Appendix

About the Jockey Club Community Care and STEM in Action Project

Funded by the Hong Kong Jockey Club Charities Trust, CUHK's Centre for Learning Sciences and Technologies launched the Jockey Club Community Care and STEM in Action Project in September 2019, in collaboration with CUHK's Hong Kong Institute of Educational Research and Lok Sin Tong Yu Kan Hing Secondary School. Six local secondary schools joined the project: Lok Sin Tong Yu Kan Hing Secondary School, Christian and Missionary Alliance Sun Kei Secondary School, Pentecostal Holiness Church Wing Kwong College, Buddhist Wong Wan Tin College, Carmel Holy Word Secondary School, and Hong Kong Baptist University Affiliated School Wong Kam Fai Secondary and Primary School. A partnership between the University, the participating schools, social service organisations and enterprises in Hong Kong, the project provides a three-phase curriculum and an interactive platform for real-life STEM learning, enabling students to unleash their creativity and harness innovative technologies to help disadvantaged groups improve their quality of life. The programme is divided into three phases.

The first phase: "From Concept to Project Proposal"

Students complete courses on STEM Education, Social Service Education, Brainstorming and STEM in Action Project Proposal to gain a deeper understanding of the problems elderly and vulnerable communities face in their daily lives. The students get to grips with the latest STEM knowledge and acquire skills to conceptualise innovative technological products and develop project proposals.

The second phase: "Maker Education – From Project Proposal to Product Prototype"

Guided by mentors from the Faculty of Engineering at The Chinese University of Hong Kong, students unleash their creativity, applying STEM knowledge and practical skills to turn the ideas from their project proposals into product prototypes. Local social service organisations and representatives from the Hong Kong Automation Technology Council assist them in refining and perfecting the functionality and design of the product prototypes.

The third phase: "Innovation and Entrepreneurship Guidance Programme – From Product Prototype to Product"

Entrepreneurs and university student mentors walk participating students through the processes and procedures of product production, improving and testing products based on user feedback, and ultimately turning prototypes into finished products.

The 21 technological products designed by the students taking part in the Jockey Club Community Care and STEM in Action Project

Participating school	Product name	Product description	Target beneficiaries
Lok Sin Tong Yu Kan Hing Secondary School	Bus Reminder	Emits audio and light signals to remind elderly and visually impaired people that their bus has arrived at the stop.	Visually impaired, elderly
	Smart Mama	Remotely monitors the wetness of nappies and reminds caregivers to change them when necessary.	
	Ventpro	A compact air purifier tailor-made for nano-flat residents.	Social housing and nano-flat tenants
	Elevating Wheelchair	Allows users to adjust the height of the seat for convenience.	Wheelchair users
	Odourless Cooking Gadget for Nano Living Space	Detects a cooking device's power status and heat levels, while its multi-exhaust filters absorb oily fumes to ensure pure, clean indoor air.	Visually impaired, social housing and nano-flat tenants
Christian and Missionary Alliance Sun Kei Secondary School	Bus Reminder	Emits audio and light signals to remind elderly and visually impaired people that their bus has arrived at the stop.	Visually impaired, elderly
	Medicine Giver	With a pre-recorded audio reminder, visually impaired and elderly people and those with dementia can take correct doses of their medicine on time.	
	Story Teller	An app for elderly people and those with mild dementia, it helps users chronicle special moments in their lives, and has a built-in game that improves their memory.	Elderly
	Clothes Distinguisher	An app that identifies clothing types and colours, so visually impaired and colour-blind people can	Visually impaired

		choose outfits for different occasions.	
	Safety Kettle	With this smart water dispenser device, users can easily work out where to put their cups, and select water at their preferred temperature and volume.	Visually impaired
Pentecostal Holiness Church Wing Kwong College	Necklace	A gadget that detects obstacles and warns visually challenged users, helping to protect them.	Visually impaired
	Smart Medicine Dispenser	Equipped with an audio alarm, the dispenser reminds users to take the drugs stacked in the storage bin on time.	
	Elevating Seat Cushion	Wheelchair users will find it easy to adjust the seat height, with the cushion safely retrofitted on a wheelchair or seat. Handy in many scenarios, such as withdrawing cash from an ATM or dining out.	Wheelchair users
	Smart Dining Assistant	Retrofitted with a magnetised adapter, this gadget helps elderly people and those with hand injuries switch eating utensils, offering them a hassle-free dining experience.	Elderly, people with hand injuries
Buddhist Wong Wan Tin College	Moderator	A board game that entertains visually impaired people and expands their social circles of able-bodied people.	Visually impaired
	Smart Stove	Retrofitted with a device that detects abnormalities, this stove helps visually impaired people cook safely.	
Carmel Holy Word Secondary School	Railway Safety Device for the Hearing-impaired	Emits flashing lights to help hearing-impaired people avoid door crush injuries.	Hearing impaired, elderly
	Text Interpreter	An app that facilitates communication between hearing-impaired and able-bodied people. With its audio input function, it can translate a voice into	

		written words and images.	
	Fire Sensor	A remote fire sensor-cum-alarm. When the sensor detects a fire source, it emits flashing lights and vibrations to alert elderly and hearing-impaired people to the fire.	
Hong Kong Baptist University Affiliated School Wong Kam Fai Secondary and Primary School	Hale-Ware	A set of dining ware, including a bowl and chopsticks. The uniquely designed bowl prevents solid and liquid food from spilling, making dining easier.	Visually impaired, wheelchair users, elderly
	MED-Chine	An automatic device for pouring medicinal liquids. MED-Chine allows visually impaired and chronically ill patients to measure teaspoon doses accurately and easily.	Visually impaired