

Graduate and employer perspectives on course efficacy – A study of VET in a developing economy

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Abstract

The challenge for technical and vocational education and training (TVET) educators including those in developing economies such as Malaysia, in the light of globalisation and education reforms (ANTA; 2003; Dai, 2000; Misko, 2006; MOHE, 2007; NCEE, 2007; Teo, 1998), is to ensure that TVET remains relevant. This inevitably calls for the evaluation of the efficacy of courses and training programs. This study emerged as a response to this need.

The aim of this study was to investigate, from the perspectives of graduates and employers, the efficacy of selected courses in relation to their effectiveness in preparing graduates for employment and/or further education as well as the acquisition of generic skills. Comparisons between the two stakeholders' perspectives were also conducted. This was achieved by an evaluative case study of the efficacy of two courses conducted by a polytechnic in Malaysia.

The study addressed the effectiveness of the polytechnic's *Food Technology* courses in preparing graduates for employment and/or further education as well as the effectiveness of these courses in helping them acquire generic skills. Additionally, it discussed participants' recommendations for course improvement and the implications of these perspectives for the food technology courses in Malaysia as well as for technical and vocational education and training in general.

A mixed method research design was employed. A survey was conducted of 789 students who had graduated between 6 months to 3 years earlier. Employer participants were also surveyed. A small number of these participants were subsequently interviewed. Quantitative data collected were subjected to descriptive and statistical analyses while content analyses were applied to the qualitative data obtained.

This study fosters a deeper understanding of the elements that shaped and explained stakeholders' perspectives which will help educators better understand and respond to the needs of employers as their learners (WADET, 2006).

Introduction

Globalisation and education reforms have resulted in a significant shift to a *knowledge-based economy* where knowledge is now regarded as a nation's key resource; increasing emphases for work competency standards, quality assurance and accountability; industry involvement; and generic skills acquisition (ANTA; 2003a; Dai, 2000; Misko, 2006; MOHE, 2007; NCEE, 2007; Teo, 1998). The challenge for technical and vocational education and training (TVET) educators, in the light of these demands, is to ensure that TVET remains relevant. This necessitates reviews of curricula and pedagogies which inevitably call for the evaluation of the efficacy of courses and training programs. This study emerged as a response to this need. It investigated graduate generic skills acquisition involving both alumni and employers as stakeholders in the evaluation, thereby filling the gap of research in these aspects, particularly in Malaysia.

A case study of the food technology courses comprised in the Food Technology Program offered by a higher education institution, the Sultan Haji Ahmad Shah Polytechnic, was undertaken to investigate graduate and employer perspectives on the efficacy of the courses of study, and to identify the factors leading to these views. This study served as a single case study in which general principles of course efficacy were explored, for

possible application across other courses and programs in the institution and more broadly to other TVET contexts.

Literature Review

Graduate and Employer Feedback Invaluable for Course Efficacy

Many researchers such as Misko (2006), Stufflebeam (2003a) and Fretwell (2003) advocate the involvement of stakeholder groups in evaluation. These stakeholders include students, alumni, employers, parents, governing bodies, training institution management and instructional staff (Fretwell, 2003). In practice however, the main groups targeted for feedback were usually students or new graduates, through student experience surveys. There is unease amongst researchers about drawing conclusions based on student experience surveys alone as some studies have shown that employers often gauge skills and abilities from a different perspective to that of course graduates or alumni (Hoey and Gardner, 1999). Additionally, vocational training without employer input is bound to lose relevance to the world of work (Green, 2004). Thus institutions need to carry out both alumni and employer feedback to gain a comprehensive picture of student outcomes in course and curriculum evaluation. The germaneness of student experience survey and employer feedback in program improvement is further reinforced by the fact that such feedback is either advocated as or forms one of the key elements for good practice, effective training and program improvement (IBHE, 2004; Banta, Lund, Black & Oblander, 1996; Townsend, Waterhouse, and Malloch, 2005; ANTA, 2003b, Stufflebeam, 2003b). Student and employer inputs are particularly pertinent if the curriculum imparted to learners is to remain relevant and useful in the face of challenges that accompany globalisation and technological innovations of the 21st century.

Although the gathering of data from multiple sources is expedient, this study focused particularly on graduate and employer perspectives as a way of building a deeper understanding of the efficacy of the courses. However, this study was not limited to an evaluation of the efficacy of courses utilizing two different data sources but it sought a

better understanding of stakeholders' views and their needs viz. that of the course graduates and employers. It was anticipated that the findings would help educators to better understand and respond to the needs of employers as well as better support their learners (WADET, 2006). It was further anticipated that such understanding would be instrumental in encouraging collaboration and foster a shared sense of responsibility between employers and educators in promoting workforce readiness in a nation (Mitchell, 2007). It can be argued that not every student who enrolls in a program at institutions of higher education does so with employment as the goal, but the fact remains however, that most do. Thus, a deeper understanding of the perspectives of course graduates and their employers would augur well for prospective students, industries and training institutions in technical education as well as higher education in general.

Employment and Generic Skills Attainment

TVET is currently faced with the challenges posed by the displacement of the traditionally-strong focus on manual work in favour of mental work, or at least the changing mixture of competencies required in the workplace. The role of TVET is no longer limited to equipping students with technical and vocational knowledge and skills so that they are better prepared for employment. In today's context, TVET is also expected to help learners acquire generic skills. Generic skills in this context refer to a set of skills deemed important at the workplace and have variously been referred to as employability skills, life skills, core skills and key skills (Curtis & McKenzie, 2001). Most generic skills frameworks include ICT skills, lifelong learning skills, numeracy, team working skills, creative and innovative skills, communication skills, problem-solving skills, and management and organizing skills (Curtis & McKenzie, 2001; DEST, 2002; DfES, 2003; ANTA, 2003a; NCEE, 2007).

In addition, TVET is perceived as essential for enhancing economic competitiveness for a nation and for contributing to social inclusion, poverty reduction and sustainable development (UNEVOC, 2006). Added to these challenges is the perceived need for education and training systems including TVET to have closer and more explicit links

with the contemporary requirements of the economy, which is characterised by increasing globalisation of national economies, rapidly changing markets, increased global competition for goods and labour, technological innovations and the movement from mass production to flexible specialisation in the production process (Clayton, Blom, Meyers, & Bateman, 2003).

An issue closely related to these challenges and the evaluation of courses is the need to identify and gauge the extent to which a set of generic skills deemed indispensable for success at the workplace and at home, have been developed in graduates (Uhalde, Strohl, & Simkins, 2006). The development of generic skills in graduates is increasingly seen as an imperative agenda for pursuit by institutions of higher education. In particular, there has been an increased emphasis on developing graduates' capacities as life-long learners. The importance of this skill has been derived from the increasing conviction amongst educators and policy makers that life-long learning is an essential attribute for one to compete successfully in the light of globalization, fast-changing technological advances and knowledge-based as well as skill-based economies (MOE, 2004; DEST, 2004; MCEETYA, 1999; Goh, 1997). Although skills change more slowly, knowledge gained today becomes obsolete very quickly. On the micro-level, if knowledgeable workers do not continuously update their knowledge, they make themselves obsolete by design thus life-long learning skills are vital for both today's and tomorrow's workforce. On the macro-level, this same attribute together with the adeptness in embracing change and the ability to think creatively as well as critically augurs well in determining the future well being of a nation. A nation's workforce needs to engage in a continuous renewal of their knowledge, skills and competence if they are to remain competitive (Clark, 2005, Guest, 2007, Wang, 2007). It is therefore not surprising that developing and encouraging life-long learners now occupies one of the rungs in the educational agenda of most countries (MOE, 2004; DEST, 2004; MCEETYA, 1999; Goh, 1997).

This agenda is also true of developing countries such as Malaysia. The Ministry of Higher Education has mandated the polytechnics and the community colleges produce graduates who are formally trained in courses that would lead to careers as technicians

and middle management positions. These graduates need to be equipped with knowledge and competencies that are current and market-ready. They also need to possess generic skills considered essential for success in the workplace. These concerns – employability, generic skills identification, and generic skills development with special emphasis on lifelong learning in addition to concerns such as a client-centred evaluation and follow up studies – are elements that many researchers are convinced must be addressed if training is to remain relevant (Rahimah, 1998; Brand, 1994; Gallagher, 1998; Green, 2004). For that to happen, determination of ‘what works and what does not’ of the courses offered is essential to curriculum reviewers and curriculum developers as well as the trainers in planning teaching and learning strategies.

Research context

This study targeted Food Technology course graduates from the Sultan Haji Ahmad Shah Polytechnic (POLISAS) in Malaysia and their employers as the participants. This department offers two courses in its Food Technology Program namely the 2-year *Certificate in Food Technology* and the 3-year *Diploma in Food Technology*. The former commenced in 1983, while the latter started in 1990. Although exit surveys were carried out on graduating students, these were sporadic until 2005 which resulted in the *Tracer Study Reports* (BPP, 2006; 2007). The *2006 Tracer Study Report* (BPP, 2007) grouped all the programs offered into 4 categories namely *Science, Arts and Social Sciences, Technical and Information Technology and Communications*. The *Food Technology Program* was grouped with *Wood-based Technology Program* under the *Science* category. An obvious limitation to this aggregation procedure is that the results may not necessarily reflect the perception of either group of graduates. Food technology and wood-based programs differ not only in the subjects they study, the sector skills trained but also the teaching approaches employed.

Such aggregated findings also do not enable the identification of sector skills required by industries which employ graduates from different programs. Thus there is still a lack of empirical studies on the performance and efficacy of these courses in preparing the

graduates for the workplace and/or further education. This study was aimed at addressing some of these lacks by focusing on only one program viz. the Food Technology Program to facilitate the identification of sector skills besides determining the efficacy of the course in preparing graduates of employment, further education and the acquisition of generic skills particularly lifelong learning.

Research Method

This study employed a mixed method research design utilising both quantitative surveys, with some open-ended questions; and qualitative semi-structured interviews. Two survey instruments, the *Graduate Questionnaire* and the *Employer Questionnaire* were developed based on research questions and adaptations from the *Graduate Course Experience Questionnaire* (McInnis, Griffin, James, & Coates, 2001; GCA, 2007), the *Monash University Employer Survey* (CHEQ, 2004), the *DPCCE Strategic Plan 2005 – 2010* (DPCCE, undated), and the *POLISAS Food Technology Program* overview.

The graduate questionnaire was piloted using the test-retest method employing 28 students in the final semester of the Diploma in Food Technology course. The two tests were conducted 4 days apart. Correlations were calculated for both nominal and interval data using the software SPSS 16.0. A correlation value of +0.660 was obtained for the questionnaire indicating a moderately strong reliability for the questionnaire.

A survey of the entire population of 789 food technology graduates who had completed their studies between 6 months to 3 years was conducted. Mail, emails with the *Graduate Questionnaire* attached and online survey were employed to reach as many graduates as possible and to increase the response rate by offering participants alternative modes of responding to the questionnaires. A total of 234 graduates responded. 53 employer surveys were sent out based on contact details obtained from graduate respondents. 27 employers responded. However, only data from 20 of these employers were complete enough to be used. This is an obvious limitation. Follow up interviews were carried out with 6 randomly chosen graduate respondents and 6 employers who had indicated their willingness to participate in the interviews. For the purpose of this paper,

only some preliminary data analysis of the quantitative survey for graduate and employer respondents will be presented and a few issues of interest highlighted. Data analysis of both the surveys as well as the interviews for the respondents is ongoing.

Preliminary Results

Demographic summary of the graduate participants

The graduate survey quantitative data were analysed using SPSS for Windows 16.01. Table 1 summarizes some demographic data of the graduate participants. The gender breakdown of the graduate participants is about 85 % female and 15 % male. The participants came from three main ethnic backgrounds. The Malays and the other indigenous groups made up almost 95 % of the graduate participants, the Chinese, about 4.7 % and the Indians, about 0.9%.

Table 1 Ethnicity versus Gender of the Graduate Participants

Ethnicity	Gender		Total
	Male	Female	
Malays & other indigenous groups	33 14.2 %	186 80.2 %	219 94.4 %
Chinese	2 0.9 %	9 3.8 %	11 4.7 %
Indian	0 0.0 %	2 0.9 %	2 0.9 %
Total	35 15.1 %	197 84.9 %	232 100.0 %

* 2 cases with missing data

The demographic data analysis also showed that the number of female participants who graduated with a certificate level qualification (48%) almost equalled those who graduated with a diploma level qualification (52%). However, more of the male participants (60 %) were certificate graduates.

Mann-Whitney U tests were used to compare the demographic data of the graduate respondents with that of the population. The results found no significant differences in the gender ratio, ethnic background and levels of qualification between the respondents

and the population ($p < .05$). It can be deduced that the respondents reflect the demographic attributes of the population and thus demonstrated a good representation of the population.

Course Efficacy in Preparing Graduates for Employment and/or Further Education

One indicator of the effectiveness of the food technology courses in preparing graduates for employment and/or further education was to look into the current employment or further education status of the respondents (Table 2).

Table 2
Current Employment/ Further Education Status of Graduate Respondents*Qualification

Qualification	Current employment / further education status of respondents			Total
	Employed	Studying	Unemployed	
Diploma Level	68	45	5	118
% within Qualification	57.6%	38.1%	4.2%	100.0%
% of Total	29.2%	19.3%	2.1%	50.6%
Certificate Level	34	70	11	115
% within Qualification	29.6%	60.9%	9.6%	100.0%
% of Total	14.6%	30.0%	4.7%	49.4%
Total (excluding Missing)	102	115	16	233
	43.8%	49.3%	6.9%	100.0%
Either employed or studying	93.1%			

It was found that 93.1 % of the graduate respondents were either currently employed or furthering their studies (Table 2). It was further found that 57.6 % of graduates with diploma qualification were employed while 38.1 % were pursuing further education. The trend was reversed amongst certificate graduates with 29.6 % employed and 60.9 % pursuing further education. An issue of great concern for developing economies like Malaysia is the high unemployment rate amongst graduates of higher institutions of learning (Nazaria Baharudin, 2004; Bernama, 2008; MOF, 2008). The preliminary findings of this study suggest that POLISAS food technology graduates were able to

enter the labour force or further their education. Nevertheless, more of those employed were diploma holders suggesting that the training obtained by certificate holders may be insufficient to meet the requirements of employers.

Figure 1 graphically presents the data on whether current jobs held by graduates were related to Food Technology training.

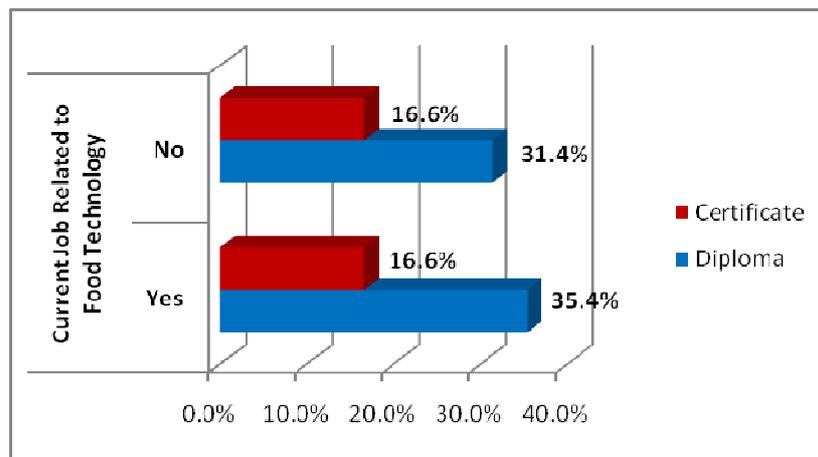


Figure 1 Relatedness of Current Job to Food Technology Training

It is interesting to note that, of the 102 respondents currently in employment, slightly more than half of them viz. 52% held jobs related to their training. Of these, 16.6 % were certificate graduates and 35.4 % were diploma graduates (Figure 1). The rest of the respondents currently employed but in fields not related to Food Technology comprised of 16.6% certificate graduates and 31.4 % diploma graduates. Thus only about half of the employed graduates were working in fields related to their training regardless of their level of qualification. This suggests that graduates of these courses might have acquired some generic knowledge and skills that were transferable to the workplace regardless of field. It is anticipated that data from the semi-structure interviews conducted with some of these graduates will shed light into the type of generic knowledge and skills graduates and employers find useful.

Only 6.9 % of the graduate respondents were unemployed, two-thirds of whom were certificate graduates. Reasons given by the 16 respondents for unemployment included

still looking for a suitable job (9), lack of employment opportunities (2), wanting to further studies (3) and by choice (2).

Figure 2 illustrates if graduate respondents currently in institutions of higher learning were furthering their studies in fields related to food technology.

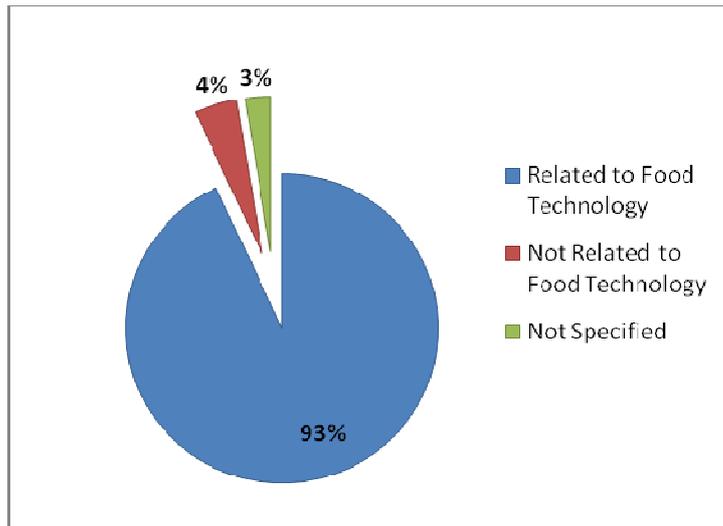


Figure 2 Graduates' Field of Study during Further Education

Of the 115 pursuing further education, 93.0 % were in food technology related studies. Of this number, 60.0 % (69 respondents) were pursuing their Diploma in Food Technology at the Politeknik Sultan Haji Ahmad Shah while 34.8 % (40 respondents) were studying towards obtaining a degree in universities. 4.4 % were studying in fields as diverse as Accountancy, Sign Language and Pharmacy. It was obvious from these figures that both the certificate and diploma qualification facilitated further education in related fields. The certificate graduates in particular demonstrated a greater tendency to continue their studies as indicated by the fact that 60.9% of certificate graduates were involved in further education. As with the Australian VET Certificate I and II, the Certificate in Food Technology appeared to function more as a pathway to further study as such graduates typically did not obtain jobs in related fields (Woods, 2007).

A second indicator of on course efficacy would be to gauge both graduate and employer responses on 5-point Likert scale items on the Graduate Questionnaire and the Employer Questionnaire regarding course satisfaction and course efficacy. These responses are summarized in Figure 3 and 4.

Graduate ratings of satisfaction of overall quality of training received in 2002 from TAFE institutes in Australia ranged from 71% to 91 % (NCVER, 2006). This study similarly found that more than 90 % of the graduates ranked positively their satisfaction towards their course experiences in POLISAS (Figure 3). However, only 75 % of the graduates perceived the courses as having prepared them for employment. And only 65 % of the graduates perceived that the theory and the laboratory sections covered were adequate for employment. Nevertheless 86 % found the industrial training component where graduates were attached to industries for one semester, helped prepare them for employment. This reinforced the need for industries to be actively involved in the training of vocational education and training.

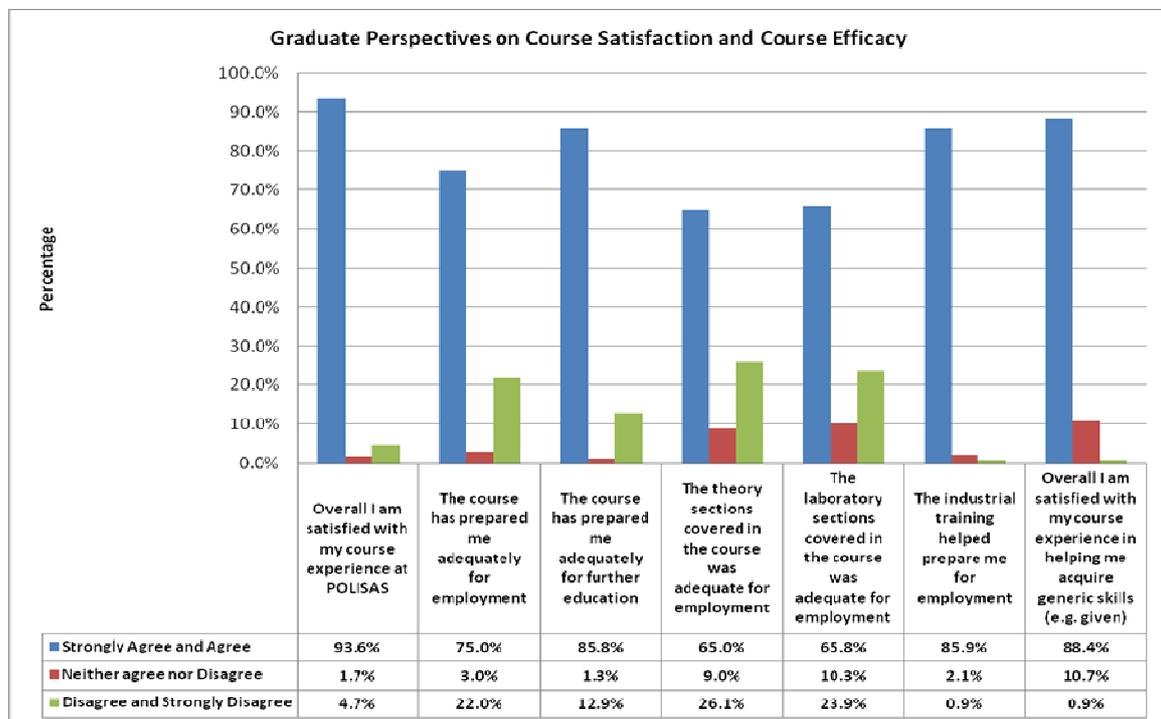


Figure 3 Graduate Responses to Items on Course Efficacy in Preparing them for Employment and/or Further Education

Although all the employers were pleased with the training their employees have received (Figure 4), more than 50% of them perceived that the course has not adequately prepared certificate graduates for employment.

Further analysis found that certificate graduates themselves shared similar views. Only about 60% perceived that the theory and the laboratory sections of the course have adequately prepared them for employment. However, a majority of the employers (85%) perceived that the course had adequately prepared diploma graduates for employment. Diploma graduates themselves were slightly less optimistic, with about 70% of diploma graduates agreeing that the theory and laboratory sections have prepared them adequately for the workplace.

85.8% of the graduates, both certificates and diploma (87.8% and 83.9% respectively), agreed that the courses prepared them adequately for further education. It can be deduced therefore that the training that certificate graduates obtained was insufficient for the workplace but the qualification provided them with a stepping stone towards pursuing higher qualifications.

A similar pattern in employer perspectives was found for generic skills acquisition of graduates. Again employers perceived that diploma graduates have acquired generic skills better than the certificate graduates. 75 % agreed that the course had helped diploma graduates and 68.6% agreed that the course had helped certificate graduates acquire generic skills adequately. However, 88.4% of the graduates perceived that the courses had helped them acquire generic skills.

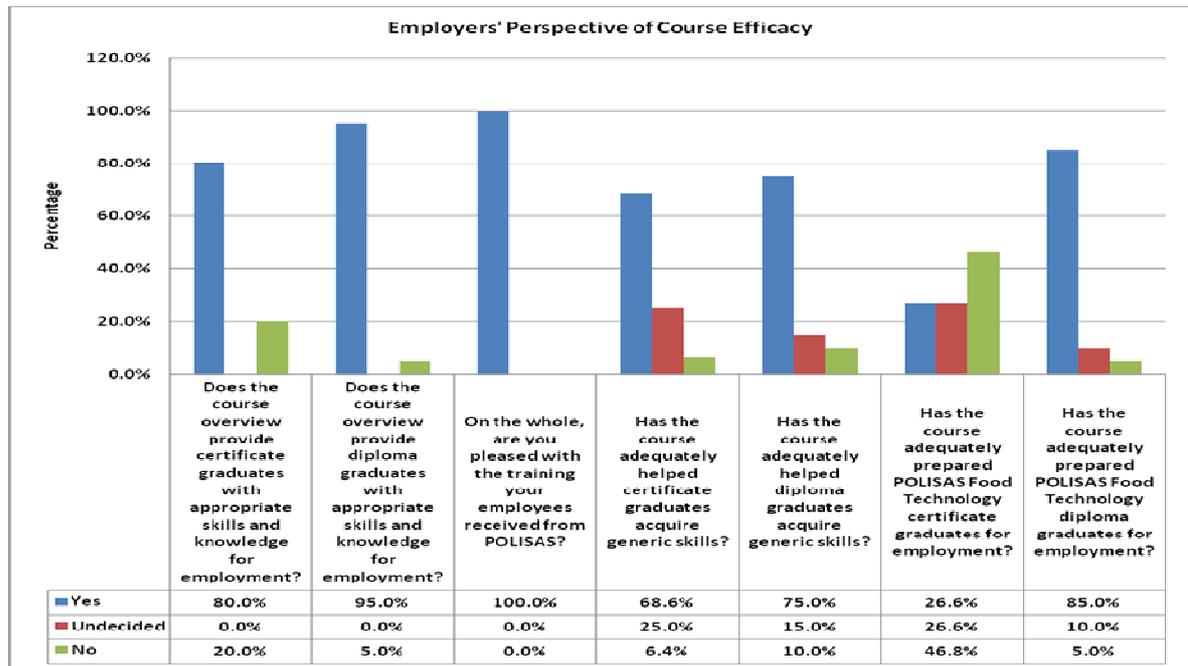


Figure 4 Employer Responses to Items on Course Efficacy of Certificate and Diploma Holders.

Graduates and employers were further requested to indicate the importance of a list of 18 attributes at the workplace (See Appendix 1), using a 5-point Likert scale; with 1 for *Very Low Importance* and 5 for *Very High Importance*. These attributes included both generic and non-generic skills. All the graduates and employers ranked the 18 attributes as either of High or Very High Importance. It is heartening to note that graduates are now aware that generic skills are equally important, if not more important than knowledge and skills, for the workplace.

When graduates' perspectives were compared with employers' perspectives for all the 18 attributes using the Mann-Whitney U test, 4 attributes showed statistically significant differences namely *Oral Communication Skills*, *Written Communication Skills*, *Effective Use of ICT Technology* and *Creative and Critical Thinking Skills* (Table 3, $p < 0.05$).

Graduates perceived these attributes as Highly Important, employers a little less so. Yet, in the interviews carried out with the employers, the lack of Oral Communication skills

and Written Communication skills amongst graduates were consistently highlighted. Data analysis is still ongoing but it is anticipated that in-depth analyses of both the quantitative and qualitative data will yield more insight to the implications of these findings for practice and policy making. Of interest would be comparisons of employer ratings on graduate generic skill attributes with graduate ratings of their own generic skill attributes. Some of these implications include a better understanding of how graduates' perspectives compare with that of employers' perspectives, and the implications such understanding might have on education and training, particularly TVET.

Table 3
A Comparison of Graduate and Employer Perspectives on the Importance of 18 Attributes to the Workplace

	Importance of Attributes at the Workplace			
	d. How important is oral communication skills?	e. How important is written communication skills?	h. How important is effective use of ICT Technology?	p. How important is creative and critical thinking skills?
Mann-Whitney U	1344.000	1507.500	1607.000	1710.500
Wilcoxon W	1554.000	1717.500	1817.000	1920.500
Z	-3.446	-2.899	-2.463	-2.161
Asymp. Sig. (2-tailed)	.001	.004	.014	.031
Mean for graduates	4.42	4.25	4.20	4.39
Mean for employers	3.75	3.70	3.70	3.85

Summary of the preliminary findings

- 93.1 % of the graduates were either currently employed or furthering their education. 60.9 % of the certificate respondents continue their studies in the same institution to obtain their diploma in food technology.
- Only slightly more than half the employed graduates were working in fields related to their training.

- Both graduates and employers have ranked the courses positively with regards to their efficacy in preparing graduates for employment, further education and the acquisition of generic skills.
- Employers found diploma graduates more ready for the workplace.

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Appendix 1

List of 18 attributes important to the workplace:

How would you RATE THE IMPORTANCE of these attributes at the WORKPLACE?

	Very High	High	Moderate	Low	Very Low
a. Work knowledge specific to the job position					
b. Work skills specific to the job position					
c. Ability to apply knowledge in the workplace					
d. Oral communication skills					
e. Written communication skills					
f. Capacity for team work					
g. Capacity to analyse and solve problems					
h. Effective use of Information & Communication Technology (ICT)					
i. Capacity to plan and with good time management					
j. Broad general knowledge					
k. Capacity for enquiry and research					
l. Capacity to learn new skills					
m. Capacity to work with minimal supervision					
n. Capacity to calculate (Numeracy)					
o. Interpersonal skills with colleagues and clients					
p. Creative and critical thinking skills					
q. Ability to cope with work pressure and stress					
r. Leadership skills					