

# **A pathology of training and learning: attracting and retaining students in a biomedical VET program**

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## **Abstract**

TAFE colleges are facing increased competition from universities and other RTOs in attracting students into biomedical science programs. Traditionally industry has valued TAFE graduates who have had the practical skills they need but jobs in the biomedical field are often being taken up by university graduates. TAFE colleges now need to better understand the importance of developing close working relationships with the biomedical industry to enhance learning and employment outcomes for biomedical graduates.

This research project asks 'how can TAFE better engage the biomedical industry and create a more effective career pathway for learners and graduates to meet the anticipated demand for biomedical science professionals?' The project draws on the experiences of vocational trainers and public and private biomedical employers to explore some of the strengths and weaknesses in how trainers engage with industry. Semi-structured interviews and insights from VET training and management in the field of biomedical sciences in NSW inform the study. The concept of network learning provides some insights into the value of business partners in enhancing learning and graduate employment. The study finds that developing and maintaining industry contact at a local level is a critical process for developing positive learning outcomes, graduate employment and employer satisfaction.

## **Introduction and background**

The aging population and the continually evolving biomedical technologies supporting contemporary health and wellbeing in Australia are creating new demands for highly skilled biomedical technicians. These are the people who work in health services such as pathology and haematology laboratories, in hospitals and in research laboratories. Medical laboratory technicians carry out laboratory tests and other procedures used in the diagnosis and treatment of diseases and disorders of the human body. For many years, TAFE Institutes and colleges have been the traditional providers of training for large numbers of science and biomedical graduates for the health industry. Biomedical graduates are normally employed as technical officers and laboratory assistants. Universities also provide training at degree levels for scientific officers and research scientists who are also employed in this field. TAFE graduates have been sought for their valuable practical 'bench-ready' skills.

Community perception that university degrees are more valuable than TAFE qualifications prevails in most States in Australia. However, a number of industry representatives have indicated that they prefer TAFE Diploma qualified graduates with broad ranging practical skills, compared to degree qualified graduates. However, several universities are now increasing the number of places they make available in biomedical courses and students who would once have chosen to enrol in a TAFE qualification are now beginning to make university their first choice. In addition commonwealth government funding for TAFE, from 2014, will be based on the number of students who fully complete subjects / units and courses (State Training Services 2013, p. 47). This is different to the current funding arrangements where TAFE is funded on the number of enrolments regardless of the extent of student participation and completion. In the current training environment, there is increasing competition between vocational training providers to attract students in a wide range of courses including biomedical courses. To maintain its market share of students, TAFE now needs to more energetically promote its training programs to industry bodies and local businesses to attract and to retain students.

A need for multi-skilled employees in biomedical science has been identified in recent industry reports. This is consistent with broader trends in the community service and health industry. The TAFE NSW Industry Training Profile 2013 indicates that the emerging consumer-directed and person-centred service models, reported in the Community Services and Health Industry Skills council environmental scan in 2012, is blurring the lines between community services and health industries. This is creating a need for health, allied health and medical workers to develop multiple skills and work in interdisciplinary teams. Overall the community services industry training area is expected to grow as population growth, ageing and chronic disease increase (TAFE NSW Strategy 2012).

As a vocational education and training organisation, TAFE NSW is expected by national regulators to consult widely with business and industry to ensure that government funded training is relevant and meets the need of the prevailing economic environment. Industry consultation enables TAFE NSW to develop appropriate learning and assessment materials to prepare graduates for employment and progression to higher level qualifications. Preparation for work is an attractive part of the learning package for students and employers.

In developing TAFE programs, TAFE education advisory units liaise with industry groups to ensure course delivery and outcomes meet their needs. This expected and realised consultation is reflected in VET course 'Scope' documents. It is also expected that TAFE Institutes and colleges continuously consult with business and industry throughout the delivery of programs to ensure currency in training and assessment.

Evidence from recent national and State graduate outcome surveys indicates that high satisfaction levels among employers will stimulate reciprocal positive

graduate outcomes in terms of wages and progression (Karmel & Nguyen 2006). Positive outcomes can then be leveraged by training organisations to attract and retain VET students in an increasingly competitive training environment. However, a range of factors can also influence student choice of trainer and qualification including employment potential, promotion requirements, personal interest and to change career (Karmel & Nguyen 2006). Still, other reasons can be attributed to the perceived lower value of a VET qualification compared to a higher perceived value of a university degree and the duration, flexibility and cost of the course. In addition, access to commence a university degree has been made more attainable in recent years by an uncapping of university places in a range of course areas including the Allied Health discipline which includes biomedical qualifications. The most critical factor in how learners choose training programs is the nature of the employment opportunities following completion of courses (Karmel & Nguyen 2006; TAFE NSW Strategy 2012).

The relationship between a training organisation and industry is therefore pivotal in attracting and retaining students and for creating future employment and progression opportunities. The national compliance environment and the continuously increasing need for and changing nature of biomedical practices emphasises the need for training organisations to manage effective industry partnerships. It also emphasises the need for training organisations to have the capacity to understand and implement changes required by both large and small enterprises.

In consideration of the background issues and rationale for looking at the relationship between RTOs and industry, this research project focuses on the value of, and some of the strengths and weaknesses in, managing the learning partnership with industry. This partnership is viewed through the lens of network learning to uncover factors which drive TAFE NSW to develop its networks. Some key themes in contemporary literature are outlined in the next section. This is followed by an outline of the research design, data collection methods, analysis and discussion. A summary of important issues, considerations and ways forward are outlined in the concluding statements.

### **The role of business networks in addressing training needs**

Studies have been conducted in the last decade that document change in the educational sector since the introduction of national training packages to deliver industry led content. The shift in control of content from educators to industry is predicated on close consultation and contact with industry at National, State and local levels. Harris and Simons (2006, p. 479) notes that employers often exert significant influence on training providers to customise, not only content but also, how programs are delivered. Another important observation made by Simons and Harris (2006) concerns the changing roles of VET trainers and educators. They suggest that there are implications for educators who are urged to 'get out into industry' in order to increase not only technical currency but engage with local employer needs. These implications include that VET trainers are being challenged to relearn their roles to operate in new workplace contexts.

Simons (2001 in Harris & Simons 2006) also points out that the modern VET environment demands a new form of 'professionalism' where practitioners are reflexive, critical and are able to act to create, and recreate, learning systems through their work in new partnerships. But Harris and Simons also argue that working in new ways with industry is an underdeveloped concept in Australia and one which needs to be explored further. Others note that there is a need for strengthening local level business relationships and diversifying the role of the practitioner in the modern VET environment (Seddon & Billett 2004 and Callan & Ashworth 2004 in Harris and Simons 2006). This is in contrast to the current view that VET practitioners are 'technicians' who deliver and maintain training services. with other key parties. One way VET practitioners can build their skills to operate in the new VET environment is to develop new working relationships with local businesses.

Harris and Simons examine these new roles and relationships with businesses within the context of learning-network theory. Network learning theory provides a framework with which to examine relationships between learners and organisational processes within a workplace and the various tensions that exist between different learning systems. Close cooperation between managers and employers boosts opportunity for joint development of knowledge, opportunity for reflection. Networks offer rich sourced of ideas, experiences and inspiration. Importantly learning networks offer local solutions that better support the needs of specific groups (Tell & Halila 2001).

However, Roffey et al (1996 in Billett 2004, p.13) contest this claiming that small businesses are frequently concerned that the policies and provisions of vocational education fail to serve their interests claiming that large enterprises' needs predominate. Similarly, Billett (2004, p. 14) argues, that in the area of vocational education and training, the influence on policy exerted by business is not always broadly representative. This present research paper attempts to further investigate this argument within the context of biomedical graduates.

Training in VET organisations is heavily slanted to the needs of large enterprises to compensate for this. VET practitioners are required to customise programs to meet the needs of local employers and this assumes a great deal of local employer contact. The benefits of networks in supporting learning are made clear in these examples.

### **Methodology and methods:**

A combination of semi -structured interviews and surveys were used for this study. Semi-structured interviews were conducted with both key employers and a number of trainers. A survey instrument was also applied to gather information from employers, who were all laboratory managers working in both public and private pathology laboratories, on their perspectives of TAFE graduate employment and satisfaction with TAFE training. The semi-structured interviews were also conducted with a small group of TAFE trainers. Interviews were recorded via note taking by the interviewer.

Semi-structured interviews and are the most common method used in small-scale educational research (Drever 2003). Semi structured interviews provide some structure to the interview process but also allow some flexibility in questioning and responding. Surveys and organisational documents provided some quantitative data on employer satisfaction with TAFE Training and level of engagement with TAFE NSW.

In interviews and surveys participants were asked to share their perspectives on the content and relevance of biomedical training in TAFE NSW to their laboratory operations and businesses. They were also asked to comment on their understandings of industry engagement.

The instruments sought feedback in three broad areas:

1. Changes in demand for biomedical graduates
2. Strengths and weaknesses in TAFE training in the areas of biomedical sciences
3. The level of engagement between employers and trainers

The respondents were encouraged to explain their views in detail. The returned data was compiled and analysed providing findings as outlined in the next section.

## **Analysis and Discussion**

Analysis of semi-structured interviews, survey questions and documents revealed various levels of engagement between TAFE and industry at both the peak body and local level. The survey data has also indicated a wide range of views among industry laboratory managers of the competencies of TAFE graduates. The data shows a strong correlation between the size of the laboratory and the satisfaction with and employment of TAFE graduates. Employers in larger laboratories are able to employ Technical Officers in a large volume, narrow skill role. Economies of scale allow them to also employ a Scientific Officer to supervise the Technical Officers. Small laboratories require a Technical Officers with a far greater breadth of skills and ability to work unsupervised. All of the data has contributed to highlighting various strengths and weaknesses for TAFE NSW in developing and delivering biomedical courses. Some of the key weaknesses lie in the relationship between documented policy and actual practices in establishing and maintaining relevant contact with industry to ensure currency in delivery of biomedical programs.

### *Systemic limitations on employment outcomes for TAFE graduates*

Data indicates that large laboratories often employ large numbers of TAFE trained Technical Officers (TOs) to carry out routine pathology testing. Scientific Officers (SOs) who are university graduates are also employed in laboratories as a requirement by the regulatory body. This body advises the National Pathology Accreditation Advisory Council (NPAAC). The NPAAC plays a key role in ensuring the quality of Australian pathology services and is responsible for the development and maintenance of standards and guidelines

for pathology practices. In addition the National Association of Testing Authorities (NATA) require that Scientific Officers (SOs) supervise TOs in multidisciplinary laboratories. Small laboratories, with fewer employees, also employ degree trained Scientific Officers (SOs) to manage a broad range of testing procedures, but there are generally fewer of these positions and hence limited pathways for employment progression in small organisations. The study also reveals that there is a culture among some key biomedical employers to employ only university degree qualified graduates. A key reason for this is that they perceive that a degree qualification is superior to that of a vocational Diploma.

*The relationship between TAFE NSW and the biomedical industry.*

The analysis of data indicates that the National, State and local RTO obligations including the required level of consultation with industry in developing programs, is clearly stated in documents and the RTO involved in this research project comprehensively adheres to these requirements. However, the actual practices of TAFE in developing strategies to continuously consult with local employers, to ensure relevance of delivery and assessment material, appears to be weak.

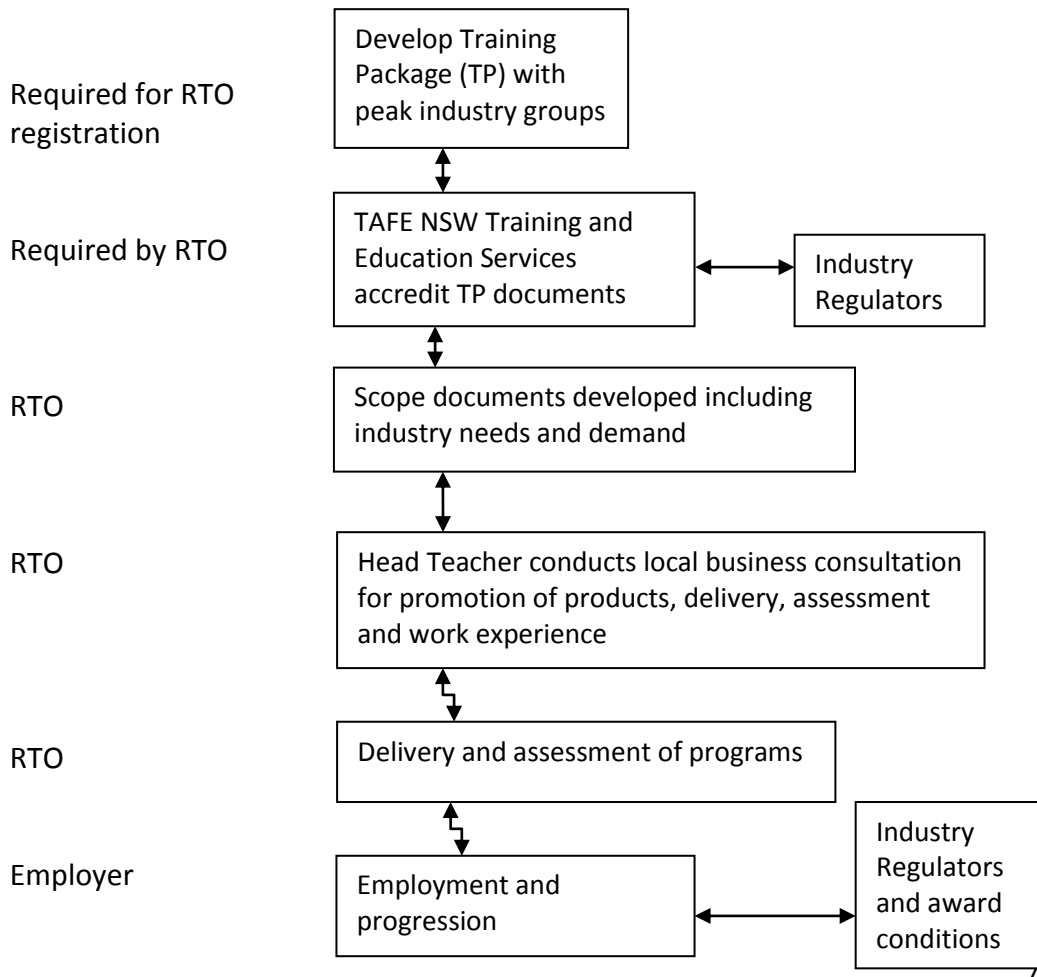
One reason for this perception of a weak link between TAFE and the biomedical industry is that much of the initial industry consultation conducted in the Scoping stages for courses is conducted with large enterprises whose needs differ greatly to those of smaller businesses. Large enterprises often require Diploma trained graduates to perform mostly routine pathology testing whereas smaller employers require degree qualified Scientific Officers (SOs) to perform a broader range of tasks. This narrow range of needs is reflected in the type of course advice provided to RTOs. One interviewee indicated that, in her RTO, contact with industry representatives has started to dwindle from weekly visits to what are now at best monthly visits. The increase in the use of online delivery now means that more units are being delivered as theory based units. Employers are noting a decrease in training in practical skills. This is evidenced in comments from a number of employers that they have not been contacted by local TAFE teachers in recent years, they are unaware that the TAFE biomedical Diploma qualification prepares graduates for Technical Officer positions. When asked about the level of satisfaction with TAFE Diploma trained Technical Officers, one local Laboratory Manager, Sarah, remarked that her hospital based laboratory does not hire TAFE trained graduates at all. The Laboratory Manager was unaware that TAFE graduates could fulfil the role of Technical Officer. This represents a fundamental lack of contact between TAFE NSW and a potential business partner. Also, the NPAAC requires that SOs perform supervisory roles in laboratories. Award conditions prevent Technical Officers from supervising staff in laboratories and thus many employers seek only SO trained staff with this broader range of duties.

*Expected and anticipated relationships between RTOs and industry bodies*

The relationship between TAFE NSW and industry commences when TAFE NSW consults with peak industry bodies in the initial stages of developing courses. The training package is formulated from inputs provided by industry skills councils at a national level. When TAFE Institutes seek to include a qualification on their scope of registration they are required to demonstrate industry consultation. This consultation is generally conducted with large enterprises through industry training advisory boards. This process requires a local needs and demands analysis which is conducted by TAFE Institutes. Actual delivery of courses occur in colleges where industry contact is assumed to have already taken place. This assumption discourages further direct contact with local employers. It also challenges the level of local customisation envisaged by the national regulator.

Overall, a number of opportunities for strengthening relationships between RTOs and business have been identified by the present study. Figure 1 depicts the key elements in the VET course accreditation and industry and local business consultation processes and how each are related. The straight arrows indicate where strong uncontested relationships exist. The bent arrows indicate where relationships are weakened by assumptions, inadequate practices or awareness of TAFE NSW qualifications and other products and services.

**Figure 1: Actual relationships between industry and a VET training organisation.**



In interviews and survey responses, laboratory managers in large and small biomedical testing businesses indicated that their contact with TAFE varies for the following reasons:

- a lack of time among laboratory managers to actively engage with TAFE teachers and other VET managers
- a lack of perceived need from large businesses - large employers are consulted in the initial Scope development of courses and have little need to continue to develop relationships with individual Institutes.
- initial consultation with small businesses is limited and as such their need to maintain contact with TAFE Institutes and local colleges to communicate their needs, is greater than for large businesses.
- limited need to contact TAFE - some employers are also enterprise RTOs which conduct their own qualification training. Many also conduct their own 'in-house' training on local protocols and 'ways of working'.
- a perception that particular Diplomas offered by TAFE NSW provide adequate 'bench- ready' graduates and further engagement of industry with local colleges is not required.
- a perception among employers that further input on TAFE course development is not welcome because the content and delivery mode is predetermined.

Some employers also note that they prefer TAFE qualifications and graduates compared to university qualifications and graduates. Reasons for this include:

- that the TAFE qualification holds a higher value within the biomedical business community compared to university degree. The TAFE qualification includes a relevant and appropriate balance of core industry required skills particularly histology, haematology, biochemistry, and microbiology.
- that TAFE graduates are well equipped to start working effectively and efficiently directly after graduating. TAFE graduates are 'bench ready' and 'understand pathology' whereas university graduates often need to be closely supervised and mentored for the first six months of employment. This is an additional cost to employers.
- The TAFE Diploma in Laboratory Operations (Pathology) qualification includes a component of compulsory work placement during the course. Work experience is viewed as highly valuable by laboratory managers and the wider biomedical industry.
- TAFE Technical Officers salaries cost less than Scientific Officers.

#### *What TAFE teachers say*

The organisation expects regular industry contact but the processes are restrictive. Some of the key reasons cited by trainers, in at least one VET organisation about why industry consultation flounders, are that:



- trainers are overburdened with day-to-day commitments and this leaves insufficient time for teachers to effectively engage with businesses and industry.
- senior trainers indicate that the process for actually participating in industry events is complex and lacks clarity. For example, in some cases, it is unclear who should attend informal events and how this participation is valued, recorded and counted. It is also difficult to arrange when funding and local protocols constrain ingenuity and motivation.
- contact with businesses and industry representatives are characterised by ad-hoc contact when time, funding and college and faculty protocols and approvals are satisfied.
- there is a long tradition and culture within the biomedical industry not to include educational managers on steering committees and boards.

#### *Assumptions made by TAFE managers which weaken links with industry*

A number of assumptions are often made by TAFE managers and teachers that:

- industry consultation conducted at the course Scope level is sufficient to maintain ongoing relevance of program delivery and assessment. This suggests that they do not perceive the need to seek further employer engagement
- sufficient industry experience can be maintained by being a teacher and an assessor in VET organisations
- teachers have time to conduct regular industry consultations
- opportunities to participate in industry events and functions as a way to build industry connections are sufficient and that adequate funds are available
- the processes and structures for supporting teacher engagement with industry are sufficient.

This research project has highlighted a number of synergies with recent organisational and network learning literature which indicates that close working relationships between training organisations enhance training experiences for learners and assist the ongoing development of relevant training materials and assessment to meet industry needs. Positive employer satisfaction levels are more likely to result in positive future employment outcomes and sustain TAFE delivery.

## **Conclusion**

The study set out to identify factors which impact on employer satisfaction with VET training in the area of biomedical science. What the study found is that levels of employer satisfaction varied according to the size of the enterprise. This confirmed that training packages are less influenced by the needs of smaller enterprises. The study aligns with the views of Billet (2004) and Harris

and Simons (2006) on the predominance of large enterprise interests in the development of training packages. The study also identified that local employer contact is critical to employer satisfaction. It is therefore, also critical for RTOs, such as TAFE NSW Institutes, to develop positive relationships with employers so as to attract and retain students in the qualifications they deliver. Further, opportunities may arise in further exploring the nature of such connections.

The study also identify that weak links with industry are a concern for RTOs because National standards require that industry consultation is performed regularly at the local RTO level. Weak relationships may compromise local customisation of programs and graduate skills, employment and further study outcomes may be undermined. Local businesses rely on TAFE trainers maintaining high levels of industry consultation and maintaining current practices in their training and assessment strategies. It is imperative that TAFE foster complimentary reciprocal relationships with local businesses to enable continuous access to current industry practices, insights into workforce needs and to continuous attract and retain customers (students).

A strengthening of the relationship between industry and TAFE could improve employer satisfaction with graduate outcomes and student satisfaction with the relevance and contextualisation of training. A strengthening of the way in which TAFE qualifications are viewed by both learners and industry would go a long way to improving overall attraction of students, their engagement and retention in Biomedical courses.

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