

Keynote Paper:
IT System Design for Liberal Arts Universities in China:
The Student-Centered Approach

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ABSTRACT

This paper is a preliminary case study of IT system design for the first liberal arts college in China, Beijing Normal University-Hong Kong Baptist University, United International College (UIC). The Information Technology system design of the college used the Student-Centered Approach with respect to achieve small class size, student engagement not just among students but also student-teacher including mentorship and collaboration, students gaining skills and practices for independent study and lifelong learning. Information Technology applying to an integral part of the academic programs and extra-curriculum activities for achieving missions include assisting students from diverse disciplines, acting responsibly, communicate, think critically and hence tackle problems resourcefully. Student centered approach in teaching and learning which involve teachers as facilitators in a student-centered environment requiring project-based, active learning, peer to peer interaction and collaborative learning, assessment, and evaluation for evident collection of student learning activities and constructive alignment of intended learning outcome. Technically, IT system design in UIC is an integrated completed package which consists of full Wi-Fi coverage campus, learning facilities such as eLearning, Active Learning Classrooms, project discussion room, computing room and Learning Management System, video captured for online courses, customized and designed courses for independent learning project such as the Vacation English Enrichment Program (VEEP), Independent Learning Hub, The Independent Grammar Student Scheme(IGSS), and Teaching and Learning Website.

Keywords: Liberal Arts College, Independent Learning, VEEP, IGSS, UIC

1. Introduction

Liberal arts education has its unique philosophy for educating the student to become a whole person, UIC adopted this philosophy to implement the Whole Person Education and the Four-Point Education models for advancing the internationalization of Chinese education and become the first liberal arts college in China. Along with the evolvement of new technology, its change the way of teaching and learning environment. This paper use information technology (IT) system design in UIC as a case study to demonstrate how IT can facilitate the college to implement the liberal arts, education model.

2. Features of Liberal Arts College (LAC)

Liberal arts stemming from the Latin word “liberalis” meaning “appropriate for free men”. In ancient times, liberal arts included grammar, logic, rhetoric, arithmetic, geometry and even music and astronomy. Today liberal arts education refers to a broad range of subjects: literature, languages, history, philosophy, math, and sciences.

A liberal arts education adopted the famous Greek philosopher Socrates teaching method -Socratic Method, which is a unique teaching method using the question and dialogue approach to challenge students to support their arguments and to stimulate critical thinking. Contemporary LAC inherits the Socratic’s teaching method which emphasizes discussion and feedback. Moreover, with the dedicated curriculum for a broad range of learning subjects, will raise students to become a whole person.

From the unique philosophy and teaching method, generally the LAC will contain the following features:

- **Small Class size:** LACs are typically small in population compared, with student bodies often around 700-2,500 students. The classes have a small teacher-to student ratio (1:20), it allows the teacher to provide a better quality teaching and with more personal attention to their students.

- **High level of Student -Teacher Interaction:** Liberal arts education encouraging a high level of student-teacher interaction, mentorship, and collaboration. Having a small student body population, it creates a more intimate environment between students and teachers. The faculty's role is to engage students in this creative process and encourage interaction and debate. Active learning is highly encouraged in a liberal arts classroom.
- **Student engagement:** Relying heavily on student participation, liberal art education emphasis on creative thinking, students are highly challenged in class to think creatively and to propose innovative ideas and interesting discussion.
- **Independent Study:** Focusing on skills and practices that enable lifelong learning and independent problem solving. Students in LAC may have multiple viewpoints and allow for educational opportunities such as interdisciplinary studies, internships, study abroad, and other opportunities that help to educate the students becoming a more insightful and enlightened person.

3. A LAC in China –UIC

In response to the China educational reform policy to supplement the insufficiency of the current examination-orientated education system. Beijing Normal University (BNU) and Hong Kong Baptist University (HKBU) jointly founded a new LAC, named as Beijing Normal University-Hong Kong Baptist University, United International College (UIC) in the year of 2005. It is the first full-scale cooperation in higher education between the Mainland and Hong Kong. UIC education is of international standards, with high-calibre academic performance. English is the medium of instruction. UIC's curriculum is set up in line with Hong Kong Baptist University's academic standards and fulfils its quality assurance requirements.

UIC takes root in the liberal art education philosophy to deliver distinct quality educations, with the student centered and interdisciplinary approach to cultivate open-minded, well-rounded talents. UIC's education also encourages a high level of student-teacher interaction, mentorship, and collaboration. Whole Person Education (WPE) and Four Point Education (FPE) are the education models being implement in UIC to lead the Chinese education towards internationalisation, where WPE model is concerned with a person's intellectual, moral, physical, social, emotional, artistic and spiritual potential. Strong emphasis on Experiential Learning, in which students are inspired to initiate their own education and learn by doing. FPE with students being the center of this model, the college, the student, the parent, and society are closely connected to enhance the education process. Making use of the interrelation between these four points, we draw on the best possible resources to groom students holistically.

4. Student-Centered Approach

Having a student-centered learning environment, teachers' roles are more that of facilitators than instructors, where students are active participants in the learning process, and teachers' help to guide the students manage their activities, and direct their learning. (Ive Emaliana, 2017)

In general, the student-centered approach for successful learning will consist of the following elements:

4.1 Project Based and Active Learning Method

Project based activity involved a high degree of student engagement, it drives the students to take their initiative to read, do research and discuss the problem on the assigned project. They have the opportunity to work at their own pace and explore their own interests. They take greater responsibility for their own learning and do not rely exclusively on the teacher to provide direction. They will show enthusiasm and enjoy learning with a purposeful challenge, they will be empowered in their learning process and encouraged to be truth-seekers and meaning-makers. Active learning allows students and teachers to engage in genuine exchanges of ideas. Teacher can "invite students to experience the world's richness, empower them to ask their own questions, and challenge them to understand the world's complexities" (Brooks & Brooks, 1993), moreover actively listen to students and help them acquire the confidence to argue, challenge and eventually prove and defend their ideas. Students are also encouraged to learn independently, with minimal guidance from the teacher as it becomes necessary. Appropriate teaching

methodologies are adopted to provide students with opportunities to do independent work, either alone or in a group. Form both the project based and active learning activities provide the student with the skill of problem solving, reasoning, critical thinking and the active use of knowledge.

4.2 Peer to Peer Interaction and Collaborative Learning Method

Peer to peer interaction and collaborative learning allow the student to learn from peers, not just from the teachers, they share information, help each other and provide support for each other's learning. Students may work together in discussions or in role-plays, share ideas, opinions, and experience, these activities let students feel more secure and less anxious in their learning process (Nagaraju,2013). It is vital to use a teaching technique that allows the student to work in groups. Group works can stimulate learning, students were more confident and motivated to express their ideas when they involved in small groups. (Slavin, 1995 and Hamzah and Lu,2010).

4.3 Constructive Alignment of Intended Learning Outcomes, Teaching, and Learning Activities and Assessments

Constructive alignment is an outcomes-based approach to teaching in which the learning outcomes that students are intended to achieve are defined before teaching takes place. (John Biggs,2014) It provides a framework for adjusting teaching and assessment to the attainment of those outcomes and the standards reached, and thus, as a form of quality enhancement, subsumes forms of quality assurance.

4.4 Teaching and Learning Assessment and Evaluation for Evident Collection of Student Learning Activities

Self-appraisals and peer assessments can be conducted for the student to determine the achievement of their project, students can revise goals, learning strategies, or assessment criteria for continuous improvement (Rodolfo P.Ang,2001). Multiple measures involving multiple sources of information collection from students and teachers can be the source of evidence for evaluating instructional effectiveness, instructional delivery, course planning, grading and assessing student learning, course management and oversight of independent studies.

5 Roles of Information Technology in Liberal Art Colleges

IT is influencing and supporting the learning environment, so too is it supporting changes to the way students are learning. It influence curricula move from content-centred to competence-based are associated with learning style moves away from teacher-centred to student-centred.

The growing use of technology as an instructional medium is changing and will likely continue to change many of the strategies employed by both teachers and students in the learning process. Students using technology for learning purposes become immersed in the process of learning and as more and more students use computers as information sources and cognitive tools (Reeves & Jonassen,1996). IT provides many opportunities for constructivist learning through their provision and support to practice (Berge, 1998; barron, 1998).

IT's roles in LAC apparently structured an Integral part of the academic programs and the extra-curriculum activities to ensure information integrated for forming literate communities within the collage. Eventually, LAC utilizes the information technology to meet their unique mission for supporting students to integrate ideas from diverse disciplines, act responsibly, communicate effectively, think critically and tackle problems resourcefully.

6 Case Study: IT system Design in UIC

UIC adopts general principles and roles of IT to facilitate the college to implement the liberal arts, education model. The IT system design in UIC based on the student-centered approach in the following aspects:

6.1 Campus Network

LAC education requires students to learn a broad range of subjects, with the development of the internet and the World Wide Web (WWW), it facilitates students a more easy way to acquire information and knowledge globally. UIC's campus network infrastructure is built based on a 3-layer architecture (Core Layer, Distribution Layer, and Access Layer). With the 10G Ethernet Backbone, the network connection baud rate can reach up to a gigabit per second, it ensures students to have timely online information access. UIC campus is also a full Wifi coverage campus, students can access online learning materials and information at any time and any place on the campus.

6.2 Learning Facilities

To facilitate project based and active learning model, UIC provides students with various type and size of learning rooms:

6.2.1 *eLearning Classrooms* based on the flipped classroom pedagogy, it is specially designed for collaborative learning activities. With movable chairs, it provides flexibility to create different teaching and learning style. TV monitors are mounted on each side of walls, students are able to view the learning materials displayed on the TV near to their work's station. Teacher's front desk is equipped with a central control panel, it allows teacher freely display the teaching materials either broadcast to all student groups or individual group. A high definition camera installs in the classroom to facilitate the teacher to video capture the class activity if they wish. The captured video can then be uploaded to the video server, students can view the video after class through the video platform, it will facilitate student to take their own pace to learn and understand deeply on the subject and hence they will be more interactive and more engaged in learning through this learning environment.

6.2.2 *Active Learning Classroom* is designed to facilitate active learning through a real-time process, where a student can actively participate in a discussion initiated by the teacher. The classroom consists of a teacher's electronic podium with real time scanner and computer, movable tables and chairs for forming workgroup among the students, each group will occupy a computer and display monitor. All the computers are networked and installed with the software for wireless screen mirroring and sharing, as well as word processing software for collaborative works. The teacher initiates discussion topics by sharing the article via the real time scanner to each workgroup monitor or sending the e-document from the teacher's computer to the workgroup computers. Students read and access the document from their station's computer, their discussion contents can be posted on the common online platform and viewed by other groups of student and teacher in the class via the TV monitor. The display's contents enable the teacher to respond and interact with each group independently or share ideas with all groups. This will promote real-time participation among students by sharing documents, where both the teacher and students can actively communicate as well as encouraging a collective discussion.

6.2.3 *Project Discussion Room* is a media-equipped room for group project discussion with both analog and digital connection, students can connect their laptop computer to the wall mounted a TV in the room, the discussion material can be displayed on the TV for peer-based and project-based learning. Free Wifi access also available in the room for students to access the internet to acquire online information for discussion.

6.3 Independent Learning

A learning management system (Moodle) has adopted in UIC for teaching & learning contents management. Teachers upload their teaching resources to Moodle, students can login to the system to view and download the required learning materials. In addition, many activities such as quizzes, forums, assignments, glossaries, journals, wiki and etc can be created by the teacher in their course site. Moodle is an appropriate software tool for promoting independent learning.

As UIC using English as the instructional medium, students wish to have more opportunity to learn English. The English Language Center has developed several independent English study courses in the moodle platform such as Independent Learning Hub (ILH), The Independent Grammar Study Scheme

(IGSS) and The Vocational English Enrichment Programme(VEEP), to improve students English reading, speaking, writing, listening and grammar skills. Reports on the students learning progress, interested activities and learning outcome can be easily generated, data can be processed and presented in meaningful and usable context for further improve the teaching and learning quality.

A video capture platform also implemented in UIC, teachers are able to pre-record their lecture and then upload to the video capture platform. Students can view the video anytime and anywhere they have control over the media they watch, they have the ability to review the parts that misunderstood and the parts that are of particular interest (Danker,2016). The video platform has the features to keep the statistic of the viewing process, this information might aid the teacher to improve their teaching contents to meet the intended learning outcome and have a good understanding of the student learning interest.

6.4 Teaching and Learning Evaluation (TLE)

An online TLE is conducted at the end of each teaching semester, the TLE's questions focus on teaching performance evaluation and student learning effectiveness. Students are invited to take part in the TLE survey, at the end of the evaluation, the system will generate a TLE report for each instructor, this data will be used by the teacher for improving the teaching performance and effectiveness.

7 Conclusions

The contemporary education model emphasis on student interest and provides a wide range of learning methods to encourage students to take their initiative to explore wider and deeper for their learning experience. Student-centered approached is the right trend to lead the education into that direction, teachers can adopt the new technology such as 3D, AV/VR, 5G and IoT technologies infiltrate into their curriculum to inspire students' interest in learning. On the other hand, college can utilize the Big Data technology to trace the students' interest and learning path to collect evidence of the learning outcome, a real time visualize report will facilitate college or teachers to identify the effectiveness of the teaching and learning as well as the curriculum aligns with the intended learning outcome.

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Currently, she is the director of the Information Technology Service Centre at Beijing Normal University-HK Baptist University, UIC in China. Software Managers in several software firms in Singapore and Australia. She has more than 20 years of software development and project management experience. Her research interest is in the areas of Customer Services, software engineering, SME's IT/ERP system, factory automation IT service and support.