What Students Need, and What Teacher Did: the Impact of Teacher’s Teaching Approaches to the Development of Students’ Generic Competences

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Abstract

Malaysia has moved towards an industrialised country, and the quality and competence of manpower have become one of the main debates. While the focus on generic competences has largely related to definition and standards development, the implementation of these skills is seen as a teaching and learning issue. Thus, this paper analysed and evaluated current teaching and learning practices in Malaysian technical and vocational educational (TVE) system, focusing on polytechnics. The central objective of this study was to examine the current teaching and learning strategies in developing students’ generic competences that focus particularly on teamwork, communication, problem solving and critical thinking skills. The discussion focused on the modes of delivery a lesson by lecturers in teaching an engineering subject (Concrete Technology). It also explored the problems faced in the teaching and learning in providing sufficient competences to students as some of these challenges can be country-specific. A set of questionnaire was employed to 192 first semester students undertaking three-year Civil Engineering Program, in three polytechnics in various states in Malaysia. Semi structured interviews were also conducted to six teachers to gather additional insights regarding teaching approaches, subjects/course value, and the extent of students learning. Findings from this study show that the pattern of teaching and learning processes in the majority of polytechnics are more traditionally focused in which teacher serves as a major repository of knowledge. Whilst students on the other hand, expect more active learning activities that could maximise their involvement. These approaches are found to be inadequate for developing generic competences. It is also found that few factors have influenced teachers in the selection of their preferred teaching approaches. Therefore, this study is significant as it provides a basis for a more effective and systematic structure for teaching and learning processes in polytechnics to respond to the changing needs of the new competent work force.

Keywords: Teaching and learning approaches; generic competences; traditional teaching-approaches.

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1. Introduction

Technical and Vocational Education and Training (TVET) institutions are seen as an agent that could contribute to the development of skills and competences, and provide the competences that are demanded in the workplace. According to Juri et al. (2006), in the era of globalisation and rapid technology changes, lifelong learning is a must for all. Therefore, the TVE and training sector should develop and upgrade its potential for providing workers who are not only knowledgeable, but also skilful and adaptive to the demands of the job. This is supported by Sipon (2003), who believes that one of the main challenges for TVE and training is to provide graduates who are able to demonstrate professional competencies as well as possessing an academic qualification. A qualification is a grade on a piece of paper, while competence is what is demonstrated in the workplace.

Malaysian polytechnics, as one of TVE institutions, are actively utilising specific strategies to prepare their graduates for employment situations that call for qualified and competent employees, with a proper attitude to work. It is recognised to an increasing degree that a well-rounded educated individual also needs to have cultivated the correct attitude to work, as well as possessing the competence to perform a particular task in the workplace. To fulfil this need for competent workers, Sipon (2003: p 4) suggests that technical content should be included with “competencies in planning, design and communication, methods of problem solving, teamwork and social networking”. Hence, theoretical knowledge and practice, as well as learning and working, have to be integrated. The more conservative ways of teaching and learning (hereinafter refer to as ‘traditional approaches’), that separates theoretical knowledge from practical aspects, should merge these two aspects. Cheung and Wong (2006) show that the traditional way of teaching and learning has always been academically oriented with a focus on further education, but little focus on students’ future career aspirations. There is a need to narrow the gap between the education system and the workplace, and the aim should be to help students understand and face a variety of issues and challenges they will meet in their future working lives.

Teachers and students of polytechnic programmes are diverse with different backgrounds, academic achievements, skills and expectations. As such, the polytechnic curriculum should incorporate competence elements appropriate to their students’ learning needs and designed to promote lifelong learning to ensure the students are able to fulfil the demand of the workplace. Sipon (2003) suggested, in that to develop a professional competent worker, curriculum content for any TVE and training program must encompass “the knowledge, skills and attitudinal aspects of the individual student” (p 5). Kasa (2006) adds that the curriculum should be designed to meet the demands of industries, as well as employers and labour market. This distinction is important as a focus on the broader skills required by an industrial sector (rather than an individual employer or temporary demand for labour) provides a more expansive view of learning.

Much research considers that employers would like to see an employee who has both work skills and personal qualities, who is a “team player, respectful of others and [has] good communication skills” (Sipon, 2003: p 5). The importance of generic competences and work attitudes should be emphasised (Cheung and Wong, 2006). However, literatures discovered that the graduates from this system hardly achieve the standard desired by industries (Mustapha & Greenan, 2002; Bakar & Hanafi, 2007). Teaching and learning strategies employed in TVE and training has found not been able to equip students with adequate competences to enter the job market (Mustapha, 2003; Yusof, 2004; Abu Hassan, 2003). This problem has necessitated a serious rethink on the current pedagogical approaches with a view to tease out those approaches that could result in the attainment of desired standards. Thus, there is the need for more in-depth study on teaching and learning aimed at producing not only excellent students but also (generically) competent graduates at polytechnic level, focusing on the engineering discipline.
2. Review of Related Literatures.

2.1 The needs for generic competences in Technical and Vocational Education (TVE)

Competence, as defined by Daelmans et al. (2005), is the ability of a professional to handle complex situations or problems using professional knowledge, skills and attitudes in an integrative way. On the other hand, generic skills are conceptualised as being skills applicable to different situations after initial teaching/learning and capable of slight adaptation to suit the varying needs of the new situation (Cornford, 2005). Generic competences is aimed more at identifying the common abilities that explain variations in performance that can be applied to different professional groups and which they could take depending on the workplace context (Mulder et al., 2007). In this study, generic competences is concerned with the meaningful objectives and content of learning that will engender the personal development of students and position them within the domain of knowledge that can best prepare them for learning, employment and future life.

During the most recent decades, the concept of competences has been used in the development of vocational education and training and higher education (Mulder et al., 2007). In Malaysia, the focus of generic competences first began in 1906 with the introduction of the School of Technical Training with the TVE and training bias. Since then, TVE and training have been continuously built to provide a skilled workforce in Malaysia. TVE has played a major role as an integral part of the national education and training system with equal importance and status to the general stream within secondary and tertiary education (Abu Hassan, 2003). TVE is argued can play a key role in the struggle for equality of opportunities, in remediyan school failure and in contributing to cultural, economic and social culture (UNESCO-UNEVOC, 1996). In line with this strategy, generic competence is argued to produce a highly skilled workforce.

There are seven elements of generic competences perceived necessary by corporations and industries in Malaysia namely basic skills, thinking skills, resource management skills, interpersonal skills, system and technology skills, and personal quality skills (Bakar and Hanafi, 2007). A study by Bakar and Hanafi, (2007) affirmed that thinking skills and resource management skill possessed by students at a technical training institute in Malaysia are moderate. Study by Mustapha & Greenan’s (2002), on the employability skills of vocational graduates have also found that critical thinking skills and problem solving skills were the lowest mean score among other eight items in the questionnaire. The study also revealed that students possessed communication skills at a lower rate. Meanwhile a study by Martinez et al (2007) on the assessment of required competences for many types of employment, suggested that working independently, and taking responsibilities are most of the required competences. Other competences that also suggested in Martinez et al (2007) are, problem solving ability, oral communication skills, working under pressure, planning, coordinating, organizing, time management, analytical competences, negotiating, critical thinking, written communication skills and learning abilities. They also suggested that employees perceive working in a team much more as a required competence. As such, in this paper, the generic competences are focus on communication, problem solving, critical thinking and teambuilding skills that are of demand in workplace.

Since the idea of competences is closely related with an emphasis on new directions in TVE program, it is worth looking in the pedagogical context, identify the way student is learning and the way teaching is taught, and discussed the issues on the pedagogical contents that have produced students that claimed possessing inadequate competences that highlighted by industries.

2.2 Students’ learning style

There are many different ways to learn, and it is useful to consider how students learn and also how to teach them in educational programs. So often it has been assumed that provided something is taught, it will be learnt. Such an implication ignores the variety of ways in which students learn. The ways in which students learn can be divided into three broad categories (Felder 2002) namely (1) visual-related to something that can be seen such as pictures, diagrams, symbols etc. (2) auditory - by hearing sounds and listening to spoken words, and (3) kinesthetic –use of sensing elements such as smell, touch and taste. Lecturers generally assume that students
learn auditorily, yet research shows only about 20% of students learn auditorily, the other 80% learn either visually or kinesthetically (Sousa, 1997 quoted in Tilestone 2000, Gardiner, 1996). Cognisance needs to be taken that students have different learning styles, and tend “to operate on perceived information in different ways” (Felder & Brent 2005: p 58). Learning styles have been shown to have important implications for teaching and learning as they determine, in large measure, the degree to which students understand the learning task.

While an appreciation of learning styles can contribute to better curriculum practice, it should nonetheless be conceded that the learning dynamics have a larger operational platform than just learning styles. Entwistle, (1988) argues that in addition to issues of personality, intelligence and motivation are also important variables in determining the extent to which successful learning takes place. In addition, Felder (2002) raises an important observation that, to improve skill development in engineering students, instruction should be designed to meet the needs of students.

This view has been supported by Yusof, (2004), who contended that appropriate teaching styles could enhance learning and promote deep learning among students which can be applied either in a small or large class and some of these techniques are believed to promote the acquisition of generic skills. Brown (2003) who makes the valid observation that students motivation and learning achievement could improve when teachers teaching styles match the students learning styles. In addition, Hayes and Allison (1997), cited in Brown (2003: p2) found that matching of teaching and learning styles gives more advantage to TVE students ‘who prefer more autonomy and less personal interaction.’

While there has been a variety of learning styles that have been put in the public educational domain, there have also been a variety of teaching approaches that have been used in the teaching and learning engagement. In reviewing these approaches, sight should not be lost of their inherent strengths and weaknesses which make it imperative for education practitioners to have a broader perspective in respect of the approaches to use in different learning situations.

2.3 Teaching approaches and the impact to students’ generic competences

A teaching approach refers to how a curricular subject is managed, planned, resourced and taught within the school context; being seen as a continuous system (Beverton et al., 2005). It guides the type of support and direction that the teacher receives from subject co-ordinators and the emphasis given to a subject within a school’s policies and development planning. We all have preferred learning styles and effective teachers attempt to match their teaching approaches to the learning styles of their students. However, some approaches ignore the way in which students learn and this will lead to variations in student achievement.

From the onset it is essential to bear in mind that each individual teacher is unique in many ways and thus there will be need for flexibility to allow each teacher to choose the teaching style(s) that are most in keeping with their individuality. In fact, most teachers vary their styles depending on a range of factors including what they are teaching and when (Beverton et. al, 2005). Different teachers may employ different method and strategies. Some teachers are traditional in their approaches that focus on a number of elements including lectures, case studies, and team projects (Tilestone, 2000). The ‘traditional’ approach is a common method often used in the classroom that does not take into account differences in learning styles.

For many years, the traditional lecture method was found to be the most widely used instructional strategy in classrooms, especially at school level in many countries (Martin and Mason, 1996). In higher education in Malaysia, lectures are still the predominant mode of instruction. Although the usefulness of other teaching strategies is being widely examined today, the traditional lecture still remains an important way to communicate information mainly in theory-laden subjects. In Malaysian polytechnics, the majority of the modules offered are theory-laden subjects. For example, the first year Civil Engineering course has six modules offered, and all of them are theory-laden subjects. As there are fundamental concepts to be covered, teachers give priority to cover the content rather than facilitating in-depth exploration by the students. Given this preoccupation with syllabus coverage, it is not surprising that the traditional lecture approach is seen as the most common method used in teaching situations. One drawback is that this approach to teaching tends to make students “too passive” and “unresponsive” (Motsidi et al, 2009, pg 214). Being content-driven in this way, the graduates of such teaching approaches are thus seen as lacking applicable knowledge and practical activities and association to actuality.
Statements above give a clear indication that traditional lecture approaches are the dominant approach in classroom learning where the approach focus on the lecturer as the main repository of knowledge whose key responsibility is providing and controlling the curriculum content with students being expected to receive and assimilate the knowledge that is transmitted by their lecturers. Most of the teaching appeared to be concerned with assessment on knowledge and understanding that led to a preference for ‘chalk and talk’ approaches that ‘underpin teacher accountability and promote pedagogic tidiness with learners covering the same material at the same pace’ (Glover and Law, 2002: p 80). In this approach, learning is conducted in a synchronous environment, meaning that the students must be in the same place at the same time in order to learn. Instruction is often delivered in a rigid, expository and passive manner. This approach seems to have much currency with teachers as they simplify relationships between teachers and their teaching because the teacher controls the learning process and therefore students become passive recipients (ibid) whose participation in the learning environment is minimal (Ibrahim, 2007). This scenario poses serious questions to educators because the methods in use appear not to be bringing about desired competencies in the learners. To enhance retention of material that has been learnt, the content covered must be made personally meaningful to the learners. There is thus a crying need for research to take the teaching situation forward from what generally obtains in most Malaysian polytechnics. As Malaysia has set itself the challenge of becoming a developed country, it becomes extremely necessary that new responsive teaching models be thought through so that existing opportunities can be capitalised on to produce graduates who are adept at both the theory and the practice of the curriculum covered. The delivery methods then should be reformed from traditional ‘paper and pencil test’ to a modular assessment and “competency based system” to indicate favorable outcomes (Ibrahim, 2007: p 12). Thus there is need for a re-think on the teaching approaches that call for a more effective structuring of the learning environment to respond to the changing needs of the new workforce.

3. Research Methods and Instrumentations

The study is a case study at three polytechnics in Malaysia that focuses on approaches to teach engineering subjects. The Engineering subject that focused in this study is Concrete Technology. Data were obtained from survey with questionnaire and interviews. The sample for survey consisted of 195 First Semester students undertaking three-year Civil Engineering Courses in three polytechnics in various states in Malaysia. Data for interviews consist of six lecturers who were experienced in teaching the subject, with two lecturers from each polytechnic.

The survey allows the researcher to analyze the students’ perceptions of the course, the subject matter and teachers’ teaching approaches in delivering the engineering subject. The questionnaire asked students feedbacks about demographic details, course taken, common teaching strategies that were adopted by teachers and students’ learning strategies.

The interviews was conducted to help to investigate the teaching phenomenon and explores teachers’ view about their own teaching practices. Semi structured interview was conducted in this study. It was conducted to gather additional insights regarding teaching approaches, subjects/course value, and the extent of students learning. This method is expected to reveal other issues related to teaching and learning process that is important for this study. The interview data might be helpful to determine any mismatch understanding/opinion between lecturers and students with respect to the academic performance and aspirations.

Data from the students’ questionnaires were analysed using Statistical Package for Social Science (SPSS) software for MS Windows, version 15.0. The main analysis method used is descriptive statistics test which used to consider the mean level and standard deviation for the variables. The correlation tests, factor analysis tests, paired sample T-tests and one way analysis of variance (ANOVA) tests were employed as well in this study, however, it will not being discussed in this paper. The interview transcripts have been transcribe, categorized and look for the synonym and similar words, and grouped for few themes. The responses from interview then were
compared with the questionnaire data to examine how the perception of the lecturers compared with the empirical data.

4. Finding and Discussion

Semi-structured interviews and a questionnaire were employed to help identify the most preferable teaching approaches that are currently used by lecturers in three polytechnics in Malaysia. Table 1 displays the detail of data obtained from the questionnaire.

Table 1. Descriptive analysis for preferable teaching approaches by teachers and students

|                  | Teachers’ preferred approach | Students’ preferred approach |
|------------------|------------------------------|------------------------------|
|                  | N   | Mean | Std. Dev. | Mean | Std. Dev. |
| chalk&talk       | 192 | 4.09 | 1.037     | 1.911 | 1.037     |
| slide            | 192 | 3.08 | 1.038     | 2.922 | 1.038     |
| OHP              | 192 | 2.77 | 1.040     | 3.234 | 1.040     |
| model            | 192 | 2.61 | 1.257     | 3.391 | 1.257     |
| specimen         | 192 | 2.68 | 1.130     | 3.323 | 1.130     |
| video            | 192 | 1.84 | 1.149     | 4.161 | 1.149     |
| chart            | 192 | 2.47 | 1.189     | 3.531 | 1.189     |
| photo            | 192 | 2.96 | 1.184     | 3.042 | 1.184     |
| lecture          | 192 | 3.84 | 1.001     | 2.156 | 1.001     |
| discuss          | 192 | 3.61 | 0.902     | 2.385 | 0.902     |
| debate           | 192 | 2.63 | 1.095     | 3.375 | 1.095     |
| demonstration    | 192 | 2.93 | 1.164     | 3.073 | 1.164     |
| project          | 192 | 3.49 | 0.981     | 2.505 | 0.981     |
| PBL              | 192 | 3.61 | 0.879     | 2.385 | 0.879     |
| inquiry          | 192 | 2.95 | 0.959     | 3.052 | 0.959     |
From the table, it can be seen that many of lecturers did not used appropriate teaching strategies while delivering a lesson. According to the students, teachers were regularly use chalk and talk as the most preferred delivery strategy with mean = 4.09, standard deviation = 1.037. In contrast, this strategy is the least preferred by students, with only mean=1.911, standard deviation = 1.037. Students are expected teachers to apply more active strategies such as video, because this approach is seems as the most favourite approach for students (mean = 4.161, standard deviation = 1.149). On the other hand, video is found as the very often approach that employed by teachers in the classroom (mean = 1.840, standard deviation = 1.149).

The finding suggested that a traditional-teacher centred approaches were the dominant approaches employed by lecturers with the ‘chalk and talk’ (lectures method) as the most preferred teaching strategies that was used. Many of the lecturers are attempted to talk and write on a board while delivery a lesson. This approach has found to limit students active participation in classroom learning process which indirectly become a constraint for students to facilitate the assimilation of their knowledge and competences prior to transferring it into a real working situation. Students would like to actively involved in the learning process. However they gave a response that they did not have much space to being active in classroom as they have to carefully listen and take notes that displayed by the lecturers. Many activities conducted in classroom are not really helping them to enhance communication, critical thinking, problem solving and team building skills. Even the institution atmosphere supports them to prepare for their future life, but the learning environment is not encouraging them to that way. However, it is interesting to find out that, while the lecturer plays a major role in the teaching process, the students also have the opportunity to take part in the process. Students are given some choice in the way learning is conducted and they are likely to be given some space to conduct their learning as well. However, the analysis cannot reveal how active the students are regarding their participation in the process.

Analysis from the interview sessions suggested that the majority of lecturers tended to see themselves being ‘traditional’ in their approaches to teaching. This is associated with the fact that although lecturers, with different career paths, face different circumstances they are also constrained by similar constraints of time, curriculum and, facilities and resources. Figure 1 displays few themes and categories that were extracted from the interview which identified as the factors that influenced teachers in selecting their teaching strategies.
The findings recognise that the reason to the choice of the didactic-traditional teaching approach is basically attributed to four major factors which are; students’ background and characteristics, lecturers’ enthusiasm and capability, the criteria of the subject/syllabus and teaching methods, facilities and resources. The interplay of these four characteristics leads to, in the main, a preference for a didactic-traditional approach. It can be presumed with this way of teaching strategies, students are unlikely to take an active role in their learning. Motsidi et al., (2009) considers that this way of learning (traditional) covers mainly basic and fundamental concepts which leads to students becoming ‘too passive’ and ‘unresponsive’ (pg 214).

According to lecturers, they are eager and tempting to employ more active and variety teaching approaches, but there are restrictions for them to plan for more variety and interactive learning environment (i.e; time and packed syllabus). Furthermore, there are limited numbers of teaching facilities and lecturers have to face difficulties while dealing with some of materials, such as slide projector, and TV and video. Due to the less number of these material, reservation priorities, unease to access and problem to set up and handle the materials, make lecturers feel give up to deploy its in classroom. For this reason, chalk and talk then become the most preferable teaching strategies because of ease of use and access, and need less preparation

Few lecturers are also found to conduct activities such as group work and presentation session that allowed students to perform in the classroom, but it is hardly to see any element of competency and skill such as communication, problem solving, and critical thinking skill were adopted in the exercise. Lecturers indeed have an initiative to variety their teaching practice, but they need more time and chance to perform their skills in teaching. Although lecturers should encourage adopting approaches to teaching which are more relevant and could invite active involvement of students (to encourage the development of wider skills) this must be done with consideration for the internal and external barriers to these processes that the lecturers have identified.
5. Conclusion

Overall, it can be seen that the pattern of teaching and learning process in majority of polytechnics under investigation are more to a typical traditional classroom teaching approach. It was clear that all lecturers were well aware of their teaching practice and have a high ambitious to help students in their learning. This somehow need for carefully teaching plan and properly teaching facilities. Even though their pedagogical decision depends on their own choice and preference, but the teaching facilities also play a significant role to ensure the success of every teaching. The reason for the didactic-traditional teaching strategies is due to four main factors: lecturers’ enthusiasm, students’ backgrounds and characteristics, the designed syllabus and curriculum, and a general lack of appropriate and available teaching facilities.

As a whole, research on teaching approaches has been perceived as an area that should be given priority as it plays a significant role in delivering the curriculum in any educational system. Knowing something about students’ interest and about the varying demands of different learning and teaching styles may help teachers to broaden their teaching styles and approaches, and also provide guides on how to help students in improving their attitude and behavior towards learning, as well as their generic competencies. In all, the desire to produce graduates who find their feet in the world of work with matching skills and competencies should always be uppermost in the minds of educators.

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