

THE IMPACT OF UNIVERSITY/INDUSTRY STRATEGIC ALLIANCES IN THE QUALITY OF TEACHING INFORMATION TECHNOLOGY AND GRADUATE EMPLOYABILITY

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ABSTRACT

Quality teaching in any education institute recounts strongly with student learning outcomes. Achieving quality of teaching presents education institutions with a range of challenges at a time when the higher education sector is coming under pressure from many different directions. Institutions need to ensure that the education they offer meets the requirements and demand of employers, both today and for the future. It is possible to say that today's challenging economic situation means that it is no longer sufficient for a new graduate to have knowledge of an academic subject; increasingly it is necessary for students to gain those skills which will enhance their prospects of employment[1]. Teaching information technology must be aware of all new trends in the market. There are many industries providing Alliances or Academy to educational institutes. There are many researchers studying the impact of this approach in the quality of graduate. Here, we are discussing the role of involving Alliances in teaching IT courses at Higher College of Technology (HCT) in Muscat, Oman. A survey is conducted to investigate the impact of Cisco Academy in the quality of teaching and graduate employability at IT department.

KEYWORDS: Education, Information Technology, Teaching, Quality, Employability

1. INTRODUCTION

Educational institutes should be able to survive both as competitors and complements of the knowledge industries over the coming decades[2]. One way is to facilitate professional certification, in information technology, the category of certification include different database certifications (OCA, OCP, etc.) and CCNA Network certification.

According to Hanna [3]

“Mechanisms for ensuring that individuals have requisite knowledge, abilities, and experiences are being developed in many professional fields, and it is inevitable that these approaches would be applied to higher education.”(p:86)

Wong et. al [4] conducted a study on how examines how the National University of Singapore (NUS), the leading changes its role in the Singapore economy. They provided a case study of how universities in East Asia are responding to the globalization of the knowledge economy. They conclude that universities need to adopt key elements of the entrepreneurial university model in order to contribute more effectively to the commercialization and transfer of university technology to private industry.

Higher education in Oman and specifically technical colleges faces greater challenge from students, and employers to account for their performance and demonstrate their teaching quality. This paper discusses how the teaching quality is provided at HCT-IT department and the impact of the utilization of the global industry strategic alliance. Due to

the limitation of the paper size, the evaluation is limited to cover the impact of Cisco academy to the teaching quality of Network specialization. Industry, academic and students participated in this evaluation. Section 2 presents some aspects of teaching quality and how it could be linked to the teaching at IT department at HCT. University/Industry Strategic Alliances is presented in section 3. Study design and results analysis was discussed in section 4 and 5. The paper was summarized in section 6.

2. TEACHING QUALITY

Quality teaching could be defined as the application of pedagogical aspects to produce learning outcomes for learner. According to Henard [5] quality teaching involves many dimensions, counting the effective design of curriculum and course content, a variety of learning contexts (including guided independent study, project-based learning, collaborative learning, experimentation, etc.), soliciting and using feedback, and effective assessment of learning outcomes. Thus, teaching quality aims is to prepare students to satisfy market demand. There are much good practice for the preparation of students for the 21 century [6]. So the question here is how quality is achieved in our teaching at the college of technology? There are many reasons that are possible to discuss. However, to the limitation of this paper few reasons are highlighted such as employability and students satisfaction. Students as well as employers want to ensure that their education will lead to gainful employment and will equip them with the skills needed to evolve professionally over a lifetime. However, there are many factors that force technical education to seek the achievement of the graduate employability within their graduate. To sum:

- Internationalization of higher education.
- Diversity in the graduate profile, and how to distinguish their students from other graduate institute such as SQL, private colleges.
- The rapid changes in the technology, and the new big projects in Oman such as the new airports, Al-Duqum projects, etc. All these projects are implementing new systems and technology. Therefore, technical education must be aware of the demand of these entire big project.
- Increase pressure of global competition and economic stability. Oman is mainly depending in the Oil and Gas. Graduates should be qualifying to work with any system and also to build their own enterprise through SMEs. So the urgent call to produce high skilled worker to meet the economic changes must be considered.

From the above discussion, as educators in the college of technology we saw it is crucial to discuss the importance of embedding the global academies and association into our program design and curriculum content. Next section presents an overview about the academies and association that have been established in the technical education and those that are under the evaluation.

3. UNIVERSITY/INDUSTRY STRATEGIC ALLIANCES

3.1 Overview

Companies with technologies that support learning that can be independent of time, location, and distance are finding the marketplace attractive[3].Partnerships and strategic alliances are also developing between and among organizations that capture each organization's primary strengths. Increasingly, these partnerships marry universities and for-profit organizations in ways that force contact and interaction between very different cultures, goals, and operating

principles and assumptions. One potential benefit of this interaction is the opportunity for both organizations to acquire much needed information and knowledge from the other, and also to change some of the unexamined practices that may be inhibiting the organization from developing a successful strategy in a changed marketplace.

In addition certification provided by these Alliances is crucial to document an individual's knowledge and his or her ability to apply knowledge in real situations.

Academies or association provide educational institute with what could be called distance education technology-based institutions[3]. Each educator and learner can get their own account, access the required materials and they could perform the required assessments. Thus, educator's time and effort could be allocated to more effective tasks such as researches. Students on the other hand build self-dependence skills no spoon feeding any more.

3.2 Network Areas

This section focus on determining the adherence of the current Networking program (CISCO Academy-based) of the IT Department to the demands of the Industry, hence impacting Oman's global economy. It aims to underscore the gap between the knowledge that graduates acquire during their academic study and the practical experience required by the labor market. At present, the Networking specialization program of IT Dept. is mainly supported by CISCO Networking Academy curriculum where most of the major courses offered like Introduction to Networking, Design & Routing Protocols, LAN Design, WAN Administration, and General High Speed Networks are based from the existing on-line academy materials of CISCO. The delivery of these courses is closely monitored using the table of specifications and the teaching-learning guidelines developed by CISCO Academy. HCT-Muscat, as a registered CISCO regional academy in the Sultanate has privileges and legal access, including usage of all on-line materials available in their website. The IT Dept –Networking is also offering training and certification opportunities with an aim to prepare the students in the global market so as to meet the immediate needs in the Information and Communications Technology (ICT) sector.

The study would provide a clear picture of whether the existing Networking curriculum (CISCO-based) is an effective, relevant and competent source of knowledge information necessary to equip the students with the competencies, skills and experience needed for the development of ICT industry, in addition to contributing to the different initiatives to achieve the objectives of producing holistic graduates ready to face the challenging demands of the global market.

3.3 Database Areas

Database specialization is one of the major areas that colleges of technology emphasize on. This is because there is a high demand from both private and government sectors. IT department at HCT saw that to prepare our graduate to satisfy the market requirements, it is important to seek one of the industry alliances. Oracle Academy was one of the options that was discussed and agreed on.

Oracle Academy offers access to outstanding software, Java development environments, faculty training, curriculum, support for CS clubs, certification preparation, and more – all designed to help you increase the relevance of your academic programs and easily expand educational institute course offerings.

The aim of technical education in Oman to equip students studying at IT departments with excellent IT skills and help them prepare for careers in exciting fields such as computer engineering, application development, web development, IT consulting, database design/administration, IT product management, IT product marketing, technical support, and more.

More than 195 courses comprise the Oracle Academy's Advanced Computer Science curriculum. Each course is modular, enabling faculty to incorporate complete courses or select lessons only into their existing CS program. HCT became a member in Oracle Academy in 2007. It was started as enhancement EPT-Training, then it was decided to include into the program study. There are many courses listed under Oracle Academy that match perfectly to the courses outcome offered by college of technology such as programming languages (Java), query programming (SQL & PL\SQL), database application, database security, NoSQL, etc. Oracle Academy provides the institute all the documents needed to deliver the targeted concepts, students' manuals, teacher manuals, assessments materials and the software licenses. The impact of Oracle Academy on students' performance and graduate employability is not discussed within this paper. However, it is planned within this research and will be covered in later stage.

3.4 Information System Areas

IT department offers Information System specialization (IS). The department saw that there is a great opportunity in having SAP as one of the industry alliance they need to consider. SAP is the recognized leader in providing collaborative business solutions for all types of industries and for every major market. It was founded in 1972, headquartered in Walldorf, Germany. UA began 1997. Over 150,000 students internationally being exposed to SAP.

SAP and the Association for Information Systems (AIS) has been a long standing partner. AIS is the premier professional association for individuals and organizations who lead the research, teaching, practice, and study of information systems worldwide. Hence, it comprises of leading professors and academia from the information systems discipline from all around the world. The collaboration between college of technology and SAP is under the evaluation. The initial evaluation reveals that there is a good promise to include their contribution to education the study program at college of technology mainly to Information System (IS) students.

4. RESEARCH SETTING

This section captures the relevant aspects of the research and how they interact with each other. The focus of interest in this research is to discuss the impact of embedding Academies or industry alliance in our curriculum design and mainly in the Network specialization. To carry out this research, the authors used different strategies at different stages of the research. The nature of the design of this research can be called a multi-strategy research [7],[8],[9],[10] where each method complements and builds on the strength of the other. The researcher applied a mixed method study [11] which attempts to bring data from qualitative and quantitative methods. A "research method" is the research instrument that is constructed to either guide or standardize data collection.

A questionnaire is conducted in the preliminary collection of data among graduates of Network specialization to determine their current job employment status among other job-related information. Findings will be evaluated and compared against the existing Networking programs which will provide accurate mapping on how the program can be aligned to directly address the real-world demands in the market.

Table 1 show the questions that was used to analyze the impact of Cisco academy at HCT-IT from both educators and students perspectives.

The questionnaire was sent to 50 academic teaching under college of technology and to 275 students registered with Cisco academy. However, 29 students and 19 teachers responded to the survey.

Table 1: Question Used in the Survey

No.	Question
1	The CISCO-based materials in Networking help the students understand better the varied concepts of Networking
2	The CISCO-based materials help the students prepare well for their future employment.
3	The practical applications of CISCO-based courses in laboratory classes of Networking ensure acquisition of skills which are needed in the future employment of IT graduates
4	The practical laboratories of Networking are equipped with quality and appropriate hardware and software which are comparable and compatible with those in the industries
5	The Networking curriculum is based on CISCO Networking Academy
6	The CISCO training and certification that are conducted by the department increases the employability of its graduates
7	The course projects of students supplement the implementation of CISCO-based curriculum
8	The lecturers are CISCO certified trainers
9	The IT Department gives the needed support for CISCO training and certification of staff
10	Overall, CISCO-based curriculum enhances employability of IT graduates

The Response Measured Using the Scale Shown is Table 2. for Each Question

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
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Next section will discuss the results collected from the questionnaire participants.

5. RESULT ANALYSIS

Grounded Theory is good for analyzing data in exploratory studies; it was used to provide insight into the factors influencing learning. Grounded theory relies on the production of theoretical perspectives deriving from data. In this respect, the researcher focuses on the 'ground' – the data and inductively generates more abstract concepts.

The result focused on the Networking areas. The impact of Cisco on students learning and employability was discussed in Question 1, 2 and 10.

For Question 1, the result shows see (figure 1) 48% of participants agreed on the value of Cisco materials in helping the students with the M(4.27).

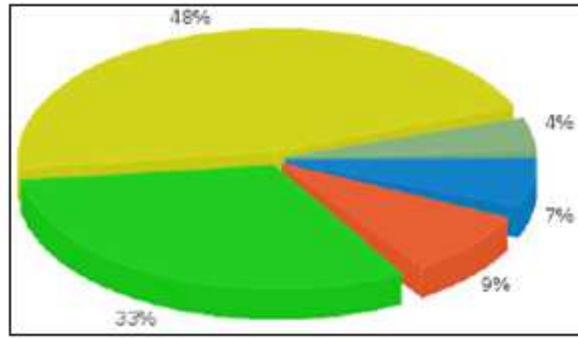


Figure 1: CISCO-Based Materials in Networking Help the Students Understand Better the Varied Concepts of Networking-Response

This result compared with Question 10 that check graduate employability see (Figure 2). The response with M (4.23) where 39% of participation agreed on the capability of Cisco material to help them finding a place in the market.

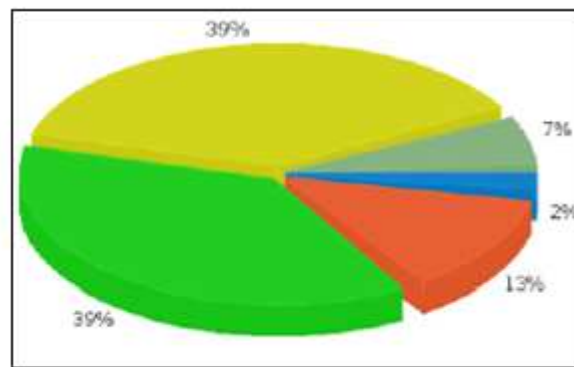


Figure 2: Overall, CISCO-Based Curriculum Enhances Employability of IT Graduates

Question 4, 8 and 9 examine the IT department resources that support Cisco academy. Question 4 examines the availability of the labs, software and Hardware. Question 8 and 9 examine the availability of the qualified human resources.

Quality of teaching is not possible to be achieved without the availability of the required resources. This study shows that not all people are satisfied with these resources accessibility, 50% of the participants agreed on Question 4. Qualified human resources availability, on the other hand, revealed that not all the lectures are Cisco certified M (3.88) and S (0.93). The reasons that was given by the Heads of IT department argue that it is one of the challenge they faced is to find Cisco Certified people who like to be an academy and most of them prefer to join the industry field. This might be related to the financial issues where academies get less paid compared to their colleges in the technical fields. It was clear that the policy in the department is not providing a full support to the staff to achieve their certification 60% agreed on the support. It is possible to argue to this that many staff are fully loaded with teaching hours where they find difficult to find time for their own study.

Cisco certification is one of the factors that must help students to find a job. This was supported by the result contributed from Question 5: The CISCO training and certifications that are conducted by the department increase the employability of its graduates. The response with M (4.02) where 61% of participants agreed on this.

Although 11% strongly disagree that the practical applications of CISCO-based courses in laboratory classes of Networking ensure acquisition of skills which are needed in the future employment of IT graduates, many strongly agree (35%) there is a need to make sure of the availability of the required Hardware and Software to deliver such skills.

Students' skills are implemented through group or individual projects. Question 7 evaluate the participants point of view related to this mater

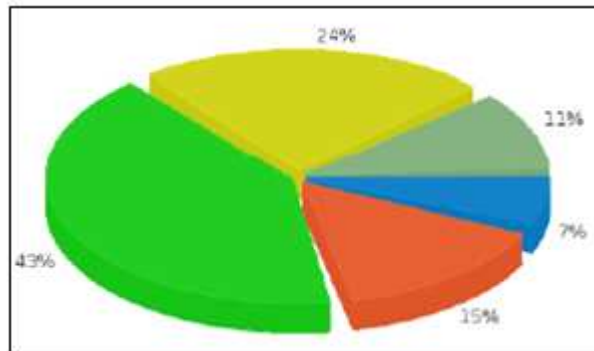


Figure 3: Course Projects of Students Supplement the Implementation of

6. SUMMERY AND RECOMMENDATION

Today's challenging economic situation means that it is no longer sufficient for a new graduate to have knowledge of an academic subject [12-14]; increasingly it is necessary for students to gain those skills which will enhance their prospects of employment[1]. According to OECD, fundamental changes in employment over the past50 years imply a rise in the demand for non-routine cognitive and interpersonal skills and a decline in the demand for routine cognitive knowledge (OECD, 2012).

Information technology is one of the fields where the market demand changing rapidly. One of the important graduates from technical education- college of technology are IT graduates to get ahead with this ever changing, increasingly competitive business environment, organizations must demand employees with competencies which will lead to a high return on the employee investment". Hence, there is an urgent call for all the IT department at seven college of technology to revise their degree and highlight these skills in the curriculum design[12] in all the IT specialization.

In addition, there is an urgent called to the finical department at ministry of manpower to increase the yearly budget allocated to the all college of technology. Achieving this will help the colleges to enhance the quality of the teaching through the availability of the teaching resources such as qualified educators, Hardware and software resources.

Future study need to be conducted to includes focus groups, consisting of industry experts and professionals will be identified and be subjected to data gathering and evaluation to assess the current gap in skills and competencies of their hired graduates. Site visits on various companies operating in the industry will also be conducted to collect data among field practitioners, determine the actual skills and competencies needed in the field.

7. LIMITATION OF THE STUDY

The results in this paper cannot be truly generalized. A further and more systematic study should be carried out. More students, educators and academic need to be approach. Hence, there is a need for further research to thoroughly investigate.

8. ACKNOWLEDGEMENTS

Our thanks and appreciation to the ETC department for their help and support toward the distribution of the survey and to students and educators at Higher College of Technology lecturer and other institutes who have contributed towards development of this work.

9. REFERENCES

1. Fallows, S. and C. Steven, Building employability skills into the higher education curriculum: a university-wide initiative. *Education+ Training*, 2000. 42(2): p. 75-83.
2. Hague, D., *BEYOND UNIVERSITIES*2013: Institute of Economic Affairs.
3. Hanna, D.E., Higher education in an era of digital competition: Emerging organizational models. *Journal of Asynchronous Learning Networks*, 1998. 2(1): p. 66-95.
4. Wong, P.-K., Y.-P. Ho, and A. Singh, Towards an “entrepreneurial university” model to support knowledge-based economic development: The case of the National University of Singapore. *World Development*, 2007. 35(6): p. 941-958.
5. Hénard, F. and D. Roseveare, *Fostering quality teaching in higher education: Policies and Practices. An IMHE Guide for Higher Education Institutions*, 2012.
6. Stephenson, J. and M. Yorke, *Capability and quality in higher education*2013: Routledge.
7. Morse, J.M., *Principles of mixed methods and multimethod research design. Handbook of mixed methods in social and behavioral research*, 2003: p. 189-208.
8. Creswell, J.W., *Qualitative inquiry and research design: Choosing among five approaches*2012: SAGE Publications, Incorporated.
9. Johnson, R.B. and A.J. Onwuegbuzie, *Mixed methods research: A research paradigm whose time has come. Educational researcher*, 2004. 33(7): p. 14-26.
10. Creswell, J.W. and V.L.P. Clark, *Designing and conducting mixed methods research*2007: Wiley Online Library.
11. Leech, N. and A. Onwuegbuzie, *A typology of mixed methods research designs*, in *Quality & Quantity*2009, Springer Netherlands. p. 265-275.
12. Finegold, D. and A.S. Notabartolo, *21st century competencies and their impact: An interdisciplinary literature review. Transforming the US Workforce Development System: Lessons from Research and Practice*, 2010.
13. McLaughlin, M., *Employability Skills Profile: What Are Employers Looking For?* 1995.
14. Overtoom, C., *Employability Skills: An Update. ERIC Digest No. 220*. 2000.