



Project Proposal for Small-Scale Blended Learning Funded Projects

(under the Top Sliced TDG Project hosted by TLC “Advancing Blended Learning @ Lingnan to a New Stage”)

(Updated in December 2020)

Key Criteria:	
Intended learning outcomes clearly articulated	Blended learning project deliverables clearly outlined
A robust project implementation approach	Impact on Student Learning
Innovative approach to blended learning	Partnering University

Basic Information:

Project Title:	Implementation of virtual field trip to science courses: coupling virtual field trip with problem-based and inquiry-orientated teaching and learning to cultivate students' capability of critical thinking and problem-solving		
Role / Name:	Post:	Faculty/ Department/ Centre/ Unit:	Email:
Principal Project Supervisor (PPS) / GENG Hongyan	GENG Hongyan	Science Unit	helengeng@ln.edu.hk
Co-Supervisor/ LIU Zhonghui	LIU Zhonghui	Dept. Earth Sciences, HKU	zhliu@hku.hk
Co-Supervisor/			
<i>For TLC use only:</i>			
Project Code:		Account Code:	
TLC Staff Liaison:		Funding Approved:	

1 Project Summary

The project summary should clearly and succinctly describe the project and be suitable for use **on the TLC website**. It is vital that this summary includes references to the intended impact of the project on the quality of student learning / adoption of Blended Learning. (*Approx. 10-15 lines / 300 words*)

Field trip, coupled with problem-based and inquiry-orientated teaching and learning, is regarded as an effective approach to promote students' engagement and to enhance students' capability of critically thinking and problem solving. However, the COVID-19 pandemic hinders the performing of field trips. Thanks to computer visualization techniques, virtual field trip is becoming an alternative to display trips to the class without going out to the field. Through the video recording of a series of on-site field trips in Hong Kong, this study aims to implement virtual field trip to *CLD9027 Blue Planet* (Lingnan University) and *EASC1020 Introduction to Climate Science* (The University of Hong Kong). This study will **(1) build up students' learning engagement, (2) enhance students' capability of critically thinking and problem solving, which composes an essential part of the graduate attributes, (3) work as showcase of virtual field trip in the university.**

<p>Amount of funding requested (Maximum of HK\$50,000):</p> <p>\$ ██████████</p>	<p>Amount of Faculty/ Department/ Centre/ Unit contribution:</p> <p>\$ ██████████</p> <p><i>(NOTE: Faculty/ Department/ Centre/ Unit funding is not a requirement, please indicate if funding has been provided from any other source or similar project)</i></p>
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2 Project in context

(i) Project Objectives

- To explore and determine the sites for virtual field trips
- To record a series of videos demonstrating representative geological phenomena
- To implement virtual field trips in CLD9027 and EASC1020
- To develop a set of documents to evaluate the effectiveness of virtual field trips, such as pre-, post-tests, semi-structured interview question and focus group interviews
- To achieve engaging teaching and learning
- To enhance students' critically thinking and problem solving (Graduate Attributes)
- To set up a showcase of virtual field trips in Lingnan University
- To investigate students' (both Lingnan and HKU) learning outcome from virtual field trips

(What are your objectives in initiating this project? Why is it needed and how does it relate to the institutional, faculty or departmental strategic goals in relation to teaching and learning? Why and how would preparing a subject (or part of a subject) in the blended learning mode enhance students' understanding?)

(ii) Student Impact

Programme/ course code	Programme/ course title	No. of credits	Mode of study	Student intake quota per term
CLD9027	Blue Planet (Lingnan)	3	Hybrid	35
EASC1020	Introduction to Climate Science (HKU)	6	Online	50

Partnering University / External Parties:

The University of Hong Kong

Please insert rows in the table for additional information. Try to avoid broad statements like 'ALL Courses in Lingnan will benefit'. At least one specific Course must be indicated. Ideally the project will involve a collaboration with a partner University.

(iii) Project in Context

This section should clearly describe the context of the project. What is the issue/problem and why is it of pedagogical significance to implement a Blended Learning solution? In answering this question, references should be made to educational and discipline-based literature or benchmarks in order to explain and justify how the proposed initiative will enhance student learning. (approx. 10 – 20 lines / 500 words)

Science courses were implemented in the undergraduate program to achieve the all-round education in Lingnan University. The teaching of science courses, however, is facing big challenges, since the amount of science knowledge is progressively rising, but meanwhile students' interests in science is deficient in the context of Lingnan's liberal arts background. Moreover, in the light that many of our students are good at memorizing data and facts but are weak in applying the obtained knowledge in real-world situations. **It is, therefore, of great demand to design engaging teaching activities in science courses and to build up students' capability of critical thinking and problem-solving.**

Field trip is an engaging and effective teaching approach since it exposes students to authentic learning (Behrendt & Franklin, 2014). Due to its nature of involving extensive interaction, exploration and analysis, **field trip is regarded especially compatible with problem-based and inquiry-orientated teaching** (Mieg, 2019; Petersen et al., 2020). Field trip is an essential for the study of CLD9027 Blue Planet. Unlike field trips in other courses, **field trip in Blue Planet is compulsory** since students need to physically observe and measure the rocks to learn the geology of the Earth. However, the COVID-19 pandemic hinders the performing of the field trips.

Thanks to computer visualization techniques, **virtual field trip (VFT) is becoming an alternative to display trips to the class** (CalOukan, 2011; Puhek et al., 2012). Since VTF overcomes the budgetary limitations (Lukes, 2014), allows students to learn without time and place limitation, alleviates logistical barriers (Krakowka, 2012), and reinforces individuals' real learning experiences and attitudes (Harrington, 2011; Katz & Halpern, 2015), it has been successfully implemented and has achieved quality learning outcome in many disciplines, such as geography (Palmer, 2013; Wang et al., 2016), environmental science (Puhek et al., 2012; Petersen et al., 2020), medical and nursing (Jang et al., 2017; Gunn et al., 2018), architecture (Im et al., 2019) and biochemistry (Edginton et al., 2013). Recent studies revealed that the **coupling of VFT and inquiry-orientated teaching and learning is effective to train students' capability of critically thinking and problem solving** (Petersen et al., 2020).

Through the video recording of a series of on-site field trips in Hong Kong, **this study aims to implement VFT to CLD9027 Blue Planet (LingU) and EASC1020 (HKU)**. The PPS will coordinate the whole project. The Co-S will contribute to the climate change session. Related VTFs will also be implemented in the Co-S's course *EASC1020 Introduction to Climate Science* (HKU). The VFT will work as substitute of real field trip during the pandemic. After the pandemic, the VFT will be used to (1) provide a preview or review of real field trips, (2) assist in understanding complicated geological terms and processes in the classroom teaching. Coupled with inquiry-orientated teaching and learning, **this study will enhance both the students learning engagement and their capability of critically thinking and problem solving, which composes an essential part of the graduate attributes**. Because VTFs are brand-new instructional activities for Lingnan, the experiences of this study can work as a showcase of VFT in the university. By investigating the students' performances in CLD9027 and EASC 1020, **this study will investigate any learning outcome differences between non-science students (Lingnan) and science students (HKU)**.

References

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- Wang J, Ni H, Rui Y, Cui C, Cheng L. (2016). A WebGIS-based teaching assistant system for geography field practice (TASGFP). *British Journal of Educational Technology*, 47(2), 279–293.

(iv) Project Activities, Timeline and Evaluation Strategy

Major deliverables (<i>including but not limited to blended learning materials and descriptions</i>)	Target date for achieving the deliverables (mm/yyyy)	Evaluation / Quality Assurance strategy
<p><u>Pre-production stage</u></p> <ul style="list-style-type: none"> - The PPS, Co-S, RA and student helper communicate thoroughly and regularly in order to make sure the videos produced are in line with sound pedagogy - A set of devices and software are purchased (see “Budget” session). - The PPS monitor each video created has properly addressed the learning 	07/2021-08/2021	Regular meetings of PPS, Co-S, RA and student helper

<p>outcomes (ILO1, 3, 4, 6 and 7 for CLD9027, see below)</p> <ul style="list-style-type: none"> - The PPS, Co-S, RA and student helper go to the field and define the sites for VFTs <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><u>Related ILOs of CLD9027:</u></p> <p>(1) Understand the Earth as a system</p> <p>(3) Identify and interpret common rock-forming minerals and common rocks</p> <p>(4) Describe natural hazards and climate change, their causes and their mitigation</p> <p>(6) Discuss and evaluate groundwater contamination and eutrophication</p> <p>(7) Evaluate the anthropogenic impacts on the Earth</p> </div>		
<p><u>Production stage</u></p> <ul style="list-style-type: none"> - A series of videos demonstrating representative geological phenomena - Implementation of VFTs in CLD9027 - Pre-, post-tests, semi-structured interview questions and focus group interviews to evaluate students' learning - Engaging teaching and learning 	09/2021-12/2021	<ul style="list-style-type: none"> - Pilot study of VFTs - Pre-and post-tests, semi-structured interview questions and focus group interviews
<p><u>Post-production stage</u></p> <ul style="list-style-type: none"> - Refinement of the implementation of VTFs in CLD9027 and EASC1020 - Enhancement of students' critically thinking and problem solving - Showcase of VTFs in Lingnan University - Examination any differences between non-science and science students 	12/2021-06/2022	<ul style="list-style-type: none"> - Pre-and post-tests, semi-structured interview questions and focus group interviews
<p>Dissemination via Internal Staff development workshop or Showcase Journal publication</p> <p>(Note: PPS is expected to disseminate the project findings within one year from the project end date.</p>	06/2022	Informal Feedback will be sought from participants

TLC will work with PPS for the presentation arrangement).		
Final Project Report (Compulsory within 1 month of the Project finishing)	01/2022	A final project report will be produced by the PPS and feedback will be sought from TLC prior

3 Budget

(i) Breakdown

[Not for publication]

(ii) Faculty/ Department/ Centre/ Unit: contributions and support (IF Applicable):

Item/s (tick all that apply)	Description/s
<input type="checkbox"/> Personnel <input type="checkbox"/> Space <input type="checkbox"/> Hardware <input type="checkbox"/> Software <input type="checkbox"/> General expenses <input type="checkbox"/> Additional funds from departmental account	Space will be provided for RA and student helper, as well as necessary computer hardware and software.

4 CV of the Principal Project Supervisor

Please Include below a CV of the PPS of not more than 1 page. The CV should identify the relevant professional experience of the project coordinator(s), including previous project experience. If Co-Supervisors are listed, please also state their relevance to the project in no more than 300 words.

[Not for publication]

5 Important Notes: Copyright & Intellectual Property

(i) Copyrighted Materials: The University is committed to comply with copyright and intellectual property rights in Hong Kong and will strive to ensure the applicable copyright laws, regulations, guidelines and practices are adhered to. The Principal Project Supervisor is solely responsible for ensuring that all material provided to TLC is cleared of any copyright obligations. TLC accepts no responsibility for any claims or losses caused by any misuse of copyrighted materials used in this project by reason of its support of, and services rendered to, the project.

(ii) Educational Use: The ownership of the intellectual property generated by this project shall belong jointly to the Science Unit (Fac / Dept / Unit) and Lingnan University. Permission is given for the Teaching and Learning Centre of Lingnan University to adapt, use and disseminate for educational purposes all or part thereof in respect of the materials and the resources developed for the purpose of this project. Due acknowledgement will be given to co-creators of material for this project.

6 CONSIDERATION OF RESEARCH ETHICS

Section A

I confirm that the proposal does/ does not involve* research on human subjects. (*Please delete as appropriate.)

If you said ‘involves’ above, please complete the remaining sections below by marking ‘X’ in the appropriate columns of the following table.

For expedited ethics review, please answer the following Key Questions	NO	YES
1. Does the study involve any activities that may cause psychological stress?	X	
2. Are any subjects under the age of 18 or otherwise potentially unable to give informed consent?	X	
3. Will students be audio taped/ videotaped as part of the study? <i>If you answered ‘Yes’, please complete Question 1 of Section B of this Part.</i>	X	
4. Does the study involve students providing information that may have potential legal or ethical issues (e.g., sexual conduct or orientation, on illegal activities, or on use of banned substances)? <i>If you answered ‘Yes’ please complete Question 2 of Section B of this Part.</i>	X	


Section B

1. If you answered YES to the Question 3 above, please state how students’ privacy will be protected (e.g., who will handle and access the data, where it will be stored, and how it will be reported in order to protect student privacy).
2. If you answered YES to the Question 4 above, please provide, in a separate document, further justification for the study.

7 Project Proposal Submission

(i) Proposal Submission by PPS:

I understand and will abide by all applicable University policies and rules as well as specific terms and conditions as specified in the TLC proposal form and guidelines. *(In signing below, the PPS is confirming the accuracy of the information provided and adherence by all staff participating in the project).*

Name: GENG Hongyan Signature: 
(in block letters)

Dept / Faculty / Unit / Centre: Science Unit Date: 27/04/2021

Please send the completed proposal (in soft copy as MS Word and a signed.pdf) to TLC (tlc@ln.edu.hk) on or before the specified submission deadline.
