

# Quality Enhancement Grant Scheme

**Progress Report**

**Project No. :** 07/QEGS/09-10

Reporting Period : From August 2011 (month/year) to January 2012 (month/year)

## Part A

Project Title : Development and Implementation of an Integrated Student Information System (ISIS) for Supporting Teaching and Learning in Hong Kong Post-Secondary Institutions

Name of Grantee : The Community College at Lingnan University

Project Period : From August 2011 (month/year) to July 2014 (month/year)

## Part B

Please use separate A4-size sheets to report the progress with regard to the following aspects:

1. Types and brief descriptions of Project activities held/completed during the reporting period (*the information may be presented in the form of a table*).
2. The dates, time, venues and number of participants / beneficiaries of Project activities held, and resources (e.g. equipment, manpower) used for the implementation of Project activities.
3. Project milestone(s) and deliverables attained at the end of the reporting period and evidence showing the attainment of milestones and deliverables.
4. The percentage, in terms of key tasks, of the Project completed at the end of each reporting period.
5. Project variation\*, if any, during the reporting period, together with details and justifications



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Name of Authorized Person: Dr Edward FUNG

Name of Grantee The Community College at  
Organization: Lingnan University

Dean of the Community  
Position of Authorized College and Further  
Person: Education

Date: 12 March 2012

\* A separate written application should be submitted to the Grant for prior written approval.

# Development and Implementation of an Integrated Student Information System (ISIS) for Supporting Teaching and Learning in Hong Kong Post-Secondary Institutions

## QEGS Progress Report (1) Aug 2011– Jan 2012

<28 February 2012>

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## Introduction

In recent years, the post-secondary education has played a major role in the community to provide wide-range of programmes and articulation paths for students. Many successful stories have been heard from both media and graduates, confirming the importance of sub-degree education in the society. Most importantly, the Government has been providing lifelong education opportunity for students by putting tremendous financial efforts in supporting sub-degree institutions and promoting the recognition of such programmes both locally and internationally. This has encouraged and motivated many students to seek for continuing education and become a whole person. Based on the statistics, the size of the Community College at Lingnan University (CCLU) has increased by 40 percent since the 2008/2009 academic year. The College expects another 50 percent increase in the upcoming 2010/2011 academic year. In order to manage a vast number of student records and thus provide academic services such as academic advising, career guidance, and articulation recommendations to the students and graduates, designing and developing a tailor-made Integrated Student Information System (ISIS) for the local sub-degree sector institutions is proposed.

CCLU is the first community college located at a university campus, where students can gain full access to the academic resources and amenities so as to enjoy a true tertiary education life. Since the structures of sub-degree and undergraduate programmes are different, the University “Banner” student information system cannot fully meet the unique educational and administrative needs of the College. Currently, the College is offering various levels of programmes, including Project Yi Jin (PYJ), Diploma (DIP), Higher Diploma (HD), Pre-Associate Degree (Pre-AD), and Associate Degree (AD). There is no student information system in the market readily meet the comprehensive needs of tracking students from different programmes and ensuring they meet the admission and articulation requirements.

Besides, the new “334” academic structure introduces another new challenge to the College. For instance, the new incoming students from the “334” structure will possess a totally different qualification. The prospective graduates will also need individual academic advice to facilitate and enhance their employability. However, all these objectives can never be accomplished through the current student information system. Even the mainstream commercial systems such as Oracle/PeopleSoft may require an extensive customization before they can meet our needs. The development and maintenance cost can become a burden upon the College and students. Therefore, we would like to propose a long-term cost-effective solution in this project to investigate and develop an Integrated Student Information System (ISIS) in order to serve the needs of both our college and the local sub-degree education providers.

This ISIS project consists of investigation, development, testing, and evaluation of an open source solution using OpenSIS as the potential platform. Feasibility and needs assessment will be a part of this project in the initial stage. Design and development of the student information system using open and community source will be the major outcome and project product. With the success of the previous CMS project funded under QEGS, we are confident that through our research findings, the new ISIS is expected to be a comprehensive solution for the higher and continuing education providers in Hong Kong which supports effective and efficient academic services, such as academic advising, career guidance, and articulation recommendations. Aside from the development of a working system, the College strongly encourages and anticipates our research findings to be published in international conferences and academic journals to make a contribution to the international community as well as the local institutions. We also expect the developed product to be shared with other local institutions so that others may benefit from the Government supported project.

In this report, we will briefly summarize the key achievements and activities completed in the Phase 1. Feasibility report, functional requirement specification, system design requirement, and financial statement will be included as appendix, which are the major outcomes from the Phase 1.

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## 1. Project Activities and Milestones

The duration of the project is from August 2011 to January 2012. It is divided into six major phases covering the work of project feasibility, system design, implementation and deployment. The duration of each phase is set and approved to be done in six months. At this moment, we have successfully completed the first phase in which we have guaranteed to the EDB in the original proposal.

The project activities and major milestones for phase 1, covering from August 2011 to January 2012, is summarized in the following table:

Date	Milestone	Completed Activities
August 2011	Formation of project team/Recruitment of First RA position	<ul style="list-style-type: none"> <li>Two research assistants (RAs) are the core members of the project team. Four other team members are from the CC teaching staff. One acts as Project Coordinator, while others act as Project Technical Consultant. One RA acts as System Analyst. His major role is to help design the system including the functional and technical specification based on the needs from the end-users. Another RA acts as Software Engineer. His major duty is placed on the system implementation and programming tasks. Given the size of the project team, we expect both RAs can interchange their duties throughout the project phases. The project coordinator helps coordinate and monitor the progress of the project under the supervision of the chairman. He also helps coordinate the suggestions from different members in the committee.</li> <li>An interview panel (Chairman: Ms. Lisa Law, Members: Mr. Winn Chow and Mr. Gary Wong) was setup and selected candidates were called in for interview. One best candidate was finally selected to initiate the project preparation and investigation.</li> </ul>
Sep 2011	Initial establishment of the project advisory committee and work duty	<ul style="list-style-type: none"> <li>An advisory committee was initially formed.</li> <li>An advisory committee was officially formed in September 2011, when one of the RA staff started to work. The committee serves to advise and make recommendations to the project team internally at CC. Selected representatives at CC form the Committee, which includes the senior teaching staff with experience in programme designs and development, i.e. Higher Diploma, Diploma, Associate Degree or Pre-Associate Degree. One of the main benefits is that the committee members can help the project team coordinate or facilitate the activities when it is necessary. Besides, selected administrative staffs from Registry service are invited to the committee to offer the perspectives in user requirements of the ISIS system.</li> <li>The committee members began to have a clear goal and direction of the project based on multiple offline communications.</li> </ul>

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Date	Milestone	Completed Activities
		<ul style="list-style-type: none"> <li>Weekly meetings are held with the RA and Project Coordinator to ensure the project progress. Regular committee meetings are held every two months. The committee members give recommendations and review the project's progress during the meeting.</li> <li>To facilitate the project management, reports are classified into bi-weekly and bi-monthly. Bi-weekly reports are submitted to the project coordinator and the chairman, while the bi-monthly reports are sent to the Dean's Office for updated progress.</li> <li>Project management software tool is also adopted to help manage the achievements in each phase.</li> <li>Our system analyst was briefed with the college working environment and the existing system issues. He successfully completed a set of training for the existing information system, Banner's System. The training helped him familiarize the current system workflow and the downsides of the system. This becomes the major step for our drafting our ISIS system design and functional specification.</li> </ul>
<p><b>Oct 2011</b></p>	<p>Recruitment of second RA position/Feasibility Study</p>	<ul style="list-style-type: none"> <li>Another interview panel (Chairman: Ms. Lisa Law, Members: Mr. Winn Chow and Mr. Gary Wong) was setup and selected candidates were called in for interview. One best candidate was finally selected to act as software engineer. He reported to duty in November 2011.</li> <li>We continued our investigation on the expectations and requirements on the ISIS of the college, where the results were later on summarized to the functional requirements.</li> <li>We completed the feasibility investigation of an open source solution, OpenSIS, and its suitability to be adopted in local post-secondary institutions. Our results were summarized in the feasibility report.</li> </ul>
<p><b>Nov 2011</b></p>	<p>Setting up 2 PCs for research staff/Research Office System Design and Functional Requirements</p>	<ul style="list-style-type: none"> <li>A research office in NAB305B was set up with 2 project PCs for the RAs.</li> <li>First draft of the system design and functional requirements were completed based on the discussions with end-users from Registry Office. The role of the ISIS was defined to specify how it works coexisting with the Banner's System. In addition, a preliminary set of functional requirements was drafted for the committee members to review and approve.</li> <li>UML diagram, user case diagram, and project timeline were drafted and completed.</li> <li>The ISIS should be able to provide four major functions: Admission Management, Programme Pattern Verification, Final Grade Management, Academic Advising, and Statistical Reporting.</li> </ul>

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Nov - Dec 2011	Initial development project plan	<ul style="list-style-type: none"> <li>Dec 2011 - An initial development project plan was drafted.</li> <li>Other project activities continued to meet the deadlines</li> </ul>
Dec 2011 - Jan 2012	Project feasibility report	<ul style="list-style-type: none"> <li>December 2011 – An initial feasibility report was drafted.</li> <li>January 2012 – A revised feasibility report was released. The report is attached in <b>Appendix II</b>.</li> </ul>
Dec 2011 - Jan 2012	Functional requirement specification	<ul style="list-style-type: none"> <li>A functional user requirement report v1.5 was drafted and distributed to the committee members for a preview on 19 January 2012.</li> <li>The purpose of this document is to capture the user requirements of various tools for the ISIS system. User requirements were collected through the face-to-face interview with selected teachers and administrative staff in Registry Service.</li> <li>The functional requirements specification v1.6 was issued after review. (See <b>Appendix III</b>.)</li> </ul>
Dec 2011 - Jan 2012	System design specification	<ul style="list-style-type: none"> <li>An initial system design specification was compiled. It served as the preparation work for designing and developing our system and described the required system components from a technical perspective view. The report is attached in <b>Appendix IV</b>.</li> </ul>
Dec 2011 - Jan 2012	Financial statement (unaudited)	<ul style="list-style-type: none"> <li>An unaudited financial statement for this period is attached in <b>Appendix V</b> for reference. It shows the transactions and the current budgetary balance of the project.</li> </ul>



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## 2. Project Milestones Completed and Deliverables Attained

Project feasibility was being studied in order to evaluate what the potential risks and difficulties will be when implementing the project. Corresponding resolutions or alternatives are needed to be considered in this report. Particularly, we need address whether adopting the OpenSIS open source solution is a good solution. Needs assessment is required to be conducted so as to know the expectation of our proposed solution. Finally, we need to determine if the project is recommended for continuation or not. Recap that a feasibility report is attached in **Appendix II** for reference.

Based on our investigation, OpenSIS or other similar solutions cannot entirely or easily solve our challenges. First, the open sources are usually written for a general scenario. Unlikely other open source, each institution has its uniqueness in terms of the academic policy and regulations, operational management, cultural background, and the organizational structure. An information system that manages student data involves heavily on all the considerations above. Without an intensive modification in any open source, it is nearly impossible to fine tune the best solution for our college. Even a well-known commercial product such as PeopleSoft Oracle, it targets on a university campus solution. However, a team of software programmer is still needed to study and investigate the needs of a university before the modification. Thus, it is more suitable to design our own system in order to target our specific needs. In our feasibility report (see **Appendix II**), the justification will be further explained in the technical perspective. Currently, we are investigating the available programming languages and development tools. This investigation will lead to our development and implementation in next phases.

More importantly, functional requirement and system design specification are the two major reports that contain our knowledge base studied in the Phase 1. The reports explain in details about a feasible solution and the role of the ISIS in the college. Based on our effort and investigation, we propose the following five key major functions of the ISIS system. Our goal is to design and develop a standalone system that can be a both self-contained and supplementary to Banner's System solution.

The key functions supported by the ISIS are as follows:

- **Admission Management**
- **Programme Pattern Verification**
- **Final Grade Management**
- **Academic Advising**
- **Statistical Reporting**

The details of the system functions were summarized in the **Appendix III**, functional requirements specification, for reference. This specification will be the major guidelines for development and implementation. Briefly speaking, this ISIS is expected to be able to allow administrative and teaching staff to input, manage, and output student data from various programmes, including New Project Yi Jin, Diploma, Higher Diploma, and Associate Degree. Other future programmes should still be able to take the advantage of the system for data management. To minimize the risk of building a real-time system, we suggest that this system is used solely by the internal staff. Students are not anticipated to involve in the usage of the system directly. More details can be found in the functional requirement specification.

In **Appendix IV**, it provides our proposed system design and architecture. For general audience, it is optional to understand and familiarize with this specification. To build our database system, our RAs have proposed the design to act as a blueprint of how the interactions of each module should be defined and communicated. This is certainly an important milestone in our project when the model of the system becomes clear and solid. Nevertheless, the concept of the system design should remain consistent throughout our project development.

Finally, the financial statement is provided in the **Appendix V**. Most of our expenses have been dedicated to our valuable human resources, particularly the RAs. They have made a satisfactory contribution to the project in terms of the design of the ISIS in this phase I.

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### 3. Percentage of the Project Completed

Based on the milestones finished in phase 1 (i.e. from August 2011 to January 2012), one sixth of the project is completed in terms of key tasks. Therefore, the percentage of the project completed is equivalent to about 17 percent. The finished major portions are illustrated in the following overall project diagram. At this moment, our project has begun the phase 2 investigation and development already. The progress report in the next phase will summarize our further achievement in this project.

**QEGS Project Implementation**

Partial Project completed at the end of January 2012 against the overall project

Project Milestones:

	Jul - Aug 2011	Aug 2011 - Jan 2012	Feb - Jul 2012	Aug 2012 - Jan 2013	Feb - Jul 2013	Aug 2013 - Jan 2014	Feb - Jul 2014	July 2014		
Phase 1	★ Commencement of the Project									
	★ Study on the requirements ✓									
	★ Study on existing open source SIS applications ✓									
	★ Draft system design requirements and development ✓									
	★ Submit the first 6 months progress report									
	Phase 1 Completed →									
Phase 2	☆ Development of system prototype and project plan									
	☆ Conduct of internal system testing									
	☆ Submit the past 6 months progress report									
	☆ Setup of development and testing servers									
Phase 3	☆ Development of pilot system with core functionalities and internal testing									
	☆ Evaluation of system									
	☆ Submit the past 6 months progress report									
	☆ Conduct of loading test for the system									
Phase 4	☆ Develop admission record system									
	☆ Develop course registration system module									
	☆ Develop qualifications framework support									
	☆ Submit the past 6 months progress report									
Phase 5	☆ Conduct of large-scale internal testing									
	☆ Develop student advising application module									
	☆ Submit the past 6 months progress report									
	☆ Trail run for the system									
Phase 6	☆ Evaluation and promotion of the system									
	☆ Completion of Project									
	☆ Submit the final evaluation report									
	☆ Submit the financial report									

Legends:  
 ★ - Completed Task  
 ☆ - to-be-Completed Task