You are invited to the marriage of Extension and Vocational Training

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Abstract. The modern extension and the vocational education and training sectors in Australian agriculture have both hit middle age and begun to find each other exceedingly more attractive. A union driven by a hunger for external funding streams and the need to provide integrated approaches to industry capacity building that can be measured, has led to a relationship that is still finding its feet. Tocal College, a leading provider of vocational education and training (VET) in agriculture and land management, has been at the forefront of the emerging relationship between extension and advisory activities and VET over the past decade. It is well placed to take on this role as the Registered Training Organisation operated by NSW Department of Primary Industries (DPI). A national competency-based training system has allowed extension activities to be aligned to units of competence from qualifications ranging from Certificate II to Advanced Diploma. This not only allows clients to receive recognition and work toward nationally recognised industry qualifications, it provides measurable outcomes based on national standards that are recorded, reported and independently verified under a quality framework. Drivers of this alignment include industry accreditation and compliance schemes, codes of practice, and occupational health and safety requirements. This paper discusses the process of building links between extension and VET and describes how programs have been developed, tested and adopted by industry. It asserts that a strong marriage that builds the capability of industry in rural and regional Australia is not only possible, but necessary.

Extension or Education?

For the past 200 or so years, the development of modern farming systems has been driven by a continuous stream of new technology, underpinning knowledge and skills. In the early phases of the 'industrialisation of agriculture' the dissemination of information and new practices was mainly facilitated by informal processes (looking over the fence) and by market forces.

As the rate of change accelerated in the late nineteenth century across the developed world, all nations have made decisions and implemented a range of systems to encourage, guide and control the adoption of more advanced farming systems. Some countries have been driven by the need for food security for a hungry population; others have developed agriculture to service export markets and secure an income source for the country (Umali and Schwartz 1994) Either way, there is an overarching public policy objective.

Australia adopted the idea that extension through public sector advisory services was the best way to bring about practice change in farming. Driven by the politics of the Country Party and 'agrarian socialism', the rural industries were a special breed which received services not generally available to other industry sectors. Formal training and credentials were never a major priority.

The various state departments of agriculture were, for much of the twentieth century, relatively well funded to carry out basic and applied research and provide extension services to industry as a means of achieving government strategic objectives. Universities and Agricultural colleges produced tertiary trained 'experts' providing one-on-one advice and assistance to farmers. Services ranging from soil testing to publications were provided to agriculture by the public sector at no cost. At the same time relatively small numbers of farm workers and managers were attaining qualifications at Certificate, Diploma and Degree level through Colleges and Universities.

This system proved very successful for many years and effectively drove practice change and increases in productivity across all rural industry sectors. However, as a direct result of this policy Australia never developed a culture of qualifications in the rural sector and these are not a barrier to entry nor are they rewarded by industry at the operational level. As a result Australia has one of the lowest levels in the developed world of farmers and farm workers holding post secondary qualifications (NCVER 2011). This ***does not*** necessarily mean that Australia's farm workforce is less skilled than other nations (our efficiency and production records would indicate otherwise), but is ***does*** confirm that the skills and knowledge have been acquired through 'non-formal' learning mechanisms and these are not recognised as a qualification.

By contrast, much of Europe adopted the opposite approach to achieve the objectives of increasing farm production, food security and sustainable landscape management. All of the nations of Western Europe have extensive networks of agricultural colleges and a strong culture of credentials as essential for working in agriculture. Lack of qualifications are a barrier to entry into farming in Western Europe where formal qualifications are required in order to be granted access to a range of government assistance programs. A good example of lack of credentials as a barrier to entry in Europe is the process of obtaining an 'Authorisation to Farm' in France. (Gibbard 1997) France provides concessional interest loans and grants to qualified young farmers. Applicants are required to hold appropriate qualifications in order to qualify for an Authorisation to Farm (Point Info International 2011) and subsequently gain access to substantial benefits.

In the United Kingdom an extensive network of county-based and funded Agricultural Colleges was developed after 1945 as a response to the need to increase food production in the UK. New industry entrants were strongly encouraged and subsidised to undertake training through the college system. This system embedded qualifications into the culture of British farming and resulted in the UK having approximately 80 percent of farmers and farm workers holding some post secondary qualification. Qualifications are embedded into the industrial award system in the UK with the Agricultural Wages Board mandating qualifications for access to higher Grades in the award (Agricultural Wages Board 2010).

The establishment of a population of formally trained and credentialed farmers and farm workers in Europe has helped to drive productivity gains in agriculture. The UK has moved from the position of net food importer in 1945 to a net exporter of food today – despite significant population increase (DEFRA 2010, DEFRA 2009). The UK and Europe have been successful in achieving adoption of new technology and new farming systems through formal education along with extension programs in the same way as Australia has achieved these same outcomes with a heavy reliance in non-formal education through extension processes. Therefore, there is a case for the effectiveness of both systems with the two approaches achieving similar outcomes and, indeed, that extension is essentially adult education. (Rivera 1998)

What has changed in extension?

Extension has traditionally been based on the technology transfer approach that focuses on promoting advances in technology to the rural community, as shown in the linear model below:

Research→knowledge→transfer→adoption→diffusion

This extension approach continues to dominate extension practice even though it has been widely criticised for many decades. Criticism has centred around its numerous false assumptions and limited applicability (Roling 1988; Russell et al. 1989;Vanclay 1992; Vanclay and Lawrence 1995; Ison & Russell 2000). The technocratic nature of traditional research and extension has been criticised for often reducing and masking the complexities of rural situations (Cornwall et al. 1994), and for its uncritical acceptance of technological innovation as a liberating agent (Buttel et al. 1990; Furze 1992; Vanclay 1992; Vanclay and Lawrence 1995). This is especially the case when dealing with complex, contested, and 'wicked' issues associated with natural resource management (NRM) and sustainability (Cornwall et al. 1994; Bellamy 2007). Natural resource management issues demand a cooperative and coordinated response from government because many of the influences which affect the problem fall outside the jurisdiction of any one agency to manage (Bates 2003; Crabb 2003; Bellamy 2007). These 'wicked' NRM issues are persistent, non-linear, involve long time scales, and are socially constructed, with no optimal solutions or definitive and objective answers (Bellamy 2007).

The NSW Department of Primary Industries (DPI) and its' former department, NSW Agriculture has a proud history of providing a state-wide training and extension service for farmers, land managers and agribusiness. This was built on a district service model where staff skilled in particular agricultural disciplines would extend new technologies and practices to farmers to increase their production and productivity. The model was based on the assumption that farmers and other clients were largely passive recipients of knowledge and skills formulated in the scientific domain; that the agency was the main and dominate provider of this new knowledge and technology and that government would continue to provide the funding to support this model. While this model of training and extension has been modified over time to address some emerging issues and priorities within government and industry, it continues to dominate the approach and view NSW DPI takes in service delivery. Unfortunately, the operating environment has fundamentally changed, requiring a new and creative approach to extension and training delivery for NSW Department of Primary Industries.

Over the past 20 years there has been a major policy shift in the way state and federal governments in Australia funded and managed research and extension services. A major principle driving this change is the general trend of governments to withdraw from provision of services which can be delivered by the private sector. This policy shift has particularly applied a great deal of scrutiny to agricultural advisory and extension services offered by state agriculture departments.

In response to these recent policy shifts DPI has been proactive in the merging of extension and vocational education services through the establishment of the PROfarm program in 2006 which aligns formal extension activities with vocational training outcomes that are clearly articulated, costed, promoted and reported on for all stakeholders. Fundamental to making this work is the close relationship between DPI's Registered Training Organisation, Tocal College and the extension and industry development units across the state. This has also opened up greater funding and industry partnership opportunities for the DPI extension program.

NSW DPI will need to continue to adapt to a model that has a stronger focus on alliances, partnerships, multi-disciplinary teams, and participative approaches that incorporate problem solving, adaptive management and experiential learning. This new approach will also be informed by adult learning principles (Bayley and Brouwer 2004). The value of aligning extension and education has been identified since the 1990's where Kilpatrick (1996) identified that farmers who undertake one or more education and training activities are three times as likely to be using a farm plan to make management decisions compared to farmers who undertake no training. The same study found that farmers who had taken further education and training (post-school) were more likely to make changes to land management practices to improve profitability and were generally more profitable.

What has changed in the Vocational Education and Training sector?

Through the 1990s the vocational education training sector (VET) in Australia was also given a major overhaul. Starting in the late 1980s a series of wide ranging reforms under the banner of the National Training Reform Agenda were implemented to improve the competitiveness of Australian industry (Guthrie 2009).

Historically, vocational training in Australia focussed on trade training using a "time served" model of education. (ANTA 1994) This system of training lacked flexibility and was losing relevance to the rapidly changing Australian economy after the structural reforms of the Hawk/Keating government during the 1980s which opened up Australia to international markets and reduced protectionist policies (Dawkins 1988).

The foundations of this process were the introduction of (Guthrie 2009):

- Key Competencies and employability skills
- Competency Based Training
- Nationally recognised qualifications defined by Training Packages
- Accredited courses delivered by Registered Training Organisations
- The Australian Qualifications Framework
- The Australian Quality Training Framework
- New funding arrangements between the States and Commonwealth

A major driver of the changes of the 1990s was the funding process. The Keating government in 1992 proposed a Commonwealth takeover of state responsibilities for vocational education. This proposal was rejected by the states but a compromise was implemented in the establishment of the Australian National Training Authority (ANTA) and increased Commonwealth funding for training. Funding was then directed through the establishment of a training market for both public and private providers which introduced competition and promoted capacity building (Ferrier et al. 2008)

Industry Skills Councils (ISCs) were established to enable stakeholders to have a much greater input into the training system. Systems have also been implemented to identify skills shortages and ensure that these are addressed in funding priorities. (e.g. State Training Services 2011-2012 NSW Skills Priority List)

One of the main outcomes of all these reforms is to establish a much stronger linkage between investment in training and economic performance. This is achieved through training focussing on "what individuals can do as a result of their training, rather than how long they have spent doing it" (ANTA 1994) through Competency Based Training), funding linked to outcomes and accreditation of Registered Training Organisations (RTOs).

Through this reform process Australia now has a VET system which is much broader, has much stronger linkages with industry and a focus on outcomes. This has given governments the tools needed to direct funds strategically to support training where skills shortages are identified (e.g. 2011-2012 NSW Skills Priority List State Training Services 2011) and measure the outcomes of this training. Training subsidies are paid to individuals and RTOs on the basis of course completions and recording of assessment results.

A wide range of funding sources have been put in place by both State and Commonwealth governments to support this process. Funding for VET training programs is relatively stable and adequate for RTOs to develop and deliver training programs to industry. Recurrent funding is easily accessible for Traineeships and Apprenticeships through state based systems and funding is made available by both state and Commonwealth governments to address strategic skills shortages. Some recent examples are: FarmBis program (Replaced by FarmReady); FarmReady Program (FarmReady 2011); Productivity Places Program (DEEWR 2010); and The Commonwealth Workforce Development Fund (DEEWR 2011). All of these programs have in-principle bipartisan political support and significant budget allocations from both Labor and Coalition governments. The medium to long term funding outlook for vocational educational programs from both State and Federal sources appears quite secure.

So we have a stark contrast between the funding outlook for the VET sector and public sector advisory and extension services. VET funding appears to be reasonably secure and has bipartisan support at both State and Federal level. VET is seen as a "public good" activity and is therefore supported. By contrast public funding for advisory and extension activities is always subject to the 'market failure' test – can this service be provided to industry by the private sector on a commercial basis? If the answer is 'yes' governments will always question the allocation of resources to this activity.

An arranged marriage where true love has grown?

A marriage of extension and VET makes sense from the perspective of access to sustainable funding sources but does it really work as a sustainable relationship? Fortunately, this is one of those fairytale marriages where true love and commitment can emerge and prosper. Tocal College and NSW DPI (and its predecessors) have been at the forefront of developing programs to combine extension and education. There have been a few disputes and 'rough patches', but the relationship is still intact and growing.

NSW DPI PROfarm Program

The NSW DPI PROfarm program is the most comprehensive and ambitious example of the merging of traditional extension activities. The program was established in 1996 and has developed over subsequent years to have on offer over 80 training courses (DPI 2011). Many of the PROfarm courses are aligned to National Units of Competency and can contribute towards Qualifications at Certificate II, III, IV, Diploma and Advanced Diploma levels. A number of these courses are eligible for current FarmReady subsidy payments (FarmReady 2011).

PROfarm courses are delivered throughout NSW by suitably qualified NSW DPI advisory staff or contractors. Many advisory staff have been involved in the development, marketing and delivery of the courses and have been crucial in gaining industry support and building credibility for the program. Tocal College administers all aspect of the course, records results and issues Statements of Attendance or Statements of Attainment (where assessment is carried out).

All participants in PROfarm courses are recorded via formal enrolment – if assessment is required - or registration and are asked to complete a feedback sheet at the end of the course. This information is used by DPI advisory staff to monitor the effectiveness of the programs and to compile reporting data to quantify the training being delivered to industry.

The PROfarm program has provided the vehicle for the repackaging of many pre-existing extension and advisory activities as short courses with definable educational outcomes and access to formal assessment and accreditation processes. In many cases, existing resources have been adapted and reused quite effectively within the short course training context.

There have been more than 30,000 participants in the PROfarm short-course program since its inception in 2006. The PROfarm program improves coordination, program design, and implementation, while assisting growing demands for transparency and accountability (Briggs 2008a and 2008b).

The cotton industry

The Australian cotton industry was an early adopter of accredited training via short-course delivery as a mechanism for achieving extension objectives. The development of the Integrated

Pest Management grower short course and commencement of delivery in 2001 was one of the first examples of this (CRDC 2005). This Cotton Research and Development Corporation funded project delivered training to over 220 cotton industry staff and 169 course participants were awarded a Statement of Attainment by either Murrumbidgee College of Agriculture (NSW) or Dalby Agricultural College (Qld). This course was aligned to a Diploma unit - RTE5006A Plan and manage long-term weed, pest and/or disease control in crops.

The cotton industry has made great progress over the past 15 years in improving the standards of environmental management and subsequently the industry image. A cornerstone of this process was the establishment in the 'Australian Cotton Industry Best Practice Management Program' - or Cotton BMP - in 1996. Farms which implemented a set of management practices to improve environmental outcomes were able to apply for accreditation under the BMP program. An identified deficiency of this program was the lack of recognition of the role of the farm manager in complying with BMP. To address this situation a FarmBis Queensland funded project was established to investigate the alignment of the BMP processes to Units of Competency from the Rural Production Training Package. 19 Units of competence were identified through this process (CRDC 2007). Ten of these Units of Competency were selected as the basis for Diploma of Agriculture and an Accreditation program.

The assessment process for certification is based on Recognition of Prior Learning (RPL) and is carried out by a farm-based interview where the assessors collect evidence of professional practice and training which aligns to the above Units of Competence. (Tocal 2011). Evidence of competence can include a wide range of documentation relating to the management of the farm and the implementation of Cotton BMP. Examples of the contribution of training to this process are Integrated Pest Management grower short course (see above), WaterPac - A Guide for Irrigation Management in Cotton (CRDC 2008).

The Certified Cotton BMP Manager program is an innovative approach to the development of a professional accreditation program for industry which allows professionals to gain recognition for latent skills and knowledge and remove the need for training where not required and identify further training where needed. This Certification will, with further development, become the standard for quality management in the cotton industry.

Emergency Animal Disease Training Program

The Emergency Animal Disease (EAD) Training Program is an initiative of Animal Health Australia (AHA) which 'is a not-for-profit public company established by the Australian Government, state and territory governments and major national livestock industry organisations …….. to manage programs that improve animal and human health, biosecurity, market access, livestock welfare, productivity, and food safety and quality' (AHA 2011). The EAD Training Program was established in 1996 to develop a workforce with the skills and knowledge to be quickly mobilised in the event of a biosecurity emergency. This includes agency staff from all jurisdictions, veterinarians – both public and private – and representatives from all livestock industry stakeholder groups.

In 2004, all EAD Training programs were revised and aligned to 'Skill Sets' (State Training Services 2011) for all of the different roles within an EAD as defined by AUSVETPLAN (AHA 2011). These Skill Sets comprise Units of Competency from the Rural Production Training Package and the Public Safety Training Package. Tocal College was contracted to provide the credentials for this program and oversee the compliance of the training to the Australian Quality Training Framework or AQTF (see State Training Services 2011).

Since 2004 over two thousand people have been trained and certified by this program resulting in a great improvement in Australia's capability to respond to a biosecurity emergency. Accredited training has provided the framework and standards for delivery of training and objective assessment of candidates against the Skills, Knowledge and Performance Criteria defined by the Training Package. Recording and reporting of results of assessment also provides the basis for funding of the training program, monitoring and reporting progress. Without the objectivity and rigour provided by the nationally recognised competencies, qualifications and the AQTF, this national training program would not be possible.

Conclusion

All good relationships change and progress over time as those involved mature and their needs and environment changes. The days of independence and autonomy with sustainable income from public funding sources are now past and the focus should now be on building and sustaining the relationship and providing for the 'family' of clients in the rural industries. In this paper we have given a brief outline of the Extension and Vocational Education landscape and

the changes that have led us to where we are today. Australian society has changed dramatically since the days when we 'rode on the sheep's back' and all Australians felt some connection to the land. We are now a highly urbanised society and the political influence of the rural sector is much reduced. As a consequence public funding for agricultural research and extension is unlikely to recover to previous levels. However, this does not mean that we cannot achieve the same objectives of practice change and productivity improvement in agricultural production and environmental management. We need to reconceive the process and match our activities more closely to the direction that society and governments are heading. This means working in the marriage of extension and VET and riding through a few rough patches. It is an ancient institution never more relevant than in these times of rapid change.

The examples of the integration of traditional extension activities with VET discussed above demonstrate **how** this can be done with a 'marriage' of two existing systems and some creative thinking. So let's drink a toast to the happy couple and wish them a long, happy and fruitful life together.

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