

HOLOSPORTS

STEMchers - STEM09 The U-STEMist Scheme 2018

PROJECT INTRODUCTION

The development of STEM in Lok Sin Tong Leung Kau Kui Primary School (Branch) (LSTLKKB) is more mature and advanced. The facilities are favorable for students to make STEM products by themselves, such as the Technology Lab and the Makers Lab. The school conducts comprehensive learning progress in STEM education, from regular courses to after-school training. These include the weekly “Young Makers” lessons and STEM days, so fundamental knowledge of students about STEM is built through long-term instillation.

Our project was tasked to perform the duties of teaching and learning of holograms to the senior primary school students. Our project occurred in five sessions on consecutive Thursdays (with one Tuesday in the middle as practice for qigong motions(八段錦)) in the month of May at the school's campus, and we acted as facilitators in the students' hologram-making experience, which involved the students filming their peers' performing of the Baduanjin qigong exercise.

The initial goals of our project were as follow:

- To allow both teachers and students to **learn** the makings of a hologram
- To provide an opportunity for team members to **serve** the school to its specific needs and themes
- To create a safe and welcoming environment for teachers and students to **thrive** in working on a STEM-related project (hologram)



First Session Google Slides



Final Session Google Slides



Pictures from Sessions

DESIGN RATIONALE



STUDENT OWNERSHIP

The entirety of the product of this project was created by the students, so in theory, the “this is mine” mentality has the potential to maximize student motivation (Biggs & Watkins, 2009).



REAL-LIFE CONTEXT

Considering the students’ learning benefits from connecting science with real-world context (King & Ritchie, 2011), this project takes into consideration the real-life application of holograms into everyday use. The hologram made by students with qigong exercise (八段錦) can serve the elderly as a brand-new teaching method. The hologram can be applied in different daily use as well, such as:

- Military Mapping e.g. save missing persons
- Information Storage e.g. locate or rearrange information
- Medical e.g. prepare surgery
- Fraud and Security e.g. scan face or fingerprint
- Art e.g. 3D artwork



STEM COMPONENTS

- The design of the program aims to incorporate the STEM components:

Science (Physics)

- This project revolves around the basic concept of reflection, which is the foundation of this simple hologram design for primary school students.

Technology (iPad + film editing)

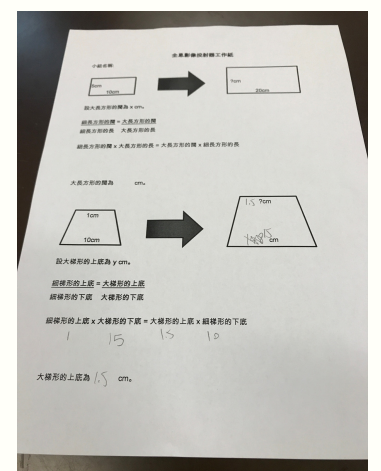
- The students were encouraged to use the iPad to both record their peers’ work and to review their hologram production. Moreover, they edited the clip under staffs' guidance.

Engineering (Gluing)

- The students glued their measured plastic pieces by hand together to form the pyramid for the hologram display.

Mathematics (Measurements)

- The students performed their own measurements using ratios for the plastic pieces, which were of sizes of the student groups’ own choice.



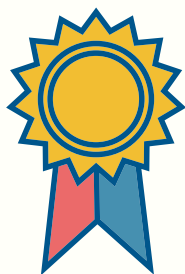
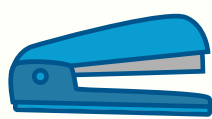
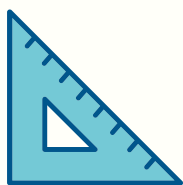
LIMITATION AND DIFFICULTIES

DURING THE HOLOGRAM PRODUCTION

1. The students were tasked to video record the movements of their peers, but they were inexperienced, so considerably more time was needed.
2. The students were separated into groups for each task, and the work allocation within the groups was at times not to the students' wishes.

AFTER THE HOLOGRAM PRODUCTION

1. We provided an exit-slip form for the students to complete at the end of our last session, but it would have been better if we had given them an initial form at the beginning of the first session so we could gauge the students' growth.
2. From the reflection exit-slip from the students, there was a comment on the lack of mathematics involved in this STEM activity, so it is possible that more exercises with ratios and measurements could have been included to cater for the numerically gifted students for differentiated learning purposes.



Student Exit-Slip Results

OVERALL, BECAUSE OF...

- the continuous assistance from LSTLKKB
- our collaboration with one another
- the consultations with our project mentor and officer

... almost all of the potential limitations and difficulties were foreseen, discussed, and solved ahead of time.



INDIVIDUAL REFLECTIONS



CHAD KWONG

This has been an incredible journey with the U-STEMist Scheme. I learnt a lot from LSTLKKB's generous staff members as well as from its bright students who were all STEM geniuses in their own rights. And of course, I am proud to be a part of our outstanding STEMchers team, which I believe performed honest displays of altruism and collaboration.

ETHAN KWOK

I am so glad that I joined the U-STEMist scheme. I learnt a lot of practical skills such as craft skills and problem solving skills. The school provided not only technical support but also experience about STEM education for us. This facilitated the students' learning progress and made Holosports conducted successfully.



IVAN YEUNG

I have never joined any STEM courses or programmes before. Therefore, I am able to amass a lot of invaluable experience in the U-STEMist scheme by joining the workshops, visits and lectures. I can also tap this opportunity to apply what I have learnt to create a workshop for the primary pupils.

JAMIE CHAN

Participating in the U-STEMist Scheme not only consolidates my knowledge and skills of science, technology, engineering and mathematics, but also provides me with a precious chance to practice my teaching beliefs. During the process of implementing Holosports, I learnt how to design different activities for primary students from theories to reality. Also, I know how to cooperate with various stakeholders at school in order to achieve success. I deeply believe that all these experiences can facilitate my learning as well as my whole person development. Now, I definitely feel more confident in developing STEM education.



JOICE YUEN

This was an unforgettable experience to work with a primary school which had outstanding performance in STEM education. The school provided precious opinions and support for us. It really widened my horizon during the project.

WINSOME TSUI

Although we encountered some difficulties in carrying out the project, we still enjoyed the process very much. It was great to recognise our strengths and weaknesses and learn from mistakes. I really learnt a lot from the U-STEMist scheme with the support of different teachers and staffs. I think these experiences can equip myself to be a good STEM teacher in the future.



CONCLUSION AND RECOMMENDATIONS

IN CONCLUSION:

- The students were successful in learning about and in producing a basic hologram.
- Our project overall did well in serving LSTLKKB's STEM initiatives.
- A safe and welcoming environment was provided by the school for both we and the students to thrive in teaching and learning.

Therefore, our project met LSTLKKB's requirement and expectation, and the collaboration and communication between the staff and us made the student learning possible.

FOR FUTURE REFERENCE:

- Provide an initial form for students to complete to estimate their prior understanding of holograms - this could allow us to gauge their progression using the exit-slip at the end of the sessions
- Prepare more opportunities involving ratios, angles and measurements to allow students more chances for the "mathematics" component of STEM



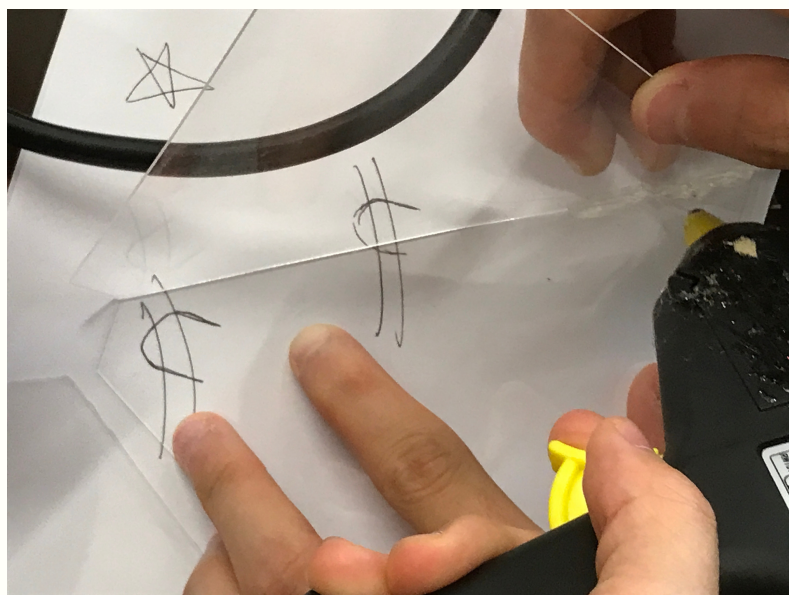
PROCEDURES OF THE ACTIVITY



..... SESSION ONE



SESSION TWO



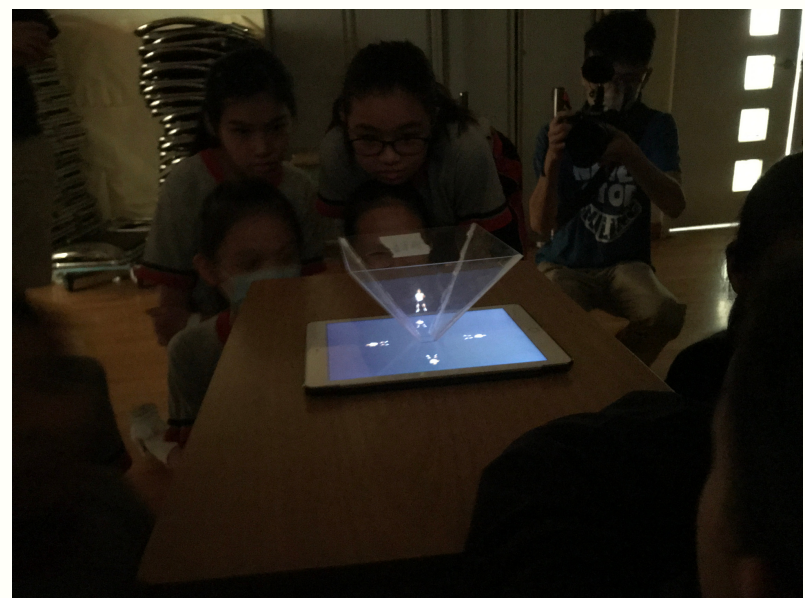
..... SESSION THREE



SESSION FOUR



..... SESSION FIVE



SESSION SIX