優質教育基金
Quality Education Fund

Final Report of Project

Project No. : 2018/0107

Part A

Project Title: **"Students as constructors of knowledge"- enhance student engagement in Personal,**

Social and Humanities Education (PSHE) subjects by a web-based VR presentation tool" (2018/0107)

Name of Organization/School: **TRUE LIGHT MIDDLE SCHOOL OF HONG KONG**

Project Period: From **05/2019** *(month/year)* to **4/2020** *(month/year)*

Part B

*Please read the **Guidelines to Completion of Final Report of Quality Education Fund Projects** before completing this part of the report.*

Please use separate A4-size sheets to provide an overall report with regard to the following aspects:

1. Attainment of objectives
2. Project impact on learning effectiveness, professional development and school development
3. Cost-effectiveness – a self-evaluation against clear indicators and measures
4. Deliverables and modes of dissemination; responses to dissemination
5. Activity list
6. Difficulties encountered and solutions adopted

Name of Project Leader: ▮▮▮▮▮   Name of Grantee*: ▮▮▮▮▮

Signature: ▮▮▮▮▮   Signature: ▮▮▮▮▮

Date: 29- 7 -2020   Date: 30- 7 -2020

* Final Report of Project should be submitted via "Electronic Project Management System" (EPMS). Once submitted, these reports are regarded as already endorsed by the supervisor of the school/the head of the organization or the one who signed the Quality Education Fund Agreement for allocation of grant on behalf of the organization.

Quality Education Fund

The Dedicated Funding Programme for Publicly-funded Schools

Project Title: "Students as constructors of knowledge"- enhance student engagement in Personal, Social and Humanities Education (PSHE) subjects by a web-based VR presentation tool	**Project Number:** 2018/0107

Name of Organization/School: **TRUE LIGHT MIDDLE SCHOOL OF HONG KONG**

Project Period: From **05/2019** *(month/year)* to **14/2020** *(month/year)*

1. Objectives

A year of incubation and changes.

The main rationales are 1) to promote holistic understanding of our community through cross-curricular approach and project-based learning, 2) to develop students' enquiry and analytical skills through self-investigation, 3) to enhance student engagement in learning with the use of technology; 4) to develop positive values, including empathy, through engaging in relevant learning experiences. Students learn to develop their abilities to identify the values embedded in different issues they may encounter. After a year of project implementation, we further strengthened the belief that active learning develops students' autonomy and their ability to learn. Active learning gives students greater involvement and control over their learning. From their reflection, they reflect on their own learning, bringing "the theory to life" and gaining insight into themselves and their interactions with the society. We believe that participating in experiential learning process through cross-curricular approach that harness multidisciplinary collaboration are the future of education.

2. Implementation and Activity List

Implementation period	Project preparation and activities
9/2018-2/2019 (preparation)	**For the software development:** -invited tenders and quotation for software development of the web-based VR presentation editor and procurements of relevant equipment and materials -Software developer had been selected in October and had started working on the web-based presentation tool and operated testing procedures to ensure its functionality and correctness
10/2018-4/2019	**For teaching and learning:** -Introduced problem / project based learning (PBL) to Secondary 1 (S.1) students

-organized visit to the neighbour, Haw Par Mansion, to help students understanding more about their community in April.

-equipped students with the skill of using 360 camera before they go for the field trip in April

-organized field-work for S1 students on Life-Wide Learning day (12/4/2019) in cross-curricular PSHE (Geography, History, and Chinese History) approach
-Students had been divided into three groups (Chinese History, History and Geography) exploring another side of Hong Kong e.g. History group: Tai O (old indigenous fishing village); Geography group: Lai Chi Wo (traditional Farming Village Landscape) & Chinese History group: Tai Hang (neighboring district full of historical and cultural significance)

- cooperated with some experienced local conservation group or tour provider e.g. The ███████████ Centre for ████████████ to provide students more up-to-date knowledge and invaluable exposure.
-Students in group was given chance to design a learning objective or start an investigation on the problem they found relating to the place they went. They took photo or video, some conducted oral history or collected field data to achieve their learning goals accordingly. Unfortunately, the weather was unstable and it kept raining and we cancelled our afternoon learning activities

| 6/2019	**For the software training development:** -S1 Students and relevant subject teachers involved had attended the training workshops separately (one for teacher and four for students), which offered by the software engineer and developer from the software company. They were equipped to use the software through the training sessions
7/2019	**For teaching and learning:** -S1 Students created and demonstrated their learning outcome collaboratively with the new web-based VR presentation editor in various in-school occasions e.g. project presentation session and post-exam activities. They were satisfied with their "creations"

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	so much. -Students and teachers, as audiences, could also view the presentation via the VR goggles and controllers
7-8/2019	-PSHE panels and the teachers involved had evaluated the effectiveness of the project and refined the learning and teaching activities in the 2019-20 school term. We had discussed how to further continue the project and relevant learning activities in the coming school year. For example, school anniversary, stem team co-creation project, life-wide learning projects etc. -Teachers involved had been invited to share with colleagues in Staff Development Day and meetings for enhancing professional developments inside school in the first school term of 2019/20
9/2019 - 1/2020	-PSHE team agreed and continued to carry out the project in the year of 2019/20 -More collaboration work among PSHE panel was continued in preparation period -Contacted the field trip organizers and planned the field-work for S1 students on Life-Wide Learning day in 2020 April
2/2020-4/2020	School suspension due to COVID-19 pandemic

Special Highlight

### A change-making step: Students become the constructor and creator of knowledge?
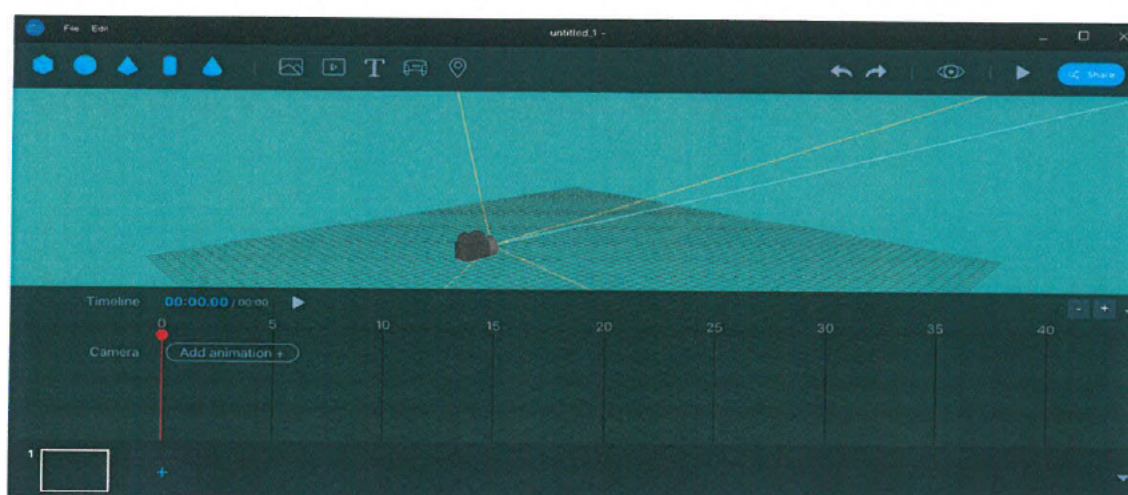
To make your own presentation, traditional tools such as ▉▉▉▉▉▉▉▉▉▉▉▉▉ might be good enough. But why don't we try to break it through and start figuring out some new tools, so as to catch and hold your audience's attention?
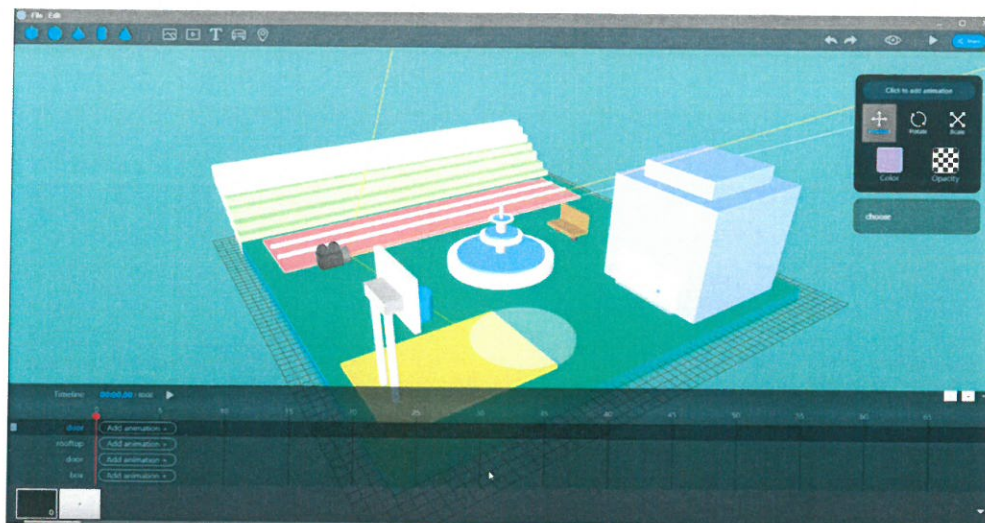
In order to facilitate the implementation of the project, THREE innovative elements "starting from community", "technology as learning tool" and "project-based learning experience" in a cross-curricular approach are highlighted. For "technology as a learning tool", a web-based VR presentation editor for students has finally come to reality. Students could make create, collaborate, and share VR environments where they visited in the fieldtrips without requiring programming skills (code-free). At the same time, they can embed video/360 video, photo/360 photo, GIF, sound & text.
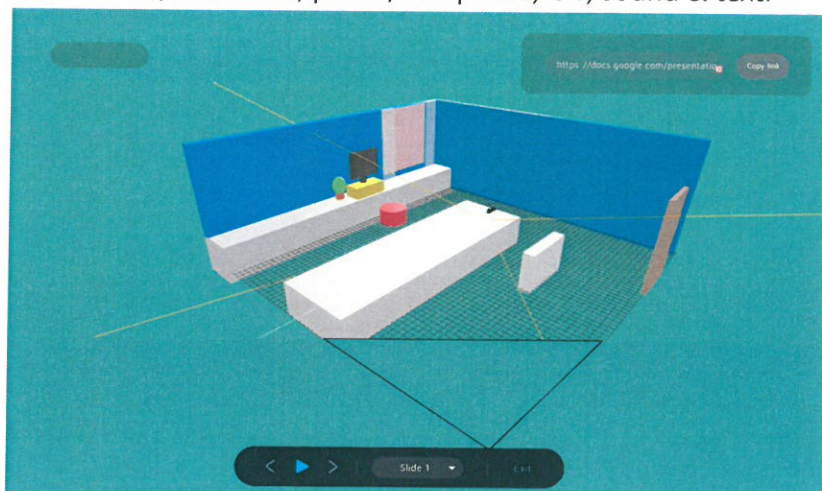
After completion of project(s), you may share to everyone by clicking the "Share" and "Copy Link" buttons.

Here are the features of a web-based VR presentation editor:

A. VR Visual Editor Mode which includes:
1. Easy 3D Objects Creation and Transformation (position, rotation, scaling)
2. Basic Animation and Sequences for 3D Objects
3. Embed 2D GIF, 2D and 3D Photos and Videos
4. Generates sharable links for presenter and audiences

B. VR Presentation Mode which includes:
1. VR presentations to be viewed in browser or VR headset
2. Synchronised presentation, presenter controls sequences of presentation slides

Students can be the "creators"

Simply by asking students to "create something that shows me everything you learned," teachers will have created an opportunity for students to have to consider how to articulate their learning. Students are no longer merely consumers of information; they are creators and producers of knowledge and information. By having various add-on features, such as 360° and VR experience, movement-directed control, etc. both presenters and audiences will be more engaged in which to boost their interests and creativity. Presentations

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is no longer standardized and boring. By making use of new presentation tool, the audiences could also feel the same as the presenters with the VR goggles and controllers. It made the sharing process more interactive and interesting.

3. Challenges and difficulties

Challenge 1: financial problem

One important problem is the lack of finances. The technological progress never stops and it seems to be on a constant move. Therefore, the newer versions of computers, interactive devices, or applications appear very often. My schools do not possess a budget, which is able to cover all the expenses for purchasing the new prototypes. For example, it is unable to purchase new desktops which can run faster for installing the software immediately. After discussing with principal, we are hoping to look for funding from other sources to purchase the desktop.

Challenge 2: resistance to change.

Resistance to technology comes in many forms, but one of the key resistance challenges is "comfort with the status quo." Some teachers often see technological experimentation as outside the scope of their job descriptions and thus reluctant to try. Some of my colleagues are still not interested to try out this new piece of tool. Creating a Culture that adapts to change is never easy but possible. More sharing and collaboration work can be organized and it is hoped that colleagues will get to know more about the benefits of using a new piece of educational tool.

Challenge 3 technical support

Sometimes it is not very easy access to technical support, availability of infrastructure (computer labs, library and hall for presentation) and time allocated to incorporate new technologies are challenges. One biggest setback of this year was the development of the new platform took longer time (to figure out some technical problems) then we expected. Therefore it made the workshops and training session proponed and it was very troublesome to re-arrange the timeslot as school had already assigned students' activities.

Challenge 4 COVID-19 pandemic

To prevent the spread of COVID-19, classes in all schools are still suspended for the sake of safeguarding students' health. As the number of COVID-19 infections surge, a number of field trips and local visits of ours have been forced to cancel or postponed to the next academic year. Social distancing may definitely cause out-of-school experiential learning to be suspended. In future, challenges of various kinds are in store for our students, but with confidence and resourcefulness, we believe that we can overcome every hurdles together.

4. IMPACT

In student's level, teachers could observe the changes of students' learning engagement and attitude after the experiential learning activities. In July, after students' project presentation, I have especially designed and distributed a reflection sheet (see attachment) for whole S1 students to reflect what they felt and experienced after the completion of their projects. They were asked to express the feeling before and after the fieldtrip and also how they evaluate their work. Concerning the venues and fieldtrip experience, their feedback was mostly positive and most of the participants enjoyed the experience e.g. one students mentioned that she went into the dilapidated stilt houses (棚屋) at Tai O and found out the special living environment there. The most impressive thing was that she also felt the special and close neighborhood relationship. Those who went to Lai Chi Woo also experienced another side of Hong Kong. They commented that it was pity they could not experience farming due to raining but they could still meet and talk to the villagers. Also, they could see the plants and ecological system there. Empathy is important because it sets students up to deepen relationships with people that they know outside of school. Students visiting Tai Han also understood more about the history of their neighboring community. The road they walked everyday had a special history behind (see attachment).

Regarding the use of technology, by observation, both teachers and students could be able to handle it well in the training sessions. However, due to the technical problem of my school computers (not very updated model) Students could not smoothly create their fieldwork projects. In teacher level, a focus group interview had been done after the workshops. Most of the participating teachers commented that the operation of the presentation tool was easy and suitable for even junior students to learn. They stated that the 3D background could help demonstrate a better vision of the places. Nearly all of them agreed that the virtual reality learning experience could improves student outcomes and increase student engagement.80% of them were interested to introduce the new tool in their subjects and seek for collaboration. However, they were concerned about if the hardware in school's computer room could be upgraded to meet the need of the new software.

Key deliverables:

Who	What benefits / changes	Number of Beneficiary	Actual Number of Class/program/session
All S1 students	-Students become more motivated to learn and thus enhance engagement to construct their own knowledge. -Students find knowledge more relevant to their life and be able to conduct self-investigation through different skills they learnt. Students become "the owner and constructor of knowledge". -Students develop positive values and empathy through experiential learning	128	All Secondary 1 students had participated in the fieldtrip activity on 12/4/2019, attended the training work of using the new software in June and presented their project in July.
PSHE Teachers teaching in Secondary 1	-PSHE teachers will develop a culture of collaboration through more cross-subjects based teaching experience and cooperation. -PSHE Techers will change to be facilitators to assist	8	8 PSHE (Chinese History, History and Geography) teachers had tried out innovative method in lesson and had planned the cross-subjects

	students in their learning process. -PSHE teachers will learn to apply innovative teaching in their own subjects to motivate students inside and outside classroom learning activities.		fieldtrip on 12/4/2019
Subject teachers in Junior form	-Different subject teachers can develop a culture of collaboration through more cross-subjects based teaching experience and cooperation. -Subject teachers will change to be facilitators to assist students in their learning process. -Subject teachers will be encouraged to apply innovative teaching in their own subjects to motivate students inside and outside classroom learning activities.	18	-18 teachers in total (PSHE, ICT and Maths) in junior form had attended the teachers' training sessions of the software in June -ICT teachers will cooperate with History panel in the coming year for conducting students' project.

5. Cost-effectiveness

Overall speaking, the equipment had been fully-utilized during the first year of implementation. 360 camera and VR tools can continued to be used in the coming school years for data collection and presentations. The equipment could match students learning needs in group when they are doing group projects and presentation. Regarding the newly developed software, students' learning experience will be well-stored in the software and it can be learning log in which students keep that record their experience and reflections about what they are learning and how they are feeling. Other subject teachers will be encouraged to apply innovative teaching in their own subjects via the equipment purchased and new software to motivate students inside and outside classroom learning activities. We believe that the project will continue and extend to S2 and S3, which can facilitate students' experimental learning.

Budget Checklist

Budget Items (Based on Schedule II of Agreement)	Approved Budget (a)	Actual Expense (b)	Change [(b)-(a)]/(a) +/- %
General Expenses	$5,000	$4,900	-2%
Equipment	$70,000	$68,047	-2.79%
Services	$88,000	$88,000	0%

6. About sustainability and future

Strive for improvement and connectivity

In school level, the current plan to be carried out in the 2020/21 academic year is that PSHE panels will continue to develop a culture of collaboration. The cross-curricular approach can be carried on in the 2020/21 and onwards. Thanks to the Life Wide Learning Grant by EDB, we are preparing a more fieldwork and cross- PBL activities to arouse more students' learning interest and build empathy. Regarding senior form students' OLE (Other Learning Experience) project, it is suggested that in some ways we can make use of service learning immersion experiences to encourage the development of empathy in students in order to help them understand themselves and others in the context of the larger world.

Other subject teachers will be encouraged to consider the possibility of implementing cross-curricular teaching approach therefore a large variety of projects can be led by more teachers. An attractive BONUS to this project will be that students who gravitate to technology will seek to create innovative products by the use of the newly developed VR presentation tool. STEM teachers expressed their positive feedback about the software and we would agree to cooperate in the future. In community level, it is expected that more professional sharing can be organized through Ednovators, a co-organizer of the project or other outside organizations. I hope to share my innovative idea, new learning tool and experience of change to local teachers.

THE END