments from 2020.

- Introduced the new curriculum
- Continuation of the Social Implementation Education Forum
- Expansion to other Kosens and further improving the quality of presentations

# Becoming Sustainable by Becoming Part of the Curriculum

In “Social Implementation Project I, II, and III,” all fourth and fifth graders work as a team to tackle social implementation issues. We are also starting to see mixed department teams. In parallel with the curriculum, we aim to establish social implementation education sustainability over the long term by continuing to develop teaching materials, verify grading, and implement practical FD.

In addition, we have incorporated English into some of the social implementation education processes to nurturing international and social implementation-oriented engineers. To grow a sensitivity to social issues and foster a global mindset from an early stage, we assign the SDGs Exploratory Project to first graders. The project includes special lectures by external professionals and card games related to the SDGs, to experience what SDGs are. Furthermore, in the “Social Implementation Education Project” for fourth and fifth graders, we are promoting new initiatives such as writing abstracts and attempting presentations in English.

## Contents of each subject

**Social Implementation Project I**  
(4th grade, 1 credit in the 1st semester)  
A subject focusing mainly on case studies

Students will learn the importance of discovering issues, understand the relationship between technology and society, and experience a series of activities from the collection and analysis of information to making a proposal to solve issues.

**Social Implementation Project II**  
(4th grade, 2 credits in the 2nd semester)  
A subject mainly on prototyping

This basic project subject requires teamwork to undertake initiatives in cooperation with both internal and external partners and to create solutions for social issues together with members of society.

**Social Implementation Project III**  
(5th grade, 2 credits in the 1st semester)  
An advanced project subject

Students will develop the knowledge and skills acquired in I and II and are expected to make further efforts by orienting themselves toward social implementation to obtain and transmit proportionate results.

## Examples of Initiatives in Collaboration with Communities

### Examples of Initiatives in Collaboration with Communities



A Kosen student explaining how to use the system to a blind school teacher (user)



A demonstration of Braille blocks with RFID tags installed in front of Kitano Station on the Keio Line

Example 1: Guide system for the visually impaired (Tokyo Kosen)  
Partners: Tokyo Metropolitan School for the Blind, Hachioji City, Keio Corporation  
Features: guidance on directions and walking support for the visually impaired.



A teacher explaining to students how to use the app while showing a video created by Kosen students



The app is tested by pupils and elementary school teachers (users) to receive feedback, such as on its ease of use.

Example 2: Support system for the creation of safety maps for elementary school students (Tokyo Kosen)  
Partners: Hachioji City Elementary School, iFORCOM Co., Ltd. (commercialization)  
Features: helping elementary school students in the creation of neighborhood safety maps.

### Examples of the Social Implementation Project III

In 2021, programming education was introduced in elementary schools in Japan. Requested by the Hachioji City Board of Education, the students of the Tokyo Kosen lead the development of programming learning materials for elementary school students and the structured educational methods as part of the “Social Implementation Project III” (first semester of the fifth year) and the “Special Research” of the Advanced Course.

The contents and methods were devised by the students under the guidance of the faculty of the Department of Computer Science, in line with the aims of the programming education indicated by the Ministry of Education, Culture, Sports, Science and Technology. It incorporated elements of active learning to grow logical thinking in addition to operations.

In this external class, we also hope that the experience of receiving support and being instructed by Tokyo Kosen students will become a motive for kids to become future engineers.



Fifth-year students teaching at an elementary school

## 02 Achievements of Social Implementation Education

### In Tokyo Kosen

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Our efforts in “Social Implementation Education” have shown many results promoting the characteristics and strengths of Tokyo Kosen education, such as patent applications and acquisition, commercialization, publication of papers at academic conferences, awards at various competitions, presentations at international conferences, and publication in various media.

In addition, to measure the educational impact of the Social Implementation Project I, II, and III, competency tests are conducted before and after the project measuring the growth of general abilities. And because the competency test results showed improvements overall, we are in the belief that the project has a significant and improving impact on general abilities.



## Social Implementation Education Forum and Cooperation with Companies

Tokyo Kosen has held the “Social Implementation Education Forum,” a two-day event every year in March. In the past, the event was held in person, with students, academics, businesses, educators, and other Kosen related individuals, and the numbers were increasing. Due to the impact of COVID-19, only written applications were accepted in 2020. But from 2021, the forum has continued to be held online.

In this forum, students present their work in “Social Implementation Education” (construction/social infrastructure, equipment systems/disaster prevention systems, food/agriculture, medical/welfare, community revitalization, educational support, services, etc.) in the form of a competition. The process (from the identification of problems to the overall efforts to solve them) is evaluated from an educational perspective and by experts in the field.

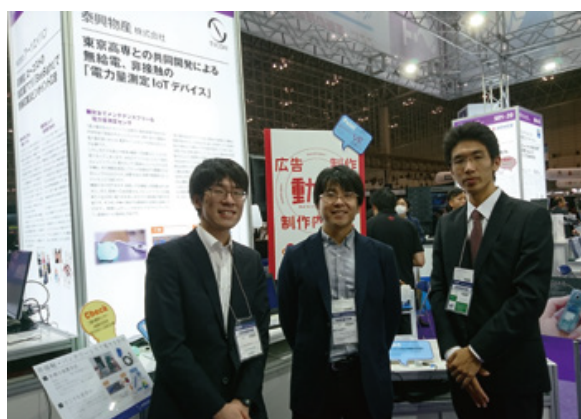
On the first day, students make an 80-second short oral presentation (or a short video in online format) and a 3-minute poster presentation (interactive presentation in the online form). Then the top eight teams will make the final presentation on the second day. The judges are academics, corporate executives, technical specialists, government agencies, professors from overseas partner schools, etc. They will directly tell their evaluations to the students from their perspectives. With the event awarding prizes such as the Best Social Implementation Award, two companies providing the “Mitsubishi Electric Robot Technology Award” and the “Yaskawa Electric Award,” students are highly motivated to participate in the competition.

In addition, in 2014, as part of the “Construction Site Implementation Project” in cooperation with the Ministry of Land, Infrastructure, Transport and Tourism, we began tackling specific issues such as developing equipment for use at actual construction sites, and the “Social Infrastructure Robot Award” has been given to outstanding efforts in this field.

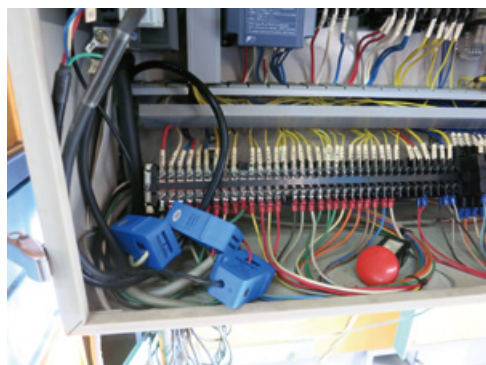
Some of the issues found by collaborating with companies are expected to continue, and new proposals are emerging to solve them.



Students in a meeting with a company



Students presenting their achievements at an exhibition



Implementation of prototypes

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