

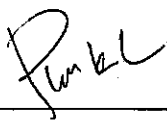
Quality Enhancement Grant Scheme

Progress Report

Project No.: 06/QEGS/A-08-09

Reporting Period: From Jan 2011 to Jun 2011



Signature:  Organization Chop: _____

Name of Authorized Person: Dr. PUN Kwok Leung Name of Grantee: Chu Hai College of Higher Education

Organisation: Chu Hai College of Higher Education

Project Manager /
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Person: Civil Engineering

Date: 15 July 2011

Part A

Project Title: Enhancement of Teaching and Learning on Environmental Sustainability

Name of Grantee: Chu Hai College of Higher Education

Project Period: From July 2009 to June 2012

Part B

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1 THE PROJECT

1.1 Introduction

This document reports the progress of the project (Project Title: Enhancement of Teaching and Learning on Environmental Sustainability; Project No.: 06/QEGS/A-08-09) for the period from January 2011 to June 2011.

2 PROGRESS ON TASKS

2.1 Project Activities

This section reports the project activities held/completed during the reporting period from January 2011 to June 2011. A summary of the project activities held/completed is presented in **Table 2.1**.

Table 2.1 Summary of the Project Activities Held/Completed between January 2011 and June 2011

	Type of Activity	Date, Time, Venue and No. of Participants	Resources Used	Description
1	Project Team Meeting No. 8	<u>Date/Time:</u> 2 Mar 2011, 3:00 p.m. <u>Venue:</u> President Office, Chu Hai College of Higher Education <u>No. of Participants:</u> 9	-	Regular meeting to update and review progress.
2	Project Team Meeting No. 9	<u>Date/Time:</u> 8 Jun 2011, 2:00 p.m. <u>Venue:</u> President Office, Chu Hai College of Higher Education <u>No. of Participants:</u> 10	-	Regular meeting to update and review progress.
3	Quality Assurance Meeting No. 2	<u>Date/Time:</u> 8 Jun 2011, 3:00 p.m.	-	Updating the QA issues and the preparation of the 2 nd

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	Type of Activity	Date, Time, Venue and No. of Participants	Resources Used	Description
		<u>Venue:</u> President Office, Chu Hai College of Higher Education <u>No. of Participants:</u> 6		Annual Quality Assurance Report
4	Traffic Noise Study	<u>Date/Time:</u> Jan to Jun 2011 <u>Venue:</u> Noise barrier study in Tsuen Wan Estate <u>No. of Participants:</u> 2	B&K 4231 Sound Level Calibrator; B&K 2238 Sound Level Meter; RION NL-22 Sound Level Meter	Supporting the final year dissertation.
5	Indoor Air Quality Study	<u>Date/Time:</u> Jan to Jun 2011 <u>Venue:</u> Classrooms, Chu Hai College of Higher Education <u>No. of Participants:</u> 2	Indoor Air Quality Meter; Aerosol Monitor; Phoenics, computers	Supporting the final year dissertation.
6	Air Ventilation Study (Architectural Design)	<u>Date/Time:</u> 25 Feb 2011, 2.45pm <u>Venue:</u> Waterside Studio, Chu Hai College of Higher Education <u>No. of Participants:</u> 13	Phoenics, computers	Site Analysis (Interim) presentation on East Kowloon District
7	Air Ventilation Study (Architectural Design)	<u>Date/Time:</u> 21 Mar 2011, 2.45pm <u>Venue:</u> Waterside Studio, Chu Hai College of Higher Education <u>No. of Participants:</u> 13	Phoenics, computers	Site Analysis (Final) presentation on East Kowloon District
8	Air Ventilation Study (Architectural Design)	<u>Date/Time:</u> 15 Jun 2011, 10.30am <u>Venue:</u> Main campus, Chu Hai	--	Submission of 'A Study of Building Mode & Environment in Kowloon'

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	Type of Activity	Date, Time, Venue and No. of Participants	Resources Used	Description
		College of Higher Education <u>No. of Participants:</u> 2		City'
9	Water Quality Study	<u>Date/Time:</u> 8 April 2011, 10:00am to 4:00pm <u>Venue:</u> Tsuen Wan Waterfront to Castle Peak Road (Ting Kau) – Northern side of Rambler Channel <u>No. of Participants:</u> 4	Measuring tape and simple depth measuring devices.	Field visit to Rambler Channel
10	Water Quality Study	<u>Date/Time:</u> 12 May 2011 <u>Venue:</u> Versailles Ballroom, 3/F, Regal Kowloon Hotel, TST <u>No. of Participants:</u> more than 80	-	Presenting a paper supported by the project in CIWEM-HK Water Conference 2011 – Advanced Technologies and Practices in Water Management
11	Water Quality Study	<u>Date/Time:</u> Jan to Jun 2011 (weekly) <u>Venue:</u> Classrooms, Chu Hai College of Higher Education <u>No. of Participants:</u> 2	Delft3D suite of models, computers	Reviewing the modelling work and progress of the final year dissertation.
12	Lighting Design	<u>Date/Time</u> 29 Jan 2011, 9.45am <u>Venue:</u> Room 201, Chu Hai College of Higher Education <u>No. of Participants:</u> 19	--	Briefing of the project and the coming tasks

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	Type of Activity	Date, Time, Venue and No. of Participants	Resources Used	Description
13	Lighting Design	<u>Date/Time</u> Feb - May 2011 (weekly) <u>Venue:</u> Different sites at Chu Hai College of Higher Education <u>No. of Participants:</u> 19	Lighting meter	Field work and use-response survey
14	Lighting Design (2 nd Public Talk)	<u>Date/Time</u> 28 March 2011, 5.00pm <u>Venue:</u> Room SBI 603, Hong Kong Institute of Vocational Education (Tsing Yi campus) <u>No. of Participants:</u> 50	Computer	Computer simulation of lighting intensity at designated spots
15	Project Website Design	<u>Date/Time</u> Jan – Jul 2011 (bi-weekly) <u>Venue:</u> Meeting room of the Faculty of Science and Engineering <u>No. of Participants:</u> 5 per each meeting	Computers	Students designed the project website logically and physically, with additional features added.
16	Mid-project Exhibition	<u>Date/Time</u> 18 and 19 Apr 2011, 11:00 a.m. – 9:00 p.m. <u>Venue:</u> Nature Walk 3, G/F, Citywalk 1, Yeung Uk Road, Tsuen Wan <u>No. of Participants:</u> 12 (students only; visitors not counted)	B&K 4231 Sound Level Calibrator; B&K 2238 Sound Level Meter; Indoor Air Quality Meter, Computers,	Promotion the project of “Enhancement of Teaching and Learning on Environmental Sustainability”.

2.2 The Five Major Studies

Traffic Noise Study

A student has completed the “Study on Efficiency of Noise Barrier at Cheung Per Shan Road, Tsuen Wan”. Noise measurement was carried out at Cheung Per Shan Road in Tsuen Wan. The performance of the noise barrier was studied based on the measured sound pressure level in L_{10} (1 hour) and 1/3 octave band spectrum. It was found that the sound pressure level reduction mostly met the designed reduction except that at the opening / gaps of the noise barrier. Based on the study findings, the lower noise reduction performance at the low frequencies might be affected by the vibration of transparent sheets. Some remedial measures were suggested in the report for the improvement of noise reduction. **Appendices A to C** show the measurement set-up, results and remedial measures of the study.

An Ubuntu 10.04 Linux system has been installed by the College for computer science students to study the installation and configuration of RADIUS server. The server will be used in providing WPA authentication for the wireless network. Two students have studied the configuration of the RADIUS server using LDAP directory. As LDAP directory may be used to hold students’ account, the experience gained from the study could be used in providing better wireless network service for the College’s staff and students.

Relevant information about the traffic noise study will be uploaded to the project website. Measured traffic noise data has been uploaded to the website under the “Traffic Noise Database”.

Indoor Air Quality Study

The indoor air quality equipment was used to support the dissertation of the final year students. A computer model simulation was developed to predict the airflow in the classrooms under different scenarios. The measurements of temperature, humidity, carbon monoxide, carbon dioxide and dust were carried out in accordance with the measuring procedures stated in “A Guide on Indoor Air Quality Certification Scheme for Offices and Public Places” to compare with the modelling result. **Appendix D** shows the setup of Indoor Air Quality

measurement in the study. The comprehensive results, analysis and conclusion were reported in the study report in details.

Relevant information including details of study and measurement data of indoor air quality will be updated in the project website.

Water Quality Study

A field visit was conducted on 8 April 2011 to study the existing stormwater and sewage discharge facilities, water quality and tidal conditions in Rambler Channel, and to identify water sensitive receivers within the channel. A brief introduction of the environmental conditions of Rambler Channel was given to the students prior to the field visit. **Appendix E** shows the poster of the field visit.

A final year dissertation on “Three-dimensional Simulation of Stormwater Discharges in Rambler Channel” has been completed by a year 4 student. The dissertation is part of the water quality study to investigate the polluted stormwater discharges from two major stormwater box culverts at Tsuen Wan Waterfront.

A conference paper entitled “Near-field and Far-field Modelling of Surface Discharges in Rambler Channel” was presented in *CIWEM HK Water Conference 2011 – Advanced Technologies and Practices in Water Management* on 12 May 2011. The paper covers some of the findings from the present study with the focus on the near-field dynamics of surface discharges from the major stormwater box culverts at Tsuen Wan waterfront. A near-field model CORMIX-3 was used to simulate the mixing of surface plume and investigate the interaction of plumes in the channel. Far-field modelling using the Delft3D suite of models was also conducted to simulate the behaviour of the surface plumes, providing a more in-depth understanding on the dispersion of surface discharges in Rambler Channel. The paper acknowledged the funding provided by the Quality Enhancement Grant Scheme, Education Bureau of the Government of HKSAR. **Appendix F** shows the programme of CIWEM HK Water Conference 2011, the paper was presented from 10:30 – 12:30 as [C.3] topic on 12 May 2011.

Air Ventilation Assessment

(i) Civil Engineering Design

In the capstone course “Integrated Engineering Design Project”, the students worked on a design project about a housing development. Continuing with the lectures provided in the first semester, the students had to consider the impact on the wind environment when they finalized the site layout plan. They had arranged the buildings with minimum impact on the wind environment by the development. An expert evaluation based on the concept of air ventilation was performed.

(ii) Architectural Design

Further to the briefing sessions of air ventilation approach to architecture in September and October 2010, a student took up the approach and did a study for the course ‘Studies on Architectural history and theories’. With the title ‘A Study of Building Mode & Environment in Kowloon City’, the study employed Phoenics to testify the effect of different shapes and heights of buildings on the wind direction and penetration in the site. Relevant pictures are provided in **Appendix G**. Some conclusions for designing the future city grid were recommended.

On the other hand, in the course ‘Architectural Design and Theory 4’, in a group work basis, students employed Phoenics to do the wind analysis to understand ventilation condition in East Kowloon District. The data collected from simulation formed one of the design considerations for the later architecture design stage.

Lighting Design

In this semester, on-site field work and user-response survey were carried out in three chosen areas in the college main campus (Classroom 201, Second Floor Corridor and Architecture Department Office).

On-site field work involved existing lighting fixtures reduction which made a darker environment than the current lux level. The reduction in lux level was

carried out in two progressive stages, followed by user-response survey (in form of questionnaires) to review the overall users' satisfaction level against the reduced lighting level. Lighting measurement meter was also employed to set a reference lighting level for comparison and recording. The result found that users could accept a lower lighting level than that is provided by current provision. Also, users generally agreed that in order to achieve certain extent of energy saving, reducing the lighting level was one of the options.

The 2nd public talk on 'Lighting Design in Architecture' was organized at the Hong Kong Institute of Vocational Education (Tsing Yi campus) on 28 March 2011. 50 people attended the talk given by Area Leader Mr. Li Fuk Ming. See **Appendix H** for the poster and photos of the public talk.

In the next semester, computer simulation will be conducted to simulate the different reduced lighting levels in the field work, followed by further analysis on the current evaluation data received.

2.3 Project Website

Three final year students, taking the course BIS390A/B Final Year Project, continued the participation in the development of the project website from January to June 2011, with the supervision of the course supervisor. Several activities have been completed and are shown as follows:

- Project contents provided by the Area Leaders were updated
- Existing Web site with contents were maintained and monitored
- New home page for the Web site was designed
- Advanced Search function was designed
- Interface of the back-end Web site was designed.

In the coming six months, new students will be involved. The interface of the website will be further enhanced by adding multimedia elements, and more functions like photo gallery in the subsystems will be designed in order to match with the progress of the five study areas and the whole project.

3 MID-PROJECT EXHIBITION

The mid-project exhibition was conducted on 18 and 19 April 2011 at Citywalk 1, Yeung Uk Road, Tsuen Wan. Student from the Department of Civil Engineering helped organise and conduct the exhibition. Posters of the project, measurement equipment (B&K 4231 Sound Level Calibrator; B&K 2238 Sound Level Meter; Indoor Air Quality Meter) and computer simulations (Delft3D software and Phoenics) were displayed. **Appendix I** shows the photos of the exhibition booth.

4 QUALITY ASSURANCE

A summary of the 2nd Annual Quality Assurance Monitoring Report covering the period from July 2010 to June 2011 is included in **Appendix J**. The attached document gives a brief summary of the procedures and actions taken for quality assurance of the project.

5 FINANCIAL CONDITION

Appendix K gives a summary of the financial condition of the Project.

6 PROJECT MILESTONES AND DELIVERABLES

The project milestones and deliverables attained in the third reporting period (Jan 2011 – Jun 2011) are shown in **Table 6.1**.

Table 6.1 Project Milestones and Deliverables Attained

Milestone Completed – Stage 2 Part II	
Project Implementation and Execution of Studies (Period: Jan 2011 – Jun 2011)	
Milestone and Deliverable	% Completed
➤ Public talks	100%
➤ Mid-project exhibition	100%
➤ Management of project website and information update	100%
➤ 2 nd Annual Quality Assurance Monitoring Report	100%
➤ Establishment of an Environment and Sustainable Development Centre (the name of the centre is now called “Centre for Sustainable Environment”)	100%

The 3rd public talk about the air ventilation assessment was originally scheduled on 23rd June 2011. The venue at Hong Kong Polytechnic University was booked and the flyer was distributed through email to the potential audience. The talk was unfortunately cancelled due to typhoon and bad weather. The 3rd public talk has been rescheduled to be conducted on 15 July 2011 at Lecture Theatre J of the Hong Kong University of Science and Technology. The title of the talk is “Introduction to Air Ventilation from the Environmental Engineering Perspectives”. The detailed information will be presented in the 5th progress report.

The above-listed key tasks that have been completed contribute to approximately 14% of the overall Project (100%). Together with the key tasks completed from the first to the third reporting periods (Jul 2009 – Dec 2010), about 62% of the overall Project has been completed.