Enriching 21st Century Higher Education Students' Job Creation Skill : UTM Academic Staff Perceptions Toward MIT BLOSSOMS

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ABSTRACT

What are some generic skills or graduate student attributes required of 21st century higher education students by future employers? Besides English communication skill, team working skill as well as critical & problem solving skill, entrepreneurial skill is one of the generic skills that require serious attention in Malaysian universities. What are some characteristics of 21st century higher education students? What are some meaningful and interactive learning experiences that can equip them with these skills? Information and Communication Technology can be used to extend conventional teaching methods. Higher Education Institutions need to tap the potential and advantage of Information and Communication Technology towards engaging and enriching 21st century higher education students learning experiences. This paper thus attempts to explore the perceptions of UTM academic staff towards the use of an interactive learning environment - MIT BLOSSOMS - in enriching 21st century higher education students' entrepreneurial skill specifically on job creation. In this study, 12 UTM academic staff volunteered to view an interactive video lesson from the MIT BLOSSOMS web site and later was interviewed how they perceive that particular video lesson will be able to help enrich entrepreneurial skill specifically on job creation among higher education students. Findings in this study showed that all 12 UTM academic staff participated in the study perceived that the video that they have viewed should be able to contribute in enriching 21st century higher education students' entrepreneurial skill specifically on job creation.

KEYWORDS: New Academia, New Academia Learning Innovation Model, MIT BLOSSOMS, Entrepreneurial skill, Job creation.

Introduction

With the advent of Information and Communication Technology there is a phenomenal growth on e-learning or online courses in the last ten years. It is reported by the Sloan Foundation that in 2008, more than one in four higher education students took at least one online course and just a few years earlier, in 2002, it was only about 10%. The vast majority (82%) of these online students were undergraduate students (Allen & Seaman, 2010).

Information and Communication Technology can certainly be used to extend conventional teaching methods. If used appropriately, it has proven to be effective at the tertiary level of education. Higher education institutions should therefore continue to tap the potential and

advantage of this technology towards enriching and engaging 21st century higher education students learning.

Presentation software can be used to create eye-catching presentations to entice students to pay attention. Electronic visuals can also provide a medium for easily incorporating multimedia into a lesson to better demonstrate an idea than through abstract words and static pictures.

The World Wide Web opens a seemingly limitless library of information and has increased the availability of information to the individual learner. It is now essential for students to become users of information rather than collectors of facts. Information is not the sole domain of academic staff. It is available to all who know how to find it and use it. The 21st century higher education students can search, select and synthesize much more information than they had ever previously considered possible.

Academic staff must therefore change their roles from being suppliers of knowledge to facilitators of knowledge. Online technology can play an important part in extending or transforming the learning environment to fit 21st century higher education students' changing needs.

Problem Statement

What are some skills required for jobs by future employers? Generic skills or graduate student attributes that require serious attention in Malaysian universities include English communication skill, team working skill as well as critical & problem solving skills. Entrepreneurial skill is also one of the skills that need to be inculcated and embedded among Malaysian higher education students.

Resolutions based on discussions among key industry players and academicians during International Conference on Teaching and Learning in Higher Education (ICTLHE 2012) in conjunction with Regional Conference in Engineering Education & Research in Higher Education (RCEE & RHEd 2012) which was held in Malaysia include:

- Graduates, among other things, acquire generic skills, must be able to create new jobs and create companies with new innovations.

- Graduates find it hard to communicate, unable to interact with colleagues and people, fail to display team spirit and face difficulties in adapting to the job market.

- Students are unable to relate and apply what they learn in classroom into real world application. Initiatives should therefore reduce the gap between classroom and real working environment.

In the last few decades there has been a gradual shift of understanding about how learning should be facilitated in higher education, towards an emphasis on Student Centred Learning (SCL) rather than Teacher Centered Learning (Ashwin, 2006; Schneckenberg, 2009).

What are some characteristics of 21st century higher education students? This 21st century higher education students want meaningful work, want to be involved and crave attention from mentor in the forms of feedback and guidance. These students grew up with technology and rely on it to perform their jobs better. These students prefer to communicate through e-mail and text messaging rather than face-to-face contact and prefer online technology to traditional lecture-based presentations. Online learning, in particular, has long been touted as a way to support students' learning (Flores, 2010) and some commentators such as Clarke (2002) consider it as a core skill in the twenty-first century.

Gardner (2008) book entitled, "5 Minds for the Future" described how students of the future think and act. The Disciplined Mind refers to student applying diligently, improving steadily and continuing beyond formal education. The Synthesizing Mind is a skill in selecting crucial information from the copious of information available and arraying that information so as to make sense to self and others. The Creating Mind pushes a student to go beyond existing knowledge and synthesize to pose new questions and offer new solutions. The Respectful Mind makes students responding sympathetically to differences among individuals and groups, and extending beyond mere tolerance. Finally, The Ethical Mind develops a student striving toward good work and good citizenship.

Understanding the characteristics 21st century higher education and learning methods used by them are essential in identifying methods and technology that are suitable for their learning needs. Will the use of meaningful and interactive learning experiences help enrich entrepreneurial thinking and mindset of these particular students? While meaningful refers to having meaning, interactive pertains to a two-way system of electronic communications, obtaining information and getting immediate results.

Possible Solution

New Academia Learning Innovation Model

With reference to the book, "New Academia" written by Zaini Ujang (2012), Universiti Teknologi Malaysia (UTM) envisions to be a global brand. Under the leadership of UTM Vice Chancellor Zaini Ujang, planning does not stop at that stage but rather projects are being implemented. This is because the projects that were proposed are realistic and achievable within a specified time period.

UTM initiatives to enrich Learning and Teaching (L&T) are based on well-known and best teaching and learning practices which have been proven to be effective. These best practices include Harvard Initiatives for Learning and Teaching (HILT), Harvard Business School Case

Studies (HBSCS), Peer Instruction (PI), MIT OpenCourseWare Consortium (OCC) and MIT BLOSSOMS (Blended Learning Open Source Science or Math Studies).

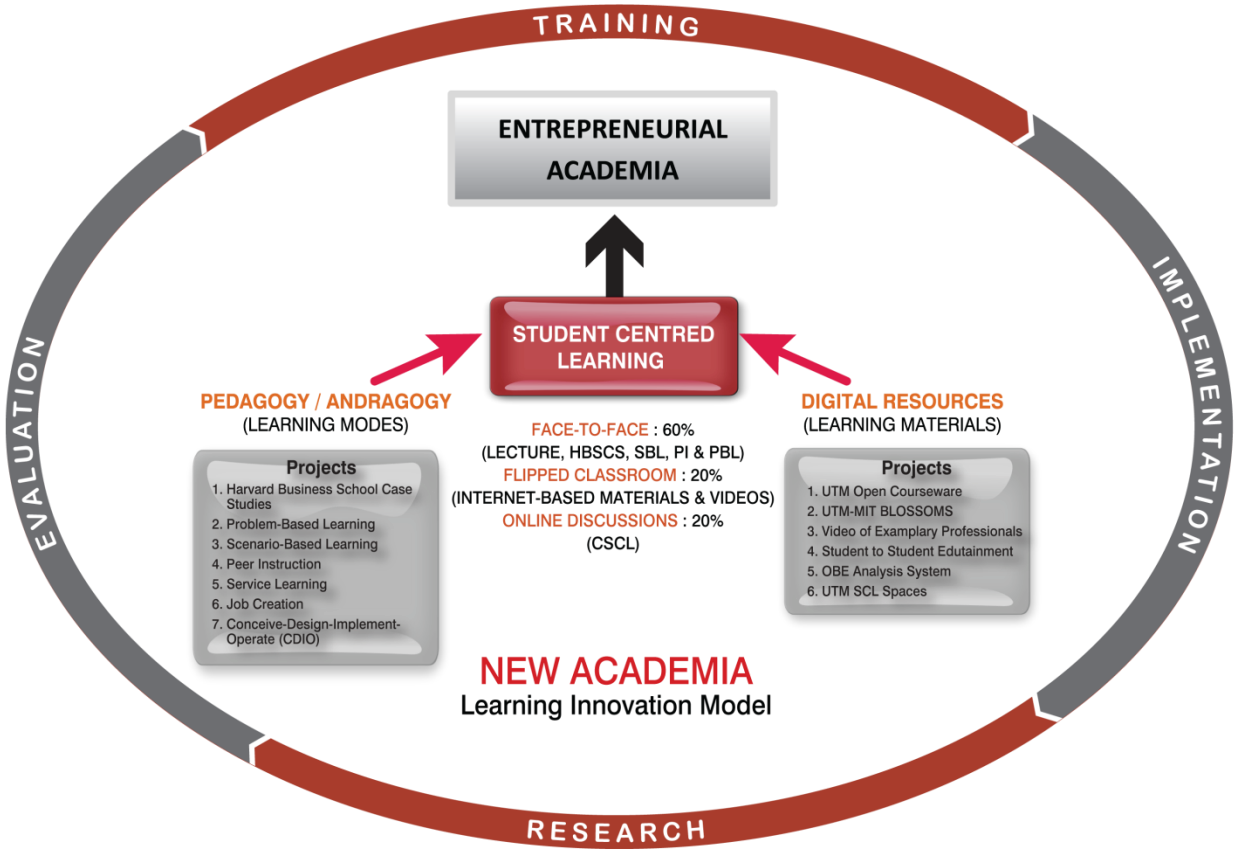

Figure 1.1: New Academia Learning Innovation Model

Based on this scenario, **New Academia Learning Innovation Model** (see **Figure 1.1**) which is under the **Key Focus Area (Academic & Internationalization)** attempts to create UTM own identity of teaching and learning models, activities, materials, systems and environments. In order to create memorable learning experiences among graduates, meaningful learning experiences and interactive learning experiences which are motivating and able to keep the attention of the students in relatively higher levels throughout the lecture is required.
Therefore, systematic incorporation of active learning strategies and digital learning materials into lectures may minimize many of the weaknesses of traditional lectures. In addition, online systems and learning environments will also help support Student Centred Learning (SCL).

Why UTM introduce New Academia Learning Innovatin Model?

Among the problems and rationale include:

In 2010, the Academic Performance Audit (APA) Panel suggested in its report that UTM, "need to ensure that the focus on research will not reduce attention towards quality and comprehensive teaching".

Based on the National Higher Education Strategic Plan Phase 2 (2011-2015) or *Pelan Strategik Pengajian Tinggi Negara Fasa 2* (2011-2015), and in particular Critical Agenda Projects (CAPs) Teaching and Learning, all (100%) university lecturers in Malaysia are required to use at least 1 Student Centered Learning (SCL) method by 2015.

MIT BLOSSOMS

Under New Academia Learning Innovation, there are projects that cater for meaningful and interactive learning experiences toward the inculcation of entrepreneurial skills among UTM 21st century higher education students. MIT BLOSSOMS is one of the New Academia Learning Innovation projects.

With reference to **Figure 1.2**, the MIT BLOSSOMS (Blended Learning Open Source Science Or Math Studies) is committed to enhancing math and science education around the world. MIT BLOSSOMS Video Library contains over 50 math and science video lessons on math and science fundamentals by relating abstract concepts to the real world.

Every video lesson is a complete resource which includes video segments, a teacher's guide, downloadable hand-outs and a list of additional online resources relevant to the topic. Each 50-minute video lessons are freely available as streaming video and Internet downloads.

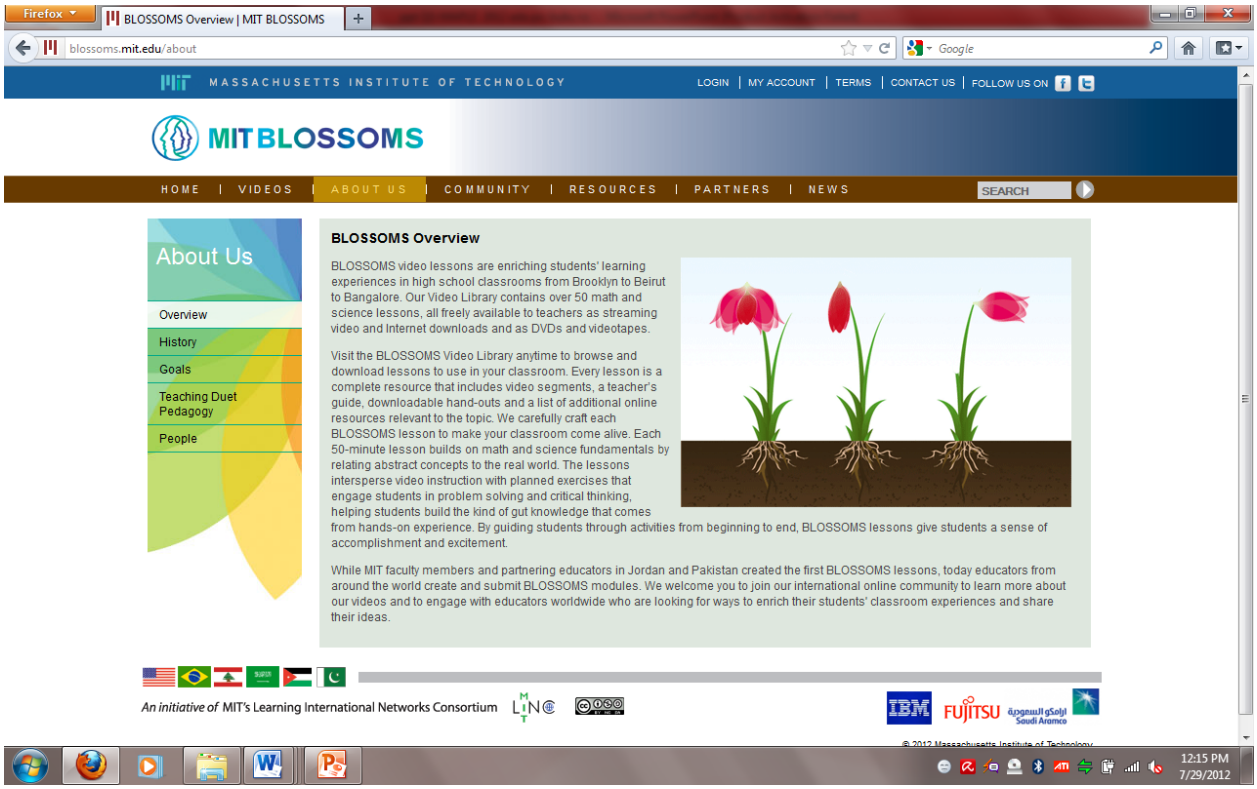

Figure 1.2: MIT BLOSSOMS web site (http://blossoms.mit.edu/about)

The MIT BLOSSOMS video lessons are interactive in nature with planned activities and hands-on experience that engage students in critical thinking & problem solving. Some video lessons can also contribute to enriching higher education students' entrepreneurial skills. By guiding students through activities from beginning to end, MIT BLOSSOMS video lessons give students a sense of accomplishment and excitement.

Research Methodology

The purpose of the study is to explore UTM academic staff perception toward MIT BLOSSOMS with respect to its usefulness in enriching UTM 21st century higher education students' entrepreneurial skill specifically on job creation.

The respondents who volunteered in the study consisted of 12 UTM academic staff from Science, Technology, Engineering and Mathematics (STEM) related areas. These UTM academic staff was instructed to view an interactive video lesson from the MIT BLOSSOMS web site (see **Figure 1.3**) that can be viewed online or downloaded from the MIT BLOSSOMS web site. Later, they were interviewed based on their perception toward that particular video lesson in enriching entrepreneurial skill specifically on job creation among higher education students.

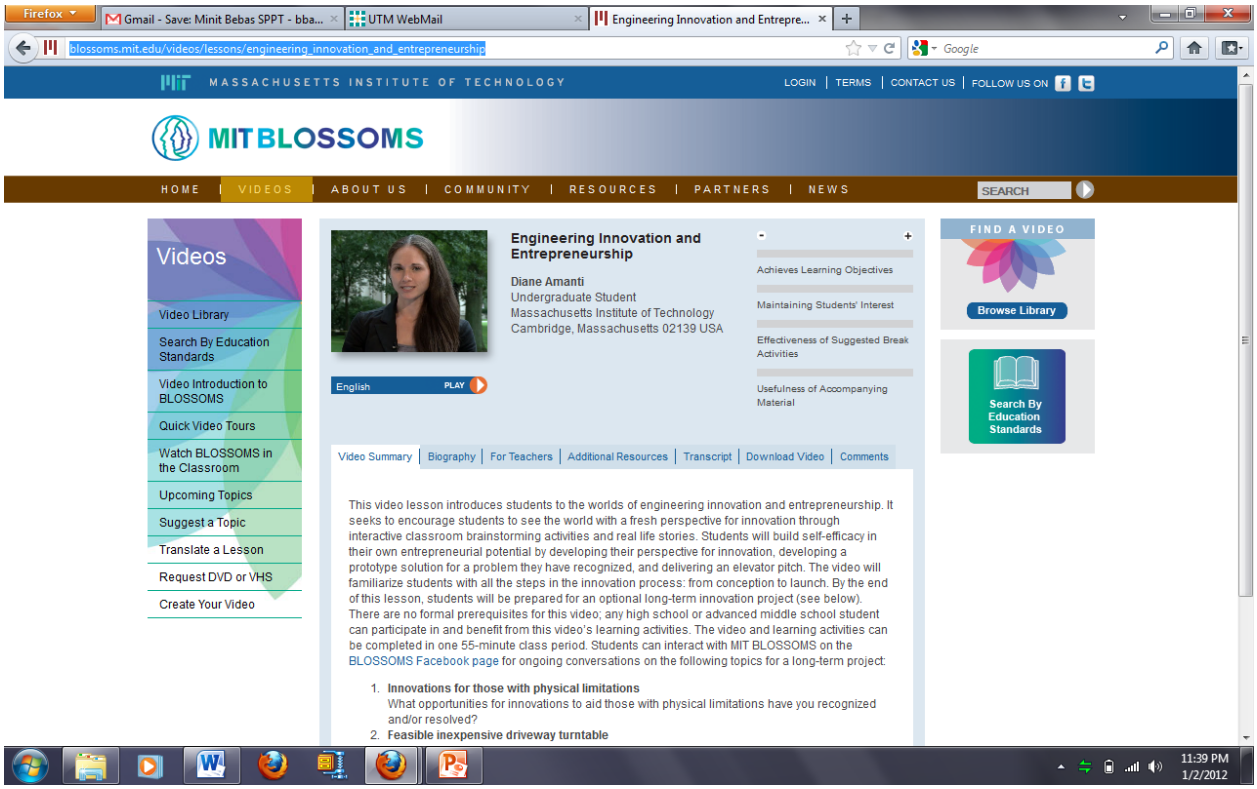

Figure 1.3: Engineering innovation and entrepreneurial (http://blossoms.mit.edu/videos/lessons/engineering_innovation_and_entrepreneurship)

This MIT-BLOSSOMS video lesson introduces students to the world of engineering innovation and entrepreneurship. It includes real life story and students actively involved in the lesson through interactive classroom brainstorming activities. Students are expected to identify a problem, suggest a new prototype solution or innovation and later seeking entrepreneurial potential.

Results of the study

General findings in this study indicated that all 12 UTM academic staff who participated in the study perceived that the video that they have viewed should be able to contribute in enriching 21st century higher education students' entrepreneurial skill specifically on job creation. Blended learning can leverage the advantages of both face to face and digital teaching materials (Lou et al., 2011; Shih, 2011).

Specific findings based on the discussions include the following 5 criteria:

Content

All the academic staff agreed that the content in the MIT-BLOSSOMS video lesson is suitable to enrich entrepreneurial skill specifically on job creation among students. The content is systematically planned and well-structured.

Academic staff A8 expresses:

> The contents were stimulating. Enough concepts were included in the video lesson that makes the lesson clear. Also, the developments of the concepts were very clear and systematic. Overall, I personally think the MIT-BLOSSOMS video lesson did improve my knowledge on systematic steps towards being an innovator, job creator and entrepreneur. If it works for me, I am confident that it will work for UTM students.

Flexible delivery

All the academic staff perceived that the structure of the MIT-BLOSSOMS video lesson is user-friendly since it allowed them to move freely and can repeat the same lesson as many times as they wanted. Digital technologies have the potential to support and shape a pedagogy which is more active, participatory, personalized, flexible, and inclusive (Laurilland, 2008).

Individual pace

All the academic staff agreed that the MIT-BLOSSOMS video lesson allows users to work at their own pace. The learner can actively participates in the construction of knowledge through situated and authentic tasks on individual basis to support deep, rather than surface, learning (Lai, 2008).

A comment made by one of the academic staff really showed that she was determined to push herself beyond the boundaries of the computer-based learning session. Academic staff A12 reacts:

> After using the MIT-BLOSSOMS video lesson, I feel like wanting to get more of such videos lessons.

Team working

All the academic staff agreed that the MIT-BLOSSOMS video lesson can help promote students to work in groups and produce a project that can be executed by a group of students. This MIT-BLOSSOMS video lesson can also encourages and improves discussion, interaction and collaboration among students (Lou at al., 2010; Shih, 2010; Wang, 2010).

Availability of computer

There was a word of caution among the participants. They said that students will be unhappy with computer based learning if support is lacking. Instructor's support is also essential while students are using MIT-BLOSSOMS video lessons.

Academic staff A3 confesses:

> I thought I would get burned out in teaching, but now I am excited about teaching again. This time around, I will try to use computer and information technology. Thanks to the MIT-BLOSSOMS video lesson. It really helped me think, and give me ideas about what I can do in the classroom.

Concluding Remarks

Developing these MIT-BLOSSOMS video lessons requires multiple levels of design and development effort and skill. Creating MIT-BLOSSOMS video lessons is also a tedious and complex task. Despite the tedious and complex task, how well do these video lessons be accepted by its users who are primarily the 21st century higher education students? Will it be effective in engaging and enriching students learning? This are some questions that can be taken in account for future research studies on implementing MIT BLOSSOMS at UTM.

From the results and discussion of this research, it can be concluded all the 12 UTM academic staff were positive towards the usefulness of MIT-BLOSSOMS in enhancing UTM 21st century higher education students' entrepreneurial skill specifically on job creation. However, there are some limitations to this study that include small sample size during the interview sessions. Also, there is a need to incorporate other strategies of data collection such as observations to observe how students approach learning.

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