

Education for Sustainability: an enabler of quality VET pedagogy?

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Abstract

This paper proposes that Education for Sustainability (EfS), with its focus on transformative and learner-centred approaches, and higher order thinking skills, enriches teaching and learning in general and therefore is an enabler of quality Vocational Education and Training (VET) pedagogy.

EfS pedagogy provides the theoretical models and thinking skills to rise to the challenge of a new discourse on VET's role in citizenship and responsibility for the future, characterised by some as a shift from productivism to ecologism, and described by UNESCO/ILO as critical thinking towards sustainable development.

This paper evaluates the impact and effectiveness of a nation-wide professional development program to up-skill VET practitioners in EfS pedagogy. Early findings indicate personal transformations for participants both as individuals and VET professionals, with high levels of teaching practice enhancement in general through uptake of EfS principles and practice. Based on our findings we draw conclusions and make recommendations for further research.

Introduction

The quality of an education system cannot exceed the quality of its teachers (Faraday 2011).

With respect to pedagogy (art and science of teaching), what does ‘quality teaching and learning’ mean in the VET context? How might Education for Sustainability (EfS) enable quality teaching and learning? First we review the literature to explore what ‘quality’ means in terms of VET teaching and learning. We then describe Education for Sustainability (EfS) and explore how it fulfils the criteria for quality VET pedagogy, examining its potential contribution to enhancing VET pedagogy in general.

Finally we review an evaluation study conducted on the impact and effectiveness of EfS professional development programs implemented nationally in Australia for VET practitioners during 2012 – 2013. We seek to determine whether this evaluation study on teacher self-perceptions of improved quality teaching and learning supports the proposition that EfS is an enabler of quality VET pedagogy in general.

In this paper we use the terms ‘quality teaching and learning’ and ‘quality pedagogy’ interchangeably, accepting the common definition of pedagogy as the ‘art and science of teaching’. We use the terms ‘VET practitioner’ and ‘VET teacher’ to designate anyone involved directly in the teaching process: teacher, trainer, assessor, consultant, designer (Wheelahan 2010: 4).

The problematic issue of ‘quality teaching and learning’ in VET

The notion of a ‘good teacher’ is an accepted one in the schools sector (Robertson 2008). A shared understanding and consensus around what constitutes good teaching

is not so evident in the VET sector with the understanding of ‘quality teaching and learning’ being heavily dependent on context.

Part of the problem is an issue of language. The term ‘quality teaching and learning’ is often appropriated by policy and research discourses that are really about matters *exterior* to the experience of pedagogy that occurs between teacher and learner. For example; compliance, managerial and organisational issues (Mitchell, Chappell, Bateman & Roy 2006: 34). These issues certainly impact on or are impacted by the ability of the practitioner to teach effectively, however are not central to the experience of VET pedagogy. They do not describe what quality pedagogy looks like in the teaching/learning space, wherever that might be.

Discourse on ‘quality teaching and learning’ in VET, rather than describing good practice, has tended to focus on specifying the barriers and challenges (DET 2004), acknowledging the need for new skills in teaching, learning and assessment (Mitchell et al. 2006), and calling for more research and definition (Wheelahan 2010).

What is quality VET pedagogy?

Since its inception, VET pedagogy has been characterised by a relatively uncritical response to industry demands for skilled labour. Focusing solely on fuelling productivity, efficiency and economic growth, the unintended environmental and social consequences of our skilled labour force have largely been ignored (Anderson 2009; Arenas and Londono 2013). Gradually this more instrumentalist and procedural approach to skills and knowledge transfer has become problematic to many as the VET landscape has become more complex.

Chappell (2004) and Smith (2005) noted changes in VET teaching and learning, towards a more learner centred, work centred and attribute focused pedagogy. They observed a focus on developing and transforming people, with teachers requiring flexibility in selecting and using multiple pedagogical strategies to serve the needs of diverse learners and contexts. Describing what good teaching would look like in this changing VET context, Smith (2005:3) saw effective teachers as facilitators of learning, with the learner playing an active role in construction of knowledge. Eight characteristics of good teaching were noted: a strong emphasis on the workplace as a meaningful context; interactive and hand-on approaches to encourage thinking as well as performing; work-ready learning outcomes; learners collaborating in determining learning and assessment processes; learners as co-producers of knowledge; recognition of prior learning; flexible teaching strategies to cater for different learning styles; and valuing of social interaction as part of the learning process.

Robertson (2008) discusses the importance of specifying the knowledge bases needed for effective teaching. Aside from subject knowledge, he emphasises general and content pedagogical knowledge; knowledge of learners, including learning theories and individual characteristics; knowledge of self; beliefs about subject; and knowledge of educational ends, purposes and values. Gamble (2013) notes that in the 21st century, vocational pedagogy is much more than the classic definition of ‘learning by doing’. She refers to the need for conceptual knowledge and higher order thinking skills, and notes an increased focus on situated and social learning as well as constructivist and experiential modes of learning. Corbel (2013) emphasises the

importance of transformative knowledge alongside the more procedural and compliance oriented knowledge more usually associated with vocational education.

Case studies: observing what good teachers do

Case studies yield valuable learning on what good VET teachers do by providing an evidence base to further inform theory. This paper refers briefly to three research projects that used in-depth interviews and/or observation to create case studies of good practice.

Firstly, Corben & Thomson (2001) used convergent interviewing to identify five clusters of attributes for great teaching, interviewing 18 expert teachers at NSW TAFE North Coast Institute. The excellence they observed was more than just 'competence in a set of practical skills' but the result of a 'rich and complex knowledge base' (p.1). The five attribute clusters identified were **learner focus** (respect, tailoring of content, understanding of learning styles and stages, group dynamics, the need for a positive learning environment); **technical knowledge and currency** (via networks, journals conferences, industry links, study, experimentation); **expertise in learning and teaching** (practice informed by theoretical underpinnings, a range of resources and strategies, a holistic approach, meaningful activities, open and transparent assessment); **personal attributes, beliefs and values** (passion for facilitating learning and helping others reach their potential, commitment to professional renewal, communication skills, belief in transformative nature of education); and **influences on teacher development** (formal qualifications, mentoring, peer review and support, reflection on practice, professional development).

Secondly, the *TAFE NSW VET Teaching & Learning Project* (2004), like the *ANTA Blue Sky Project* (2002) before it, provided a refocus on teaching and learning. Phase C of the *Teaching & Learning Project*, which reviewed 24 case studies of teaching excellence, yielded rich insights into 'great teaching' in VET. Common themes included, for the learner: a variety of learning modes; self-directness; and peer learning and development of generic skillsets. For the teacher: common themes included peer learning and reflective practice; holistic and learner-centred approaches; pastoral care for learners and strong partnerships. Interestingly, a discussion of future trends included 'the potential for a shift toward sustainability-driven rather than productivity-driven models of learning' (DET 2004: 95-96).

Additional themes noted in a more recent analysis of the *Teaching & Learning Project* case studies by the current authors included:

- *Participatory approaches* in the pedagogical process itself (learner-centred and directed), and post course – empowerment and community engagement;
- *Lifelong learning orientation* – encouraging self-direction of learners, cultivating a sense of inquiry, work as learning;
- Use of *multiple teaching/learning/assessment/evaluation strategies*;
- *Multiple roles* for both *teachers* and *learners*: facilitator, instructor, mentor, problem solver, investigator, co-producer, collaborator, evaluator;
- Creation of a *climate for transformation* – stimulus, passion, challenge, links to real life and lived experience, respect and empathy, fun, empowerment, inquiry;
- *Constructivist, social and situated learning*– real life problems, peer learning,

groups and community learning, learners as co-constructors of learning.

Thirdly, Faraday, Overton and Cooper (2011: 5) conducted a UK based project to promote more effective Vocational Education (VE) teaching. They noted that ‘...quality of teaching is the key factor in improving learner achievement.... the quality of an education system cannot exceed the quality of its teachers’. The authors educed five elements of quality VE pedagogy. Excellent teachers used a variety of *teaching strategies and skills* and developed good *learner relationships*. They engaged in individual and shared *reflective practice* and were aware of *underpinning theories and models*. The authors found, however, that most VE teachers were unaware of underpinning theory. The element of ‘*teaching context*’ emerged during the research. This refers to the physical and metaphysical settings of VE teaching: places, packages, people, constraints, objectives. This element was seen as the only differentiator between VE and teaching in general.

In summary, this literature review points to a rich variety of best practice elements that contribute to defining quality VET pedagogy, including holistic approaches to teaching for lifelong learning, development of more generic attributes and higher order thinking skills, learner-centred, constructivist, socially situated and transformative approaches. In terms of the learner, the reach of good VET pedagogy is ‘beyond competence’ and for the teacher it is underpinned by (socially) reflective practice and a passion for the art and science of teaching.

Education for Sustainability? What is it? What does it offer VET pedagogy?

There is a significant role for EfS in VET in Australia. The increasing recognition of environmental values in our society and the changing nature of work have necessitated a shift in the way that we think and act in learning and in life. The recent integration of generic skills into VET has paved the way for the inclusion of sustainability skills and can be used to provide direction in this process (Goldney 2007: 36).

Within international concern for environmental sustainability, education has been seen as critical to changing the way individuals, the economy and society function. Globally, and in particular under the aegis of the United Nations, an approach to pedagogy has been developed to support *learning based change* towards sustainability. Emerging in particular from the 1992 Rio Earth Summit’s Agenda 21, and later promulgated through the UN Decade of Education for Sustainable Development (DESD) 2005- 2014, Education for Sustainable Development (ESD), or Education for Sustainability (EfS) as it is known in Australia, provides the pedagogical platform for sustainability education.

Australia’s response to global policy initiatives at the federal level has been the *Living Sustainably: National Action Plan for Education for Sustainability* (2009), *National VET Sector Sustainability Policy and Action Plan* (2009-2012), the *Green Skills Agreement* (2009), and the *Green Skills Agreement Implementation Plan* 2010-2011. Core to the theory and practice of EfS in Australia are the principles that were proposed for the Australian Government’s *Living Sustainably Action Plan* (2009). These are;

- *transformation and change* –skills, capacity and will to plan and manage change
- *lifelong learning and education for all* – within all learning spaces and for all

- *systems thinking* –connections between environment, economy and society
- *envisioning a better future* – developing a shared vision of sustainability
- *critical thinking and reflection* –rethinking our values and beliefs
- *participation* – both in the pedagogical process and in the community
- *partnerships for change* –across community, industry, institutions and individuals.

Sitting behind this brief outline is a rich pedagogy that is characterized by transformative, constructivist and holistic approaches to learning. EfS encourages higher order thinking such as reflective, critical, relational, ‘whole of systems’ or ecological thinking. EfS encourages us to examine our experiences, assumptions, beliefs, values and world views, and to make changes at individual, institutional and societal levels that are more supportive of a good future for all.

The following table adapted from Sterling (2012) illustrates the key differences between traditional and EfS pedagogical approaches.

Table 1: Education for Sustainability pedagogical approaches

Education for Sustainability Pedagogical Approaches	
From transmissive instruction	To constructivist and transformative learning
From fixed knowledge	To provisional knowledge
From discipline based	To inter and transdisciplinary based
From abstract knowledge	To real world knowledge
From teaching/instruction	To participatory learning
From few learning styles	To multiple learning styles
From passive learning	To reflective/active/ ‘knowing about knowing’ learning

Adapted from Sterling, S. (2012)

Sterling, in addressing the issue of quality higher education (HE) teaching in the UK, quotes the Policy Studies Institute: ‘...*in general, good sustainable development pedagogy is often simply good pedagogy. Hence its promotion is broadly consistent with a commitment to improve quality in the sector.....Potential synergies exist between the development and dissemination of pedagogies appropriate to sustainable development teaching in higher education and the enhancement of pedagogic quality across the sector more widely*’ (Sterling 2012: 18).

On a global stage, Wals (2012: 84) notes the emergence of EfS as a means to rethink education in general: ‘*In some parts of the world ESD is causing a co-evolution of pedagogy and has arguably become a catalyst for educational change and innovation.*’

EfS pedagogy can be seen as enriching and renewing teaching and learning generally, operating on the foundation of conscious theoretical models and approaches relevant to the 21st century context, and helping to remedy the perceived ‘theory-free zone’ of VET practice. It also gives VET the opportunity to knock another traditional relic on the head: the tendency to follow uncritically in the footsteps of industrial

‘productivism’ (Anderson 2003). Arenas and Londono (2013) observe a new VET discourse emerging in the 2000s, with an emphasis on citizenship and responsibility for the future, and what Anderson (2009) calls a shift from productivism to ecologism.

Linked to a traditionally uncritical response to perceived industry demands is VET’s historical silence on issues of economic, environmental and social injustice, including ‘dull and degrading work’ (Arenas & Londono 2013: 167). EfS pedagogy provides the theoretical models and thinking skills to rise to the challenge of a new, more critical VET discourse, characterised by UNESCO and ILO (2002: 9) in a recommendation on the purpose of VET:

1. Contribute to the achievement of the societal goals of greater democratization and social, cultural, and economic development ...
2. Lead to an understanding of the scientific and technological aspects of contemporary civilization . . . while taking a critical view of social, political, and environmental implications of scientific and technological change;
3. Empower people to contribute to environmentally sound, sustainable development through their occupations and other areas of their lives.

Noting the need to teach higher level thinking skills and change skills as part of quality education, Wals refers to the classical question: ‘*is education about social reproduction or about enabling social transformation?*’ (Wals 2012: 22). The UNESCO/ILO recommendation answers firmly for the latter proposition.

Earlier work by Goldney, Murphy, Fien and Kent (2007: 15) point out that industry itself is now expecting ‘a more rounded worker with higher level skills’, with a call for ‘soft’ or generic skills, and a preparedness to embrace change. Industry and enterprise are in many cases looking to the future: they want change-ready, critical and creative thinkers – they want more than social reproduction.

In his UNDES Report, Wals (2012) names the following attributes of quality EfS teaching: learning-based change; integrative; problem-based; exploratory forms; critical; creative; multi-stakeholder; visionary leadership; participation; social networking; lifelong learning. These are attributes that synergize elegantly with those of quality VET pedagogy.

Implementation of EfS in Australia: a nationwide professional development program

Swinburne University of Technology was funded by the Federal Government to implement national capacity building of VET educators as part of the Government’s 2009 national *Green Skills Implementation Plan*. Adopting the EfS principles from the *Living Sustainably Action Plan for Education for Sustainability* framework, Swinburne developed in 2010 the Vocational Graduate Certificate in Education and Training for Sustainability (VGC EfS). This program provided an AQF Level 8 qualification for educators from the VET and other sectors seeking to embed sustainability in their workplaces, through training packages, curriculum, teaching and assessment, infrastructure, policy, and processes.

Delivered over 2012-2013, in excess of eighty VET practitioners spread over five

state based cohorts completed the VGC EfS program. The program's specific aims are to develop high quality teaching and learning practice, and to facilitate change towards more sustainable practices in VET institutions and industry through infusion of EfS pedagogy. Aimed initially at the VET sector, the program is applicable for educators from early childhood education through to Higher Education.

VGC EfS Evaluation Study

This paper refers to the early stages of research in progress to evaluate the impact and effectiveness of the VGC EfS Program. The Evaluation Study involves the collection and analysis of survey data capturing participant self-perceptions on various measures related to changed or improved teaching and learning practice (National Centre for Sustainability 2014). All 80 participants were requested to complete a baseline online survey at the commencement of the program. They were then requested to complete a more comprehensive survey six months after program completion. The questions focused on program impacts at four levels. Firstly; personal change, growth and transformation; secondly, changes to teaching and learning practice; thirdly, sustainability related changes at organisational levels; and finally, sustainability related changes within industry.

Of specific interest to the authors was whether this qualitative research study on teacher self-perceptions of improved quality teaching and learning supports the proposition that EfS is an enabler of quality VET pedagogy in general. We were therefore particularly interested in the responses to the first and second questions, about personal transformation and teaching and learning practice.

Findings

The 47 participants (58% of the total participants) who responded to the survey strongly supported the proposition that EfS is an enabler of quality teaching and learning in general, with positive outcomes for VET practitioners, their learners and training institutions.

63% of respondents reported increased personal confidence, improved teaching quality, more engaged learners and increased ability to support other staff. 90% of participants experienced personal change, growth and transformation through their involvement in the program. 90.5% of program participants adapted and improved their teaching and learning practice to incorporate EfS tools and principles. Examples provided indicated that newly acquired EfS knowledge and skills have been used in the workplace to enhance training resources and training delivery across disciplines (70.2 %). 68.7% of respondents indicated maintained or increasing use of EfS principles and tools after the program, indicating sustained longitudinal change in teaching practice.

Participants reported that the adoption of EfS principles and tools has

- improved the quality of their teaching
- contributed to a positive impact on student learning outcomes
- initiated more problem based project work and interaction with the 'real world'
- developed higher level systems thinking skills in learners by thinking about how sustainability relates to their profession/industry

- developed critical thinking analysis amongst learners, applied to their industries
- stimulated ongoing mentoring and professional development initiatives
- initiated creation of communities of practice at local, state and national levels
- inspired ongoing sustainability projects within training organisations, from small scale ‘greening’ interventions to strategy and policy development at executive management level (NCS Swinburne 2014).

It must be noted, however that some of these initiatives and improvements may have occurred regardless of participation in the VGC EfS Program. The self-perception of participants, however points to a causal relationship.

An unexpected outcome of the VGC EfS was the empowerment provided by learning about theoretical models underpinning practice. Theoretical underpinnings give a conceptual architecture and a language with which to describe, understand and reflect on practice, and to engage in dialogue with peers. Faraday et al (2011) noted the inability of surveyed VE teachers to identify underpinning theoretical pedagogical models. Although not captured in the Evaluation Study survey questions, accompanying anecdotal feedback indicates the powerful effect of having a shared language of theory and practice.

Implications of the findings

Findings from the VGC EfS Program Evaluation support the proposition that EfS is an enabler of quality VET pedagogy in general, as evidenced by the self-reports of the participating VET practitioners. Preliminary findings of the Evaluation Study indicate that program participants implemented the principles of EfS in their practice, thereby enacting many attributes of good quality VET pedagogy in general. The findings of this Evaluation Study, in supporting the proposition of EfS as an enabler of quality VET pedagogy, suggest a range of possibilities for further research. These include: case study research into EfS theory and practice in the VET sector; detailed, comparative analysis of EfS and ‘quality pedagogy’ in general; EfS as VET professional development; and investigation of linkages between emerging industry demand for workers with broader and higher level skills and emerging VET pedagogy.

The possibilities of EfS as providing both theoretical underpinnings and practical tools and methodologies for quality VET teaching and learning across disciplines and industries has implications for the ongoing professional development of VET practitioners. The inclusion of the TAE Sustainability Skillset (TAESUS501A and TAESUS502A) as a Level 2 practitioner developmental opportunity in the recent IBSA VET Capability Framework is encouraging in this respect (IBSA 2014), and supports our recommendation for EfS as professional development for VET teachers.

Conclusion

We reviewed the literature to determine the characteristics and attributes of quality VET teaching and learning. We then delved into understanding Education for Sustainability, explored how it fulfills the criteria for quality VET pedagogy and examined its potential to contribute to enhancing VET pedagogy in general. We also reviewed the findings from an evaluation study on EfS professional development and

concluded that the outcomes support the proposition of EfS as an enabler of quality VET pedagogy. Based on the findings, a range of possibilities for further research were suggested that include: case study research into EfS theory and practice in the VET sector; detailed, comparative analysis of EfS and 'quality pedagogy' in general; EfS as VET professional development; and investigation of linkages between emerging industry demand for workers with broader and higher level skills and emerging VET pedagogy.

In conclusion, EfS with its focus on transformative and learner-centred approaches, and higher order thinking skills, provides for an enriching of teaching and learning in general, and therefore has much to contribute to VET pedagogy. Further, EfS provides the theoretical models and thinking skills to rise to the challenge of a new discourse on VET's role in citizenship and responsibility for the future as we move towards more sustainable development in the 21st century.

References

Anderson, D. (2003). Productivism, VET and ecological sustainability. *The Changing Face of VET*. AVETRA.

Anderson, D. (2009). Productivism and ecologism: Changing discourses in VET. In J. Fien, R. Maclean, & M. Park (Eds.), *Work, learning and sustainable development: Opportunities and challenges* (pp. 35-57). Dordrecht, Netherlands: Springer.

ANTA (2002). *Blue Sky Project*. Australian National Training Authority.

Arenas, A. & Londono, F. (2013). Connecting vocational and technical education with sustainability. In R. Stevenson, M. Brody, J. Dillon, & A. Wals (Eds.), *International Handbook of Research on Environmental Education*. New York: Routledge.

Chappell, C. (2004). Contemporary vocational learning - changing pedagogy. *AVETRA Conference 2004*. Canberra: AVETRA.

Corbel, C. (2013, Autumn). Introducing the specialised vocational pedagogy project. *The Australian TAFE teacher*.

Corben, H. & Thomson, K. (2001). *What makes a great teacher? Attributes of excellence in VET*, <http://www.voced.edu.au/node/15292> , accessed 8 January, 2014.

Department of Education and Training (2004), *Theory and Practice: TAFE NSW VET Teaching and Learning Project*. TAFE and Community Education Policy and Support Unit, Darlinghurst.

Department of the Environment, Water, Heritage and the Arts (2009). *Living sustainably: The Australian Government's national action plan for education for sustainability*. Commonwealth of Australia, DEWHA. Canberra: Commonwealth of Australia.

Faraday, S., Overton, C. & Cooper, S. (2011). *Effective teaching and learning in vocational education*. City and Guilds Centre for Skills Development/LSN Learning. London: LSN.

Gamble, J. (2013). Why improved formal teaching and learning are important in technical and vocational education and training (TVET). In UNESCO-UNEVOC (Ed.), *Revisiting global trends in TVET: reflections on theory and practice*. Bonn: UNESCO.

Goldney, D., Murphy, T., Fien, J. & Kent, J. (2007). *Finding the common ground: is there a place for sustainability education in VET?* NCVER. Adelaide: NCVER.

IBSA (2014, January). *VET Practitioner Capability Framework*, <https://www.ibsa.org.au/vet-practitioner-capability-framework> , accessed 10 January 2014.

Mitchell, J., Chappell, C., Bateman, A. & Roy, S. (2006). *Quality is the key: critical issues in teaching, learning and assessment in vocational education and training*. Adelaide: NCVER.

National Centre for Sustainability (2014). *2012 National VET Skills for Sustainability Professional Development Program Impact Evaluation Report* (unpublished). Swinburne University of Technology, Melbourne.

Robertson, I. (2008). VET teachers' knowledge and expertise. *International Journal of Training Research* , 6 (1), 1-22.

Smith, P. & Blake, D. (2005). *Facilitating learning through effective teaching: at a glance*, <http://www.ncver.edu.au/publications/1660.html> , accessed 8 January, 2014.

Sterling, S. (2012). *The Future Fit Framework*, http://www.griffith.edu.au/__data/assets/pdf_file/0011/436655/The_Future_Fit_Framework.pdf , accessed 21 January, 2014.

UNCED (1992). Agenda 21. *United Nations Conference on Environment and Development*. Rio de Janeiro: United Nations.

UNESCO & ILO (2002). *Technical and vocational education for the twenty-first century: UNESCO & ILO recommendations*. Paris & Geneva.

Wals, A. (2012). *Shaping the education of tomorrow: 2012 full-length report of the UN decade of education for sustainable development*. UNESCO, Education Sector. Paris: UNESCO.

Wheelahan, L., & Moodie, G. (2010). *The quality of teaching in VET: final report and recommendations*. L.H.Martin Institute for Higher Education Leadership, University of Melbourne.