Industry Collaboration as a Solution for Greater Acceptance by the Job Market: The Experience from Universiti Tun Abdul Razak (UNITAR), Malaysia

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Abstract: Universiti Tun Abdul Razak (UNITAR) has acclaimed to be the first virtual university in Asian region and certainly in Malaysia. The framework used to implement virtual education would be totally different from the conventional classroom approach, where student-lecturer interaction is real, direct, and easy. With the virtual concept, however, computer-mediated teaching-and-learning approach is used with support of telecommunications networks to impart knowledge to students at distance. The interaction would be virtual, indirect, and difficult. The difficulties were derived from groups of science-based and technical-based subjects, which they require a level of hands-on, practical, and experimental skills for students to really appreciate and understand the essence of the subjects. Simulation and modeling may be best used to replace the experiential learning, but they are not strong enough to provide the required skills. Thus, virtual education is facing technical and pedagogical obstacles in its delivery. Information and Communication Technologies (ICT), however, have been fully capitalized to overcome some of these obstacles with the use of virtual classroom, multimedia contents, and distributed learning. However, its effectiveness in producing fully competence and proficient graduate students in those disciplines is still a big question. On the other hand, the obstacles are less complex with subjects group of so-called 'reading subjects', which does not require an amount of learning-by-doing experiences. Supported by ICT, the subject group can be easily mastered with added advantages. The effect from this problem is not only the concern of the students but also to the job market who will employ them upon graduation. This paper will address the issue of how the job market will perceive and receive graduate students from virtual universities with respect to their competency and proficiency in practical-based disciplines. The solution based on UNITAR's experience in producing quality graduate students through collaboration approach is discussed.

Keywords: student-lecturer interaction, science-based and technical-based subjects, experiential learning, competency and proficiency, collaboration.

1. Introduction

Universiti Tun Abdul Razak (UNITAR) is probably the first virtual university in Asian region but certainly in Malaysia. The framework for virtual education to impart knowledge to students is through computer-mediated teaching-and-learning approach with support of telecommunications networks. The interaction would be virtual, indirect, and difficult. In particular, the difficulties were derived from groups of science-based and technical-based subjects, which they require hands-on, practical, and experimental skills for students to really appreciate, understand, and master the subjects. Simulation and modeling have been widely used to gain the experiential learning, but they are not sufficient and not strong enough to provide the required skills from those groups of subjects. Information and Communication Technologies (ICT) have so far been exploited to overcome some of the obstacles with the use of virtual classroom, multimedia contents, and distributed learning. However, the effectiveness of virtual education to produce fully competence and proficient graduate students in these specific disciplines is still a big issue. With the problems, graduate students from virtual university would have limited employment opportunities and particularly critical when the job market perceived them as 'no quality' graduates.

2. The Model of Virtual Education

Virtual university offers distance education delivery connecting students regardless of locations. The obvious advantage is that students can learn at any time, at their convenience, and at their own pace - also at whatever age! The computer-mediated teaching-and-learning approach is employed with support of telecommunication networks to impart knowledge to students. Therefore, the interaction between students and their respective lecturers would occur in synchronous mode or most of the times in asynchronous. Web-based courseware is the prime component is any virtual education delivery, where it permits students to access materials via Internet. To support further understanding on the subject matter, on-line tutorial and course forum discussion are provided where they permit interaction between students to lecturers and between students to students, locally and globally. E-mail is used to facilitate for personal interaction with an individual lecturer. To implement distributed learning or when on-line setup is not available, CD-ROM courseware is used to deliver education material to students. Finally, a minimum number of face-to-face meetings are required to be conducted in a semester, so that at least students know how their lecturer look like.

3. The Obstacles

The way and ability of a student to learn new knowledge and experience would differ greatly from one to another. Broadly speaking, the learning capability of a student will be determined by three prime learning environments:

- Learning by reading
- Learning by seeing
- Learning by doing

Combinations from any those three environments are very applicable and certainly would further enhance toward the understanding of the new knowledge that a student has learned.

With respect to virtual education, however, not many subjects offer learning-by-reading only mode of study. It has to be supported with the necessity to see the running of an implementation, a simulation, or at least a model. Only after seeing a kind of implementation, then the subject would be more appreciated and better understanding is gained. The expression "seeing is believing" may best describe the scenario. This is a learning environment, which allow a student to relate the conceptual framework they have learnt in class with the visualization of a real implementation.

However, majority of subjects from multiple of disciplines would require strong support of experiential learning, i.e. learning-by-doing. By actually doing it through a series of hands-on, practical, and experiments, the following skills and experiences would be gathered by a student:

- The skills in dealing with real world problem
- The skills in using tools and techniques for problem solving
- The skills and confidence in handling a set of equipment
- The competency and proficiency in a specific area of study

With conventional mode of education delivery, all the above learning environments can be applied in an easy and straightforward manner. In particular, the learning-by-doing approach is also not so much a problem when it can be fully supported by laboratory setups or by any other hands-on practical facilities.

However, with the virtual mode of education delivery, a set of obstacles is being faced by science-based and technical-based groups of subjects that do not permit hands-on practical works to be fully conducted in virtual way, thus limiting the experiential learning the virtual students could gain. The obstacles may involve technical and pedagogical aspects of virtual delivery. These groups of subjects can only be mastered with hands-on, practical, and experimental skills so that the students can really appreciate and understand the essence of the subjects in a more concrete fashion. Information and Communication Technologies (ICT) have been fully used and capitalized to overcome some of the obstacles with the use of virtual classroom, multimedia contents, and distributed learning. In particular, modeling and simulation are used to replace the non-existence of physical laboratory facilities, and this effort continues to develop. However, all these support components are not strong enough to facilitate and provide the required skills from those groups of subjects. There are still many weak points to overcome.

There are some part of laboratory works that can be transformed into and implemented in virtual mode, but they are limited by the facts that:

- Natural laws cannot be substituted by anything else that is not natural.
- The environment for which the virtual laboratory works being conducted would not perfectly matched as the real one.
- The model used to simulate the environment would not as precise as the real one.
- The results produced will be dependent on an earlier effort of data input.
- The precision would not be the same as results are produced following certain structured rules.
- The technical related problems would hinder performance achievement.

All these are the obstacles that lead to the issue of effectiveness for conducting science-based and technical-based groups of subjects through virtual delivery.

In overall, the obstacles encountered by virtual graduate students would result in problems of:

- Lack of full understanding on a specific topic and subject
- Lack of skills on the use of a specific tool and technique
- Immature acquired skills
- Lack of competency
- Lack of proficiency
- Less or not confident in using physical equipment
- Not practical-minded in solving problems

The problems, however, are not so obvious with subjects group of so-called 'reading subjects', which do not require an amount of practical, hands-on, and learning-by-doing experiences. Supported by ICT, these subject groups can then be easily mastered with added advantages.

The effect from this problem is not only the concern of the students but also to the job market who will employ them upon graduation. Students would feel not confident and uncomfortable with the skills they have gathered from their study. Critically important to avoid is the perception of the employer toward the graduates from virtual education, which may presume that these students are not skillful enough.

4. The Challenges of Virtual Education

There are many challenges that virtual education system has to face with respect to their graduates students in relation to each of the obstacles indicated above.

One of the challenges is how to provide sufficient practical experiences and solid hands-on skills to virtual students in those groups of science-based and technical-based subjects. This is because in virtual education concept, students are not in direct contact with physical laboratory setup, particularly for those who are at remote distance or across geographical boundary. The only most possible solution is to provide virtual laboratory environment, which can be implemented in asynchronous or synchronous mode. Asynchronous laboratory works may involve off-line or on-line simulation and modeling, whereas synchronous laboratory works requires on-line real-time interactions with a remote physical laboratory infrastructure. Internet can be used to support both modes of laboratory implementations. However, this solution would not be able to give similar gains in experience and skill to students as what the conventional method could deliver. Any other ways that are technically feasible to be implemented would have to be devised that finally students are competence and proficient enough in the areas of their studies.

However, the greatest challenge is the level of confidence and willingness of the job market to accept graduate students produced by virtual universities. Knowing that the syllabus and subject contents of the virtual university contained less hands-on and practical works, the job market would certainly skeptical on students' competency and proficiency in a specific subject, a course, or a discipline. Employer would certainly prefer graduate students who have possessed both sound theoretical knowledge and hands-on practical experiences in a number of subjects from a course. With this capability, a graduate student is expected to be more practical-minded in executing the real-life jobs than those students who have not been exposed to learning-by-doing kind of environment. More importantly, learning-by-doing students are more skillful in solving real-life problems since they have been trained to solve problems using the right tools and techniques based on many real cases from real business environments.

These two challenges can be transformed into competitive advantage, however, where a virtual university has to grab as they may provide strategic positioning in the education market share. Without it, a university and its business operations may difficult to survive, even if when it competes against the conventional universities.

5. Approach to the Challenges

For business to be strategically competitive, a number of strategies have to be laid. The following list of strategies [1] may have to be used by any organization wanting their business to survive longer and having a long-term customer relationship.

- Differentiation
- Costs leadership
- Innovation
- Focus on niche market
- Business collaboration

This paper will address the above two challenges at once. This can be achieved by forming business collaboration with other business entity and industry. In some cases, this could be similar to business alliance and outsourcing. UNITAR has the experience in preparing its graduate students to be fully competence and proficient in their area of studies, through collaboration approach. Begin with providing platform to acquire skills from the science-based and technical-based groups of subjects, the result is expected that the job market will perceive and receive better the graduate students from a virtual university.

On the part where UNITAR has limitations in providing the required skills or does not have the chance, ability, facilities, infrastructures, and expertise, the collaboration would provide a way for UNITAR to outsource them from its business partners. With the collaboration, students could gain experiential learning from UNITAR's partners. For example, students may use testing laboratory from one of its partners as one of a collaboration initiative. By doing so, students are exposed and gained the required skills for those particular subjects or area of studies and at the same time experiencing the real-life working environment. In this way, students are becoming more competence, proficient, and confidence.

From business point of view, collaboration is about a 'win-win' partnership. With respect to virtual education, collaboration has brought many direct benefits to both parties. In overall, the collaboration effort would directly affect the other strategies for competitiveness. From this kind of business alliance and resources sharing, indirectly the operating costs could be reduced, unique products and services could always be delivered, innovation can always be invented, and niche market can always be identified. This leads to competitive advantage for the business.

Collaboration approach can be divided into two classes: levels of coverage and entity types involved. Level of coverage refers to the geographical boundary in which the collaboration initiative has covered its scope. It may start from national then expanding to a wider coverage to regional and ultimately international collaboration. The university itself may initiate national collaboration, whereas higher level collaboration may require government policy and bilateral agreement between governments of two or more countries. The entity types that participate in the collaboration may include industry and university.

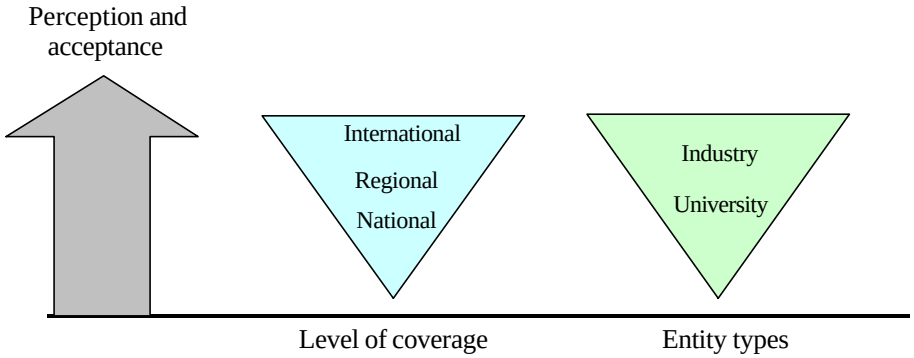

Figure 1: Collaboration approach

6. The Impacts of Collaboration

The following are examples of collaboration that UNITAR has so far engaged with universities, business, and industries.

Table 1: Examples of collaborations

	University/Educational Institute	**Industry/Business**
International	United States, Britain, Kampuchea	3COM, Oracle, Sun Microsystems
Regional	RECSAM (Regional Education Center for Science and Mathematics)	Computer Associates
National	Malaysian educational institutes	

The impacts of collaboration can be observed from both the university and student point of views. University gained competitive advantage as its prime impact. Collaboration with giant names would project university image and reputation as a strong, full caliber, and well-established educational institution. The university is then becoming well accepted by the people and business thus enhancing public perception that a virtual university can also produce the same quality graduates as the conventional university. Students would also gain the same benefits, where they are now more acceptable by job market and having equal opportunities to be employed. In fact, they are much better in term of their IT skills than their counterpart.

It has been identified that collaborations at the international level have brought greater impact to university than those collaborations at the national and regional levels. It is also found that collaborations with industry organizations are better accepted and well-recognized due to the fact that these companies are geared toward skills producer and solutions provider, thus students are assured to gain valuable knowledge and experiences from them. Collaborations with universities have contributed to the competitiveness but it was seen more as a method to fill up the gaps that exist within the UNITAR system, and at the same time used for building up university name.

7. Conclusion

In today's modern world of business, competitive advantage is the determinant point for survival. Universiti Teknologi PETRONAS (UTP) and other universities can learn from UNITAR's experience and use similar strategy that could strategically positioned the business ahead of its competitors. However, collaboration alone is not enough to succeed in this education business sector. To keep pace with the ever-changing business requirements many other strategies have also to be developed.

8. References

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