



COMBINING STEAM EDUCATION WITH PLAYFUL EXPLORATION

Given the high degree of change in society through developments in areas such as AI and IoT, there is an increasing need for interdisciplinary education to resolve social issues via the comprehensive application of knowledge across the wide-ranging fields of science, technology, engineering, arts, and mathematics (STEAM). A gold medalist at the International Mathematical Olympiad—and a jazz pianist to boot—guides us through the essence of STEAM education.

How can we experience the beautiful tones of handbells without relying on sound? In order to share their performance

with hard-of-hearing children, students in a certain school's handbell club passionately started learning about programming to

translate their handbell music into visual animation. Children at a school for the deaf and hard of hearing also tried programming lights to express the high and low tones of the music with the help of a hearing-support device. Aided by



In 2018, while running her own company, NAKAJIMA Sachiko was awarded a Fulbright Scholarship to study at the New York University Tisch School of the Arts, where she majored in interactive telecommunications. There, she first learned to code, finding the cyclical process of thinking and materialization both interesting and immersive.



The students of Tamagawa Academy's handbell club studied programming and created animated works to move in harmony with sounds, thereby enabling hard-of-hearing children to experience their performance. The photo on the left shows Nakajima (front, far left) and students of the handbell club checking their creations. MIRAI EARTH SCHOOL (steAm, Inc.)

computer science, the two groups' collaborative work made their wish to share the tonal pleasures of the handbell come true, letting them discover the joy of co-creation. From such initiatives, we witness the budding of innovation.

NAKAJIMA Sachiko, founder, CEO, and president of steAm, Inc., has been taking on the challenge of using science and technology to nurture creativity. The program introduced above is just one of over 40 Future Earth School projects led by the company under the Future Classroom program supported by the Ministry of Economy, Trade and Industry to demonstrate how students can learn to innovate.

STEAM is an approach to learning that utilizes knowledge from the five disciplines of science, technology, engineering, arts, and mathematics to solve problems and create new value. In this era of relentless change, there is a global demand to nurture such abilities, and the Kishida administration has put a concerted focus on promoting cross-curricular learning that transcends the boundaries

of arts and science to foster individuals who are able to support our collective future.

Nakajima participated in the International Mathematical Olympiad as a high school student, where she became the first female Japanese competitor to win a gold medal. She also harbored a fascination for jazz while studying mathematics at the University of Tokyo, and became a professional pianist after graduating.

Nakajima uses the commonalities between mathematics and music that she found through her own background to explain the pleasure she derives from interdisciplinary studies and the multifaceted perspectives of living in such a volatile and uncertain era.

"To me, STEAM represents diversity. I find it interesting that there is never just one answer. It is important to remain inquisitive. Constantly questioning what one wants to do inspires creativity," Nakajima explains. "The Japanese people have proved adept at devotedly pursuing individual topics in depth. While cultivating expertise

in each field is important—and is something that Japan has long valued—I believe that fresh views of the world will open up if we make connections across the barriers erected between fields of study. One can enjoy pursuing one's inquisitiveness with STEAM. I consider it my job to foster inquiring minds. I support 'diverse creativity' by establishing that initial impetus and injecting engineering and mathematical expertise along the way to facilitate its realization."

Nakajima also works as a thematic project producer for Expo 2025 Osaka, Kansai, Japan, whose theme is "Designing Future Society for Our Lives." Efforts to revolutionize how we learn and play to create better global connections overlap with the world of STEAM education.

"Think like a scientist, create like an artist. That's STEAM. Persistent inquisitiveness becomes a way of living rather than simply a way of learning. I hope to see a future in which everyone, including myself, enjoys an even happier life."



Left: Nakajima (back row, third from right) won a gold medal at the International Mathematical Olympiad in India in 1996 during her sophomore year in high school.

Right: Her fascination with jazz piano while at university led to her becoming a professional pianist after graduation. At a popular math seminar for adults, she strove to convey the mathematics behind the movement of sounds and chords through hearing and vision. KIOI STEAM LAB