Conducting a Graduate Tracer Study at a University of Technology: a Quest to Enhance the Learning Experience

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ABSTRACT

The university is a complex open system with a range of stakeholders each with a variety of (different) expectations. It is important for universities to be aware of these expectations and to ensure that they are achievable (Ulewicz 2017:93). Universities are key role players in improving employability and to enhance economic growth. They are preparing students with the knowledge and skills required for the contemporary labour market (Tran 2016, 58-59) and should respond to governments’ neoliberal pressures in finding ways to address the requirements of the labour market and to apply mechanisms to safeguard their graduates from unemployment. Vaal University of Technology (VUT) in South Africa, conducted a Tracer Study to gather information on graduate’s experience and to evaluate their abilities and skills as employees. This is important as knowledge of the outcomes of the educational experience forms the basis for quality enhancement.

This presentation focuses on tracer studies as mechanisms to enhance programme quality and will reflect on the methodology that VUT followed, how the results inform the development of institutional remedial action plans and lessons learnt. This study may contribute to the dearth of research available on tracer studies in the sector.

Keywords: Tracer Studies, employability, graduateness, quality enhancement.

INTRODUCTION

Lidice et al 2013 emphasise the notion of ‘added value’ and the importance to compare what a graduate receives at his or her ‘exit’ with what he or she had at the ‘entrance’. VUT’s quality assurance system is based on the principles of Total Quality Management and therefore ‘stakeholder focused’. It is therefore important for the institution to know the needs and expectations of its internal (students and staff) and external stakeholders (employers, industry, government, and so forth) stakeholder are. According to Ulewicz (2017:93), “quality is assessed by the external environment” by means of two ‘steps’. The first step is an assessment of graduates own personal experiences and skills that that they acquired while studying in relation to the requirements imposed to them by an employer or the job market. The second step is the evaluation of the employer after confronting the graduates’ abilities or skills.

The purpose of the Graduate Tracer Study was to trace VUT graduates’ progress after graduation from the institution. This was done to determine the employability of VUT graduates, and to
retrospectively assess graduates’ satisfaction with the services and tuition offered by VUT. In so doing, the study presents a means for VUT to evaluate whether the institution is meeting its primary objective, namely, to produce top quality, employable graduates. In addition, assessing graduates’ satisfaction with the services and tuition offered by the university provides a means to highlight areas where the institution is performing well, as well as areas in need of improvement. The rationale for this study was to collect information that can inform the alignment of the curricula with the needs and expectations of the “world of work”. The satisfaction survey questionnaire that was used was an effective tool to measure not only the satisfaction rate of alumni with their experience as students of VUT but also what level of importance they placed on each question. This allowed for an analysis of the high priority issues as this instrument was specifically designed so that issues with high satisfaction and low importance could be identified as low priority issues, while those issues that indicated low satisfaction and high importance rates, were indicative of high priority issues and hence could inform improvement plans.

Universities in South Africa are allowed within the Higher Education Quality Sub-Framework (HEQSF 2013) to change 30% of a curriculum, provided that the changes made support the exist level outcomes of the respective accredited programme. The research emphasizes not only the importance of Work Integrated Learning to enhance students’ soft skills which contributes to academic success but also the significance of continuously aligning curricula with the changing needs of the labour market. The term curricula will be used in this article to refer to all “planned learning outcomes and the desired consequences of instruction” (Popham & Baker: 48). In this article it will also refer to the students’ learning experiences to attain the VUT’s academic goals, which concurs with the views of Tyler (1957:79).

SKILLS SHORTAGE

Pressure is increasingly placed on the higher education sector to promote socio-economic stimulation and growth by ensuring that the national workforce is highly skilled and internationally competitive. Chetty (2012, 19) states that ‘it has been widely acknowledged that higher education plays a significant role in human capital development and economic growth.’. Of concern is the world-wide trend, also evident in South Africa, that the unemployment rate is higher amongst the youth than older members of society (Levinsohn et al. 2014; Oluwajodu et al. 2015). There is wide consensus that the unemployment problem in South Africa is ‘structural’, resulting from a mismatch between the types of highly (educated), skilled and semi-skilled worker force available and those needed in the labour market. This mismatch mainly came about due to the increasing demand for highly skilled workers, in ever more technology driven, skills- and capital-intensive industries in the country. As would be expected under these circumstances, post-school education presents a crucial buffer against unemployment, where the majority of people that are able to work but poorly educated with limited skills find themselves unemployable most of the unemployed are poorly educated with limited skills), (DHET, 2013). Student throughput is generally low due to the lack of basic skills including conceptual skills. That said, a worrying trend has started to emerge where the unemployment rate for graduates has seen a steady increase since 1995 (Pauw, Oosthuizen, and Van der Westhuizen 2008; Baldry 2016). Given the prevailing skills shortage in the South African economy (DHET 2014), a factor might be that graduates are not suitably qualified for the demands of the labour market. Graduates should be prepared to enter the world of work by ‘hitting the deck running’ (Harvey 2000, 4). This demands university-enterprise collaboration (Tran 2016, 61) to ensure that the skills needed are not developed solely in the higher education context, which places emphasis on the accountability of stakeholders such as industry and employers. Tran (2016, 61) observes that although an institution of higher learning can be viewed as the place where employability skills are developed, the results ‘of that development can only be seen in enterprises’. Enterprise learning, therefore, is imperative to ensure that graduates develop in the working place as innovative, adaptable, resilient employees.
with flexible enterprise skills (Tran 2016, 61). Universities of technology in South Africa offer many programmes that have a compulsory work integrated learning component, which is imperative to the development of graduates with the desired skills, knowledge and applied competencies.

GRADUATENESS

According to Chetty (2012, 9), ‘the interface between higher education and the world of work includes defining and understanding employability in relation to graduateness, the argument against the notion of skills being associated with labour market requirements, and employer needs and expectations’. The concept graduateness can be viewed as attributes, which graduates of an institution of higher learning own, as employable individuals that can contribute to a knowledge-driven society. Institutions of higher learning, therefore, should prepare students to become competent to compete within a shrinking global workplace (Griesel and Parker 2009). Concerns that institutions increasingly are pressured to produce graduates that are fit for the workplace are common (Chetty, 2012, 5), but the relationship between academia and employment should not erode academic freedom. Harvey (2000, 3) warns that if the focus of institutions of higher learning is on the training of students to become more employable, it might lead to a situation where the enhancement of their minds could be disregarded. Responsiveness, rather than the lowering of teaching and learning standards, is the new reality in a rapidly ever-changing world.

It is imperative that higher education institutions ensure that they provide quality education that will produce highly skilled graduates who will be directly employable in the labour market (Awere et al. 2016, 125). This implies not only furnishing graduates with specialist academic knowledge, but also ensuring that academic programmes equip graduates with experiential knowledge, high-level skills and attitudes required by the labour market (Kruss, 2002; Coetzee 2012, 120). This demands a close partnership between the higher education sector, Industry, professional bodies and stakeholders (Tran 2016, 65). While institutions claim that they prepare students with multiple of skills combined with discipline specific content knowledge, Dumford and Miller (2017, 160) assert that not all skills learned in higher education ‘may transfer directly to the workplace’. To assess whether institutions are meeting the demands of the labour market, they need to use mechanisms such as evaluations and surveys. The tendency within the higher education sector is that institutions ‘accept the neoliberal pressure and looking for ways to make their educational practices more aligned with the needs of the labour market’ (Tran 2016, 58).

TRACER STUDIES

Quality higher education that is ‘relevant to the workplace’ is essential in counteracting the above-mentioned high unemployment rates and to address the concerns of Harvey (2000, 3). A main claim of institutions is that their entitlement for success comprises of the employability of their graduates (Dumford and Miller 2017, 16). One way institutions can get a glimpse into the success of their graduates is to conduct graduate tracer studies. Burke (2005, 314) states that tracer studies evaluate the perceptions of graduates on their learning experience during their student years. These studies will improve an institution’s understanding of student preparedness and graduate success. Although tracer studies have been used since the late 1980s and early 1990s (Melchiori 1988, Pettit 1991 and Pike 1994), there is, unfortunately, a dearth of research available for a variety of reasons, including fear that these studies may reflect negatively on the quality of a respective institution’s provision of teaching and learning. This aligns with the observation of Zemsky (2005, 282-283) that the publication of these studies may reveal institutional deficiencies. Graduate tracer studies gather information on the professional success of the graduates (i.e. are they employed or not), as well as on the relevance of knowledge and skills gained at the institution to fulfil their current roles in their places of employment. In addition, graduate tracer studies provide a means for graduates to assess their satisfaction retrospectively with an institution’s curriculum and services (Schomburg 2003).
According to Saunders-Smits and De Graaf (2012, 134), ‘knowledge of the professional success of alumni and their opinion on the curriculum, adds the benefit of hindsight to the indicators used to determine curriculum quality’. Therefore, tracer studies can be used as a valuable indicator of an institution’s curriculum quality. Alumni are in a unique position to assess how effective their studies were, they could also indicate the shortcomings that they experienced in the workplace and suggest what current skills and knowledge will be needed to succeed in their careers (Saunders-Smits and De Graaf 2010, 133). According to Hsu, Wang, Cheng, and Chen (2016, 994), ‘alumni can better evaluate the curricular relevance to job requirements’. Universities can use this information to inform the revision of programmes offered. Universities in South Africa are allowed within the context of the Higher Education Quality Sub-Framework (HEQSF) to change 30% of a curriculum, provided that the changes made support the exist level outcomes of the respective accredited programme.

**METHODOLOGY**

Vaal University of Technology (VUT) is based in Gauteng, South Africa in an industrial area. Amongst others, there are two large industries, namely Sasol Chemical Industries and ArcelorMittal steel industry. The institution has the following faculties:

- Faculty of Applied and Computer Sciences
- Faculty of Engineering and Technology
- Faculty of Human Sciences
- Faculty of Management Sciences.

The purpose of the graduate tracer study was to trace VUT graduates’ progress after graduation from the institution. The target population was students that graduated the past five years. This was done to collect baseline information for future tracer studies, to determine the employability of VUT graduates and to assess graduates’ satisfaction retrospectively with the services and tuition offered by VUT. Assessing graduates’ satisfaction with the services and tuition offered by the university provides a means to highlight areas where the institution is performing well, as well as areas in need of improvement. This aligns with the generic purpose of tracer studies, namely ‘to improve the educational experience of …undergraduate and graduate students’ (Bosshart, Wentz, and Heller 2009, 411).

**Development of data collection instruments**

A questionnaire consisting of quantitative questions was developed after scrutinising the literature on graduate tracer studies. To ensure that all the objectives of the study were met, the following sections were included in the questionnaire:

- Graduates’ education and qualifications
- First position of employment
- Current employment status
- Current position of employment
- Graduates’ experience of VUT

The sample of the study was restricted to individuals who graduated from VUT within the past five years. The study targeted graduates from all four faculties of the institution. A convenience sampling method was used because alumni studies have, in general, low response rates. An online survey was conducted by using Google Forms survey platform. After being thoroughly tested to ensure accuracy, alumni that graduated received emails with a link to the survey. The exercise was also advertised on social media platforms (Facebook and LinkedIn). As a marketing tool to encourage participation, incentives in the form of technological devices were sponsored and could be won by respondents by means of a ‘Lucky draw’. Alumni had the opportunity to respond to the questionnaire that was active online for three months.
Gender was the only biographical characteristic that was asked of respondents in order to keep the completion of the questionnaire short and to encourage participation. The respondents were evenly representative between males and females, with 47.8 percent (N=1072) male, and 50 percent (N=1075) female respondents. The majority respondents (71.4%) held qualifications only obtained from VUT. The institution offers a variety of qualifications that include National Diplomas, B Tech, M Tech-, and D Tech degrees. Representatives of the post-graduate degrees (M Tech and D Tech) were significantly lower (8.8% and 1.4% respectively). The four faculties were well represented in the study, with the highest number of respondents that obtained their qualifications from the Faculty of Management Sciences (34.7%), followed by the Faculty of Engineering and Technology (24.5%), the Faculty of Applied and Computer Sciences (21.1%) and the Faculty of Human Sciences (19.0%).

**Data collection**

Raw data were collected from the Google Forms online survey platform and fed into the Microsoft Excel software programme. The quantitative data were checked, cleaned and then uploaded for the purpose of statistical analysis. Descriptive statistics (Coldwell and Herbst 2004, 92) were used in the study and were run in SPSS for all quantitative questions and graphs were created to represent the data from the frequency tables visually.

**RESULTS**

The following sections reflects on the most important results of the study:

**Employment**

It is plausible to note that more than one third of the respondents (43.5%) were employed while busy with their studies or they already received a proposition that they would be employed when they graduated. A total of 22.4 percent graduates found employment within six months after graduation, whilst 7.5 percent of the respondents were still unemployed by the time that this study was conducted. The respondents that were employed indicated that they found their jobs by means of newspaper or online advertisements (26%), by means of personal contacts (16%), or through the help of the University (13%). VUT could investigate ways to support graduates more in finding job opportunities. 55.8 percent of the respondents were employed in the private sector while 62.5 percent held contract positions. The respondents were asked to reflect on factors that helped them to secure employment for the first time. More than three quarters of participants who had found first-time employment (82%) agreed to some extent that having a tertiary qualification helped them to secure employment, with 73 percent specifically highlighting the role that the course they studied through VUT played in this regard. This is on par with the observation of Pauw, Oosthuizen, and Van der Westhuizen (2008) that post-school education safeguards against unemployment. Universities of technology like VUT offer courses with a compulsory work integrated learning component. This practical experience of the workplace develops the students’ personal soft skill qualities and academic success. The above-mentioned teaching and learning experience at VUT could be deemed a supportive factor in securing employment by more than 60 percent of the respondents.

The majority of the respondents (78.7%) were employed in a field related to their field of study at VUT. As high as 95 percent of respondents indicated that the skills obtained during their qualification were relevant to their jobs (Figure 4). This finding, to a certain extent, contradicts the view that there is a mismatch between what is taught to employees and what is needed in the labour market (Pauw, Oosthuizen, and Van der Westhuizen 2008), or the observation of Moleke (2010)
that there is a misalliance between graduate output and the employers’ expectations and needs. This finding may also indicate that VUT succeeds, to a certain extent, in addressing what Shah and Nair (2011) regard as the changing needs and expectations of the labour market.

Learning experience

The respondents reported less positive satisfaction with student counselling and student guidance (57%). Less than half of participants were satisfied with the accommodation provided (45%), food services provided (46%), the degree of community engagement (47%), and the effectiveness of campus security and safety (48%). In conclusion, the satisfaction levels of the respondents with regard to teaching and learning activities are relatively high in comparison with the result of the satisfaction survey results for VUTs support services, especially student counselling and guidance, campus security and safety as well as accommodation and food services.

The respondents (more than three quarters of participants) rated the teaching staff’s knowledge of content, student-teaching-staff interaction, respect shown towards students, instructional materials provided and teaching methodologies with high satisfaction. Although the participants were somewhat less positive about staff members’ accessibility outside of lecturing times, a considerable percentage (72%) is a good indication that the respondents were to some degree satisfied with this aspect. An aspect that was rated with a lower satisfaction was the atmosphere of political and cultural understandings (69%). This finding perhaps is reflective of the difficult transition to democracy and cultural and political tolerance faced by not only South Africa at large, but also its tertiary institutions specifically. VUT has a majority (90%) black student population (from different black cultural groupings), it, therefore, is not clear if this tension occurs mainly amongst the student population (variety of ethnic groups) or between students and staff members.

Satisfaction with VUT’s facilities

The library and online digital library services, as well as the availability of online resources, computer laboratories, lecture rooms and the general condition of the buildings and grounds received relatively high satisfaction values. The respondents rated lower satisfaction for science laboratories, ICT facilities and services, equipment, medical services and recreational facilities. The provision of parking space received a significant low satisfaction value of 52 percent, which should be viewed against the fact that 15 percent of the participants noted parking facilities as ‘not applicable’ to them.

Satisfaction with the curriculum

As already mentioned, this tracer study measured the respondents’ opinion on the relevancy of several aspects of their course curriculum and how it is on par with the requirements for the world of work. The results were very positive with high satisfaction values. Every aspect evaluated was rated at a satisfaction level of more than 80 percent. The following aspects were evaluated by the respondents: the suitability of the overall study programme, the suitability of the subjects students can choose from, the sequence of the subjects, compulsory courses that had to be taken, the theoretical instruction received, the practical instruction received, and the overall impact of the curriculum on graduates’ knowledge/skills/competencies in their subject area. The overall impact of the curriculum received the highest ratings of relevance, namely 86 percent.

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CONCLUSION

Although the findings from the survey, specifically with regard to teaching and learning aspects, were predominantly positive, there are other aspects detected as deficiencies, which need attention. From a quality enhancement point of view, remedial action is required for those areas that were rated with relatively low satisfaction values in order to improve ‘the educational experience of undergraduate and graduate students’ (Bosshart, Wentz, and Heller 2009, 411). This information should be disseminated to the key stakeholders and responsible portfolios of the institution. The findings can be triangulated by the data collected through other institutional studies such as student satisfaction surveys and focus group interviews. The deficiencies of the survey should feed into the quality risk register for remedial action planning purposes and for the monitoring of progress made. The following can be regarded as limitations of the study:

- The database of VUT’s alumni should be updated for similar studies in future. This is important not only for administering the survey but also for feedback to the respondents on the results and the impact of the study.
- The survey should be active for longer than 3 months in order to allow for a higher participation rate.
- The alumni of all three sites of delivery should take part in the study and not only the main campus in Vanderbijlpark.
- The length of the survey should be short enough in order to be completed by the respondents between 15 – 20 minutes.

The findings on the teaching and learning aspects emphasise that the graduates are convinced that the skills learned at the institution are relevant to their working environment and, therefore, to the current labour market.

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