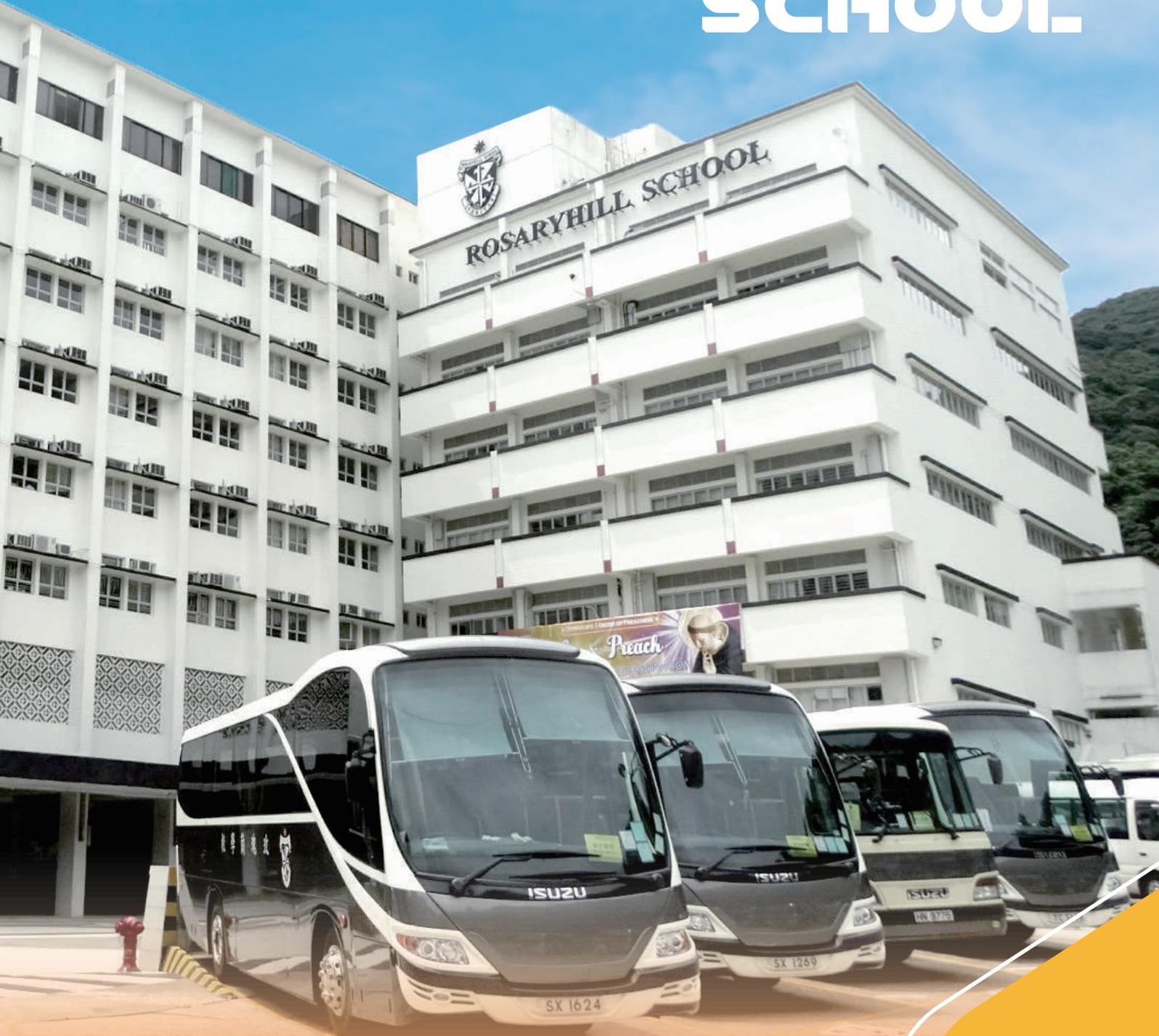




# ROSARYHILL SECONDARY SCHOOL.



**PROJECT LEARNING  
BEYOND CLASSROOM**

# THE INSPIRATIONAL EVENT

The 1<sup>st</sup> CAFEA Young Talent Smart City Forum jointly organised by CAFEA Smart City Limited and Cyberport Academy of Cyberport was held during 15–16 July 2021 in Cyberport, Hong Kong. The event provided an opportunity to enhance Rosarians' project learning skills and team spirit. More importantly, students were able to blend their ideas about smart cities and campuses with social responsibilities. Their positive values of being caring and contributive citizens were strengthened.

Four teams of students from our school joined the inspirational event and shared their ideas and vision about smart cities and campuses. Their creativity and excellent performances were highly applauded by the judges and audience. One of our teams received the Best Academic Article Award with a cash prize of \$10,000. Their academic article is titled 'How Virtual Reality (VR) enhances students' learning experiences in History Subject'. In total, 4 submissions entered the finalist round:

- o Using VR to Enhance Students' Learning Experiences in History Subject
- o Smart Canteen in RHS: Environmental Conservation and Healthy Eating Habits
- o Futuristic School Library with RFID
- o Urban Living Partnership with Hydroponic System

Rosarians were further encouraged when the forum proceedings were successfully launched by Christine Yip (Founder of CAFEA Smart City Limited), Tony Wong (Deputy Government Chief Information Officer), Henry Lin (Chief Curriculum Development Officer (Technology Education, Education Bureau) and Peter Yan (Chief Executive Officer of Cyberport).

Congratulations to our young talents for their impressive ideas and the courage to present them in such a large-scale event!



# WORDS OF ENCOURAGEMENT

**Ms. So Pui Ting**  
**Principal of Rosaryhill Secondary School**

As always, I am proud of our Rosarians for their enthusiasm in participating in outside school events, which help broaden their horizon and enrich their experience. Not only did the 1<sup>st</sup> CAFEA Young Talent Smart City Forum allow students to share their innovative ideas with leading educators in universities, market leaders in technologies, and other students and teachers around Hong Kong, but also strengthened their awareness of social responsibilities as global citizens.

In Rosaryhill Secondary School, we dedicate ourselves in fostering students' academic excellence in different subject areas. We cherish students' creativity and individual uniqueness. Besides, cultivating students' positive values and attitudes in different aspects of their lives is also our significant mission.



**Ms. Yip, Christine**  
**Founder of CAFEA Smart City Limited and**  
**Convenor of Task Force of CAFEA Young Talent Smart City Forum**

I would like to congratulate all Rosaryhill Secondary School participants at the inaugural CAFEA Young Talent Smart City Forum this year. The quality submissions together with wonderful presentations have showcased your capabilities in transforming innovative ideas and STEM elements into real smart applications.

CAFEA forum is a unique platform for school students to learn, be inspired, express their innovative ideas, and participate actively in shaping a human centred smart city. We look forward to welcoming more Rosaryhill Secondary School students in next year's Forum with many exciting submissions, and let us shape the development of Hong Kong into a global smart city hub together.



# HOW CAN VIRTUAL REALITY (VR) ENHANCE STUDENTS' LEARNING EXPERIENCES IN HISTORY SUBJECT?

INOCENO GABRIELLE ELOISE I 4A  
HUNT SAMUEL 4D  
OLI ELIEZER NICOLE 6A  
CHLOE LEIGH 6B

## Project Background and Aims

Recently, people in Hong Kong had a heated debate about the demolition of a century-old underground reservoir discovered in Sham Shui Po. The society had a strong urge to suspend the demolition and to preserve the reservoir as historical heritage. This incident actually indicates the importance of historical preservation as well as history learning. With better understanding of history, students will be able to develop a global perspective and an in-depth understanding of the process of interaction, diversification and rapid changes in today's world. Technology plays an essential role in motivating students and enhancing their learning experiences. This project aims at exploring how VR can enhance students' learning experiences in history lessons and discuss the innovative use of VR in history education.



## Significance of the Project

According to Kavanagh, ‘Virtual Reality has existed in the realm of education for over half a century. However, its widespread adoption is still yet to occur’. Moreover, there is a lack of research about the usage of VR in education in Hong Kong. Little is known about the effectiveness and the students’ learning experiences in using VR in Hong Kong secondary schools. Therefore, the project wants to discover how using VR in an innovative way could benefit students in various aspects, especially for students’ learning motivation. In addition, using VR in history education matches the concept of smart cities since it helps to collect the data of students’ learning experiences which is beneficial to teachers to amend the teaching and learning progress. By obtaining learning data via VR, schools could better structure and implement the History Curriculum.

## Reflection of Our Team

During the pandemic, the landscape of education has been completely changed. The society is longing for an answer to cater for distance learning and the new learning mode. Virtual Reality immediately comes up in our mind as the answer to the new mode of education. It breaks the limit of time and space. Simultaneously, there is an urge for historical preservation in the Hong Kong society because of the demolition of a century-old underground reservoir discovered in Sham Shui Po. People begin to emphasize the historical value of architecture and historical conservation. It is exciting to combine the two heated topics together to conduct a project. As a result, this arouses our interest in how VR enhances the learning experiences in History subject.



# SMART CANTEEN IN ROSARYHILL SECONDARY SCHOOL: ENVIRONMENTAL CONSERVATION AND HEALTHY EATING HABITS

ALICE NGA MAN CHENG 4A  
ANIKA MAE B SERRANO 4A  
HUGH TATSU FUJIWARA 4A  
MARTIN WEI TENG CHEONG 4A

## Project Background and Aims

With the increasing population worldwide, natural resources have become scarce, and it is high time to decrease food waste and develop ways to conserve resources in our daily lives. This project aims to address food waste in our school, in which facts related to food waste are presented, followed by information about our smart canteen. Our objectives are to involve students and staff in our school to reduce food waste by using sensor technologies and smart card operation in our school canteen. The technologies in our smart canteen, 'Cookie' smart card and 'Cookie' mobile app, also serve as monitoring systems to keep track of the eating habits of our canteen users with effective use of technologies and efficient collection of meaningful data, accompanied by the passion of all members of the school towards a common goal of conserving the environment through decreasing food waste.





## Significance of the Project

The project is worth conducting due to its positive impacts on environmental conservation and the cultivation of healthy lifestyles, by the enhancement of catering management in a smart campus. For instance, it contributes to the reduction in food waste produced in schools, which may in a long run alleviate Hong Kong's food waste problems. The health of students and staff are bettered with the introduction of personalized dietary management. Socially, the project attempts to fill the knowledge gap by providing pilot and raw data for modelling food waste problems in school sector. Insightful solutions may be generated with further in-depth analysis.



## Reflection of Our Team

We are highly motivated to participate in the project. First, we have first-hand observation and experience of the eating habits of students, which has inspired us to come up with the idea of a smart canteen. Besides, our awareness of food wastage has been increased through doing research about food wastage. We also enjoy the process of completing the proposal as we learn to appreciate each other's creativity and thoughtfulness. As Form 4 students, writing an academic article with our teachers' guidance is another fruitful challenge. We are also looking forward to seeing our dream come true - the establishment of smart canteens around the world.

# PROJECT WORK: FUTURISTIC SCHOOL LIBRARY WITH RFID

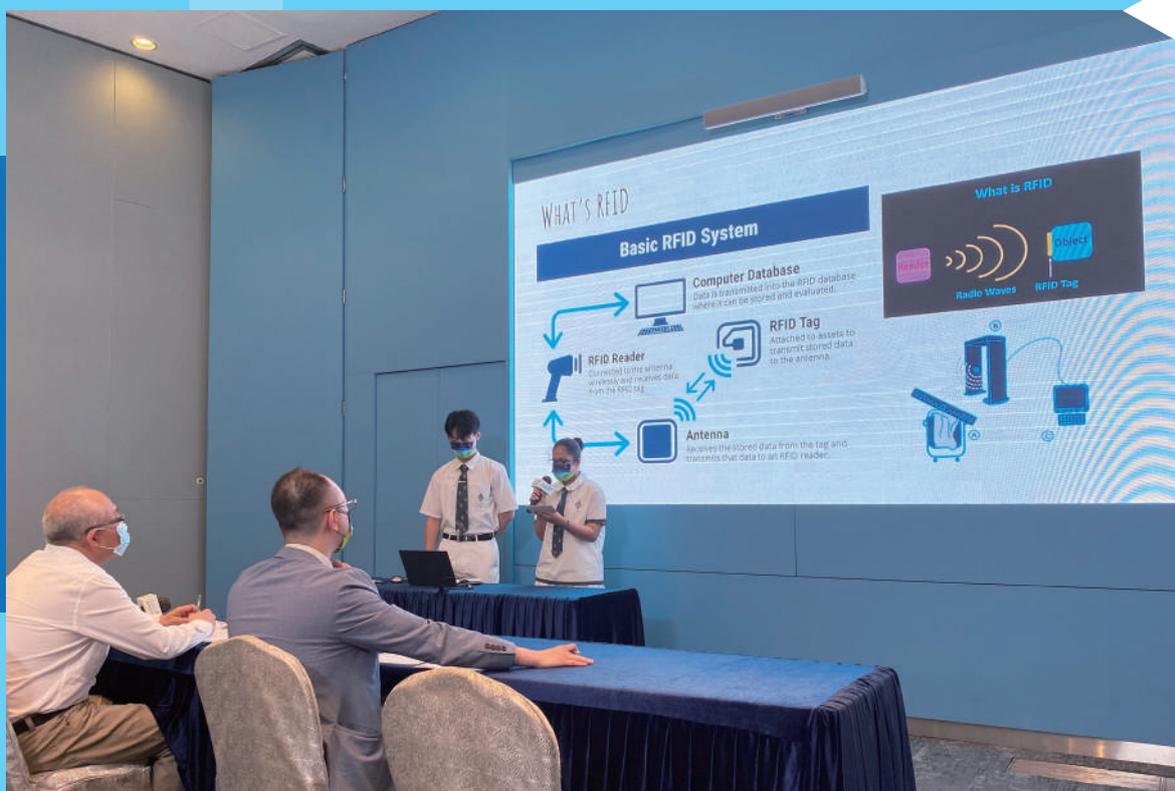
TSOI ESON SHELBY 5A  
ZANNATUL FADIA 5A

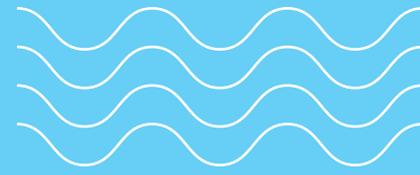
## Project Background and Aims

The aim of the project is to facilitate book circulation and stocktaking. Currently, our library uses barcodes for book circulation and stocktaking. However, this process takes much time and involves lots of physical contact, which is not hygienic during the Covid-19 pandemic. Therefore, we would like to introduce a new technology called RFID to modernize our library.

Radio-frequency identification (RFID) uses electromagnetic fields to identify and track tags attached to books. When a student leaves the library carrying his/her student card with numerous RFID-labelled books, the RFID reader device will transmit an electromagnetic pulse to the book tags, and the tags will transmit the books' information to the reader device for book circulation. No extra manpower or physical contact is involved.

During stocktaking, a student librarian only has to take a RFID reader device and walk around the library. All the books in that area will be automatically recorded.





## Significance of the Project

Our project can significantly lower the cost of setting up a RFID system. By developing our own mobile app, students can make use of their mobile phones for checking out of books. Teachers can also do stocktaking by simply walking around the library.

Our project provides an alternative to the expensive RFID systems available in the market. For example, each RFID reader costs around \$20,000. However, these readers are basically a smartphone-like device plus a RFID scanner. Therefore, if a free-of-charge RFID reader app can be developed and publicized, all schools can download it and use it in their libraries.

## Reflection of Our Team

Throughout the whole event, we learnt that there are many SMART ways to make our world better. The presentation of our project and the Q&A session afterwards also gave us precious experience to share our ideas in front of the public.

Apart from our own project, we were also amazed at the innovative ideas of other schools and students' demonstration of their prototypes in the forum. It takes time to investigate real life situations thoroughly in order to turn ideas into reality and make them cost-effective. The project has raised our awareness of STEM in daily life.



# URBAN LIVING PARTNERSHIP WITH HYDROPONIC SYSTEM

JOHN CHARLES TEMUULEN WOOD 2A  
YEUNG TO FUNG 2A  
LI DEXIONG 5A

## Project Background and Aims

The aim of this project is to create a whole-city approach for both indoor and outdoor hydroponic systems in Hong Kong. The project advocates the Urban Living Partnership in Hong Kong to solve the social, economical and environmental problems. Traditional agriculture should be conserved due to its ecological importance. Meanwhile, the Urban Living Partnership provides an alternative and parallel agriculture mode in the city. The Urban Living Partnership adopts the whole-city approach, which combines policy, technology, agriculture and citizen participation to ensure a self-sustainable local food supply chain in Hong Kong and make contributions to fight against climate change.



## Significance of the Project

Urban Living Partnership is more than smart city planning as it provides society a vision and betterment of life. Moreover, district-based greenhouses and solar voltage power stations will be the next step. This district-based greenhouse provides a variety of vegetables to be produced in different areas. These district/estate-based solar voltage power stations can advocate the use of clean energy and reduce the dependence on the grid. We do not only require STEM and policy making, but also public participation.



## Reflection of Our Team

Firstly, we are very grateful to the organizer for choosing us as finalists. The experience was both meaningful and very challenging for all of us because this is our first attempt in writing a proposal. Everything about the format and the content was new and sophisticated to us. Fortunately, teachers guided us and lent us a helping hand.

Secondly, while researching information via the Internet, we have become familiar with how the food supply chain works in Hong Kong and how the Hydroponic System could benefit us. This useful knowledge has expanded our horizon and given us more incentives to learn more about science.



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