II Project Information

Project title (in English)	Project title (in Chinese)
Development of Transitional Modules towards Post-secondary Science Education via Interactive E-learning Platform	科學互動教學迎大專

Project summary

*(Please provide an executive summary of the project proposal in **no more than 500 words**.)*

Background

Under the new three-year senior secondary education system, unlike the traditional programme design, in which most students could only select one of the three board streams (i.e. Science, Art or Commercial streams), the majority of Hong Kong Diploma of Secondary Education (HKDSE) candidates take four core subjects, plus two or three elective subjects out of the twenty one subjects available. The foci of these elective subjects are very board and students are free to take any combination of these subjects. This newly-designed curriculum allows students to extend their scope of learning and provides a wider set of post-school pathways for young people. However, this new breed of HKDSE graduates often lacks a comprehensive foundation in science. Many of them also pointed out that they needed to complete a lot of background studies, on their own, in order to catch up with post-secondary education programmes that are strongly science-based.

Address the Needs of DSE students

To assist students in bridging the knowledge gap from new senior secondary education to post-secondary science education, and making informed decisions in their daily lives and academic development in the future, an easy and free access e-learning platform, as well as an interactive Outcome-based Learning and Teaching (OBLT) package is proposed. All DSE students transitioning to post-secondary education could register on this system and complete the science modules before the commencement of post-secondary education. All teachers from the post-secondary education sector could also be engaged to update and share their teaching materials, allowing project suitability.

The 120-hour programme consists of 3 components, including two 30-hour core modules and three 60-hour specific modules. The first core module, “Fundamental Science” allows students to acquire basic knowledge in Physics, Chemistry, and Biology. The second module “Scientific Thinking & Problem Solving Approach” equips students with logical thinking principles and problem-solving skills so that they could analyse contemporary science issues in daily life. The three specific modules, namely “General Science”, “Life Science”, and “Engineering Science”, focus on the application of science knowledge in different contexts of daily life, healthcare and engineering disciplines.

Scope

The target beneficiaries are multifold including DSE graduates who intend to study Science-based post-secondary programmes and DSE undergraduates who are interested in Life Science and Engineering Science modules. Because the programme is launched in a free and open access platform, no separate distribution mechanism is needed. After the platform is released, more courses can be designed and shared by the different post-secondary education sectors to cater for the needs of students with different majors and the number of beneficiaries will be maximised.

Conclusion

This platform provides information, knowledge, learning and experimental experience to prepare DSE graduates for post-secondary science learning. The learning modules are lively, interactive and practical in nature. It would also help students to make informed decisions in their academic development in the future as they understand more about the major subject. This innovative project provides a complementary learning experience to DSE students who would like to pursue their academic development in traditional heavy science based post-secondary education programmes.

* Please delete where inappropriate.

Project objectives

(Please identify the project objectives and explain how they will be attained.)

Objectives	To be attained by
1. To provide easy and free access to ready-made teaching materials on science topics in a more lively and practical manner	• Develop interactive e-learning modules and design an e-learning platform with interactive e-learning tool (Game-based), student response system and course management system by the project team. • Monitor the progress of development under quality assurance policy and mechanism. • Seek external advisers' comment on the context of modules. • Collect users' feedback in pilot study to upgrade the learning package.
2. To assist students to bridge the knowledge gap from new senior secondary education to post-secondary science education	• Liaise with the secondary schools for pilot study. • Support lecturers to assist students over the e-learning platform and keep tracking students' progress. • Stay on track with student's tasks as their progress towards the goals and provide timely feedback.
3. To help students make informed decisions in their daily lives as well as academic development in the future	• Resolve academic challenges and concerns via online feedback and discussion. • Provide other support materials and resources.

Implementation, deliverables, beneficiaries and cashflow

(Please describe the activities to be implemented and indicate the expected number of beneficiaries, the outcomes/deliverables and cashflow in each timeframe of the project.)

Estimated start date of project: Oct 2013

Timeframe	Activities and beneficiaries	Deliverables and cashflow
10/2013-3/2014	● Design and develop e-teaching materials ● Design and prepare Interactive e-learning tools	a. E-teaching materials for the three streams namely, General Science, Engineering Science and Life Science will be developed. b. Modules syllabi and content of General Science Stream include: -Fundamental Science -Scientific Thinking & Problem Solving Approach - Application of Biology & Chemistry in Daily Life Modules syllabi and content of Engineering Science Stream include: -Fundamental Science -Scientific Thinking & Problem Solving Approach - Application of Physics & Mathematics in Engineering Modules syllabi and content of Life Science Stream include: -Fundamental Science -Scientific Thinking & Problem Solving Approach - Application of Biology & Chemistry in Health Science c. Interactive e-learning tool prototype

	● Design and prepare an Interactive student response system ● Design and prepare for a Course management system Expected no. of beneficiaries: N.A.	d. An Interactive student response system prototype **<u>Total:</u>** **Manpower: HK$ 849,000** **Equipment (Computational/ graphic devices & Computing server /Education mobile devices/Developer license): HK$87,000** **Contingency: HK$29,955**
4/2014-9/2014	● Pilot study of the developed modules and systems in 5 to 10 selected secondary schools Expected no. of beneficiaries: 200 to 300 DSE graduates from selected schools. (20 to 30 students in each selected schools)	a. Draft prototype of the integrated courseware (including modules content, e-learning tool, student response system, course management system) for pilot study b. A Course management system prototype c. Finalising module syllabi d. Students can make use of the developed e-leaning resources in order to be prepared towards post-secondary education **<u>Total:</u>** **Manpower: HK$ 1,182,000** **Contingency: HK$29,955**
10/2014-9/2015	● Analysis of collected data and evaluation of the developed modules and systems ● Modification of the developed modules and systems ● Development and preparation of the final integrated courseware ● Implementation of publicity and promotion activities ● Preparation of final report Expected no. of beneficiaries: 6000 to 7,000 DSE graduates.	a. Evaluation report of the pilot study b. Modified modules and systems c. Final prototype of the integrated courseware d. Promotion of the modules and system to DSE students and public e. Final report of this project **<u>Total:</u>** **Manpower: HK$ 1,476,000** **Services (Instructional design & consultancy fees for final prototype of the integrated courseware) : HK$360,000** **Contingency: HK$59,910** **Audit fees: HK$40,000**
Estimated completion date of project:		30 Sep 2015
Expected total no. of beneficiaries by the end of project:		6,000 to 7,000 DSE graduates

Project budget

Projected Expenditure *(Please provide detailed breakdown under each item.)*	**Amount in HK$**			
	Year 1	**Year 2**	**Year 3**	**Total**
a. Manpower	2,094,000	1,413,000		3,507,000
b. Equipment / Facilities	87,000			87,000
c. Services		360,000		360,000
d. General Expenses (e.g. Corporate support for project administration/ operation and others)				
e. Others (e.g. auditor's fee, transportation contingency and others))	59,910	99,910		159,820
Total Expenditure :	**2,240,910**	**1,872,910**		**4,113,820**

Projected Income *(if any)*	**Amount in HK$**			
	Year 1	**Year 2**	**Year 3**	**Total**
a. (e.g. fees received)				
b.				
c.				
Total Income :				

Sources of funding

a.	Amount of grant sought under this application:	**HK$ 4,113,820**
b.	Other sources of funding *(e.g. donations, contributions from the applicant/its parent organisation, etc. Please give the name(s) of the sponsor(s), the amount of funding, and indicate whether the funding has been secured.)*:	

Key personnel involved and self-evaluation mechanism

(Please indicate in each timeframe the evaluation measures to be conducted, the key personnel to be involved and their roles/duties, and the scope of each evaluation measure.)

Timeframe	Evaluation measures	Personnel involved (roles/duties)	Details of the evaluation mechanism
1st month	Preparation for the formation of Project Coordination Committee (PCC) & Project Management Committee (PMC) Invitation of External Assessors (EA)	PCC and PMC will be formed with among the involved staff in THEi and OUHK. EAs will be identified and invited to join the project.	Review and approve the terms and reference of PCC & PMC Plan and review the whole recruitment procedures and standards

4th month	Blueprint of courseware and the design of the e-learning tools will be completely assessed	EAs will review the blueprint and provide comments. PMC will review EA's comments and approve the blueprint.	1. PCC will prepare the blueprint. 2. PMC will review the materials. 3. EA will review and provide comments on the materials. 4. PMC will review the comments of the EA and endorse the blueprint
6th month	Teaching materials of the modules (i.e. 1. Fundamental Science; 2. Scientific Thinking & Problem Solving Approach) and prototype of e-learning tool will be developed for review before launching	EA will review the prototype module and provide feedbacks to enhance the quality of the materials. PMC will review EA's feedbacks and approves the prototype module	1. PCC will prepare the prototype module 2. PMC will review the materials. 3. EA will review the materials and provide feedbacks to improve the quality. 4. PMC will review the comments of the EA and endorse the prototype module
6th – 18th month	Teaching materials of remaining modules (i.e. 1. Application of Biology & Chemistry in Daily Life; 2. Application of Physics & Mathematics in Engineering; 3. Application of Biology & Chemistry in Health Science) and prototypes of student response system & course management system will be developed for review before launching.	EA will review the course materials and provide feedbacks to enhance the quality of the materials. PMC will review EA's feedbacks and approve the course materials.	1. PCC will prepare for the course materials. 2. PMC will review the materials. 3. EA will review the materials and provide feedbacks to enhance the quality of works. 4. PMC will review the comments of the EA and endorse the course materials.
6th, 12th & 18th month	Interim and progress reports will be ready for review	PMC will prepare the interim report and submit the report for internal and external audit.	1. PMC will prepare for the reports. 2. The reports would go through the quality assurance mechanism of the institutions.
15th month	Evaluation report of the pilot study of whole courseware will be ready for review	PMC will review the evaluation report.	Meetings will be held to review the evaluation report.
18th month	Final integrated courseware prototype will be completed	PMC will review and endorse the courseware prototype for further evaluation	Meetings will be held to demonstrate the courseware for review and endorsement
23rd – 24th month	Final report will be ready and the project is completed. The courseware should be ready at that time	PMC will prepare the report and submit final report to the QESS secretariat	Meetings will be held to review the final report.

III Other Information (if applicable)

1 Sharing of project deliverables *(Please describe how the deliverables/outcomes will be shared or used by other institutions in the sector and what information can be uploaded on relevant EDB websites during and/or after the project period.)*

Modules and interactive e-learning platform will be uploaded on relevant EDB websites and opened for assessed by all DSE students or post-secondary students with simple registration. Other post-secondary institutes will also be invited to use the system.

2 Project sustainability *(Please indicate how staff will commit to ensure project sustainability and describe how the recurrent expenditure involved will be met after completion of the project.)*

Institution Commitment

THEi makes its own contributions with high degree of staff's involvement to ensure the project implementation and sustainability.

Regular review of the multimedia and on-line learning and teaching package by project team.

3 Past experience in organising projects of similar or relevant nature and achievements

Technically viable

All module developers are VTC academic staff who have extensive experience in tertiary education programme development and possess PhD in Life Science and Engineering Science.

OUHK has been using distance learning platform and interactive learning and teaching multimedia materials in programme delivery for 15 years.

Both VTC and OUHK adopt rigid Quality Assurance policy and system to monitor the development and operation of all programmes.

The project-in-charge, Ir Professor CHUA Hong has received numerous R & D grants from HK RGC, HK Industrial Department Innovative Technology Funds and Industrial Collaborative Funds. The total awarded funds amounting to above HK$20,000,000 in the past five years.

4 Publicity plan *(Please describe all the publicity activities to be involved and how they will be carried out and list all the publicity materials to be produced to acknowledge the support of Quality Enhancement Support Scheme.)*

1. **Pilot study and school talks will be provided for secondary school students.**
2. **Hyperlink will be established in THEi and OUHK official websites for potential candidates of THEi and OUHK. The hyperlink will also be made available on relevant EDB websites.**
3. **Internal promotion through email and seminars will be provided for existing students of THEi and OUHK.**
4. **Promotion through email and mail will be provided for other post-secondary institutes.**
5. **Promotion through press releases, newspapers as well as radio will be provided for public.**

5 Others

The OBLT approach would be adopted in programme design. Intended learning outcomes (ILOs) that would contribute to the objectives for each module will be set. Abstract concepts and theories and their applications in daily life or authentic environments will be introduced with the aid of interactive game-based multimedia materials on an e-learning platform. Students can access these resources and attain the ILOs at any time through the Internet. Learning activities such as forum discussions, online tutorials and interactive assessment tasks are available to support students' inquiries and on exchange of opinions, ideas and experiences. Students have the option to select any learning modules and materials that meet their current level of knowledge and specific interest.