

Innovate and integrate

Embedding innovative practices

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Executive summary

This executive summary includes a background to the research, the key themes emerging from a comprehensive literature review, an introduction to an implementation model used in this research, the eight key findings, a summary of four resources developed by vocational education and training (VET) contributors and an overview of a proposed four-phase strategy for embedding innovative e-learning in VET.

Background

'Embedding' means to fix or set securely. It is equated to 'institutionalisation' or the sustained use of an innovation by a critical mass as a routine practice. It is the final stage of an innovation process that starts with an initial decision to engage (adoption), moves to spreading the word (diffusion) consolidates in utilisation (implementation) and culminates in embedding (integrate as core practice).

The aims of this applied research project on embedding innovative practice in e-learning were to:

- identify factors that have contributed to embedding innovative practices
- inform future decision makers in regard to the considerations and potential impacts of embedding innovative practices
- develop models for ongoing embedding of innovative practices to be utilised by future VET organisations.

This is Phase 2 of the research. Phase 1 focused primarily on New Practices in Flexible Learning¹ projects and sought input from Project Managers about embedding the outcomes of their projects. This phase has integrated and built on these findings by broadening the scope to include other innovative e-learning practices supported by the Australian Flexible Learning Framework² (Framework), as well as innovative practices initiated from other sources within the VET sector. It has also expanded the range of contributors to include practitioners, decision makers with responsibilities for professional and organisational development, and those with responsibilities for implementing e-learning innovations. Over 330 people contributed to this research.

Data was collected through various processes including a comprehensive survey of the VET community, interviews, case studies, site visits, feedback from conference and workshop presentations, contributions to the research wiki, innovation styles assessments, feedback from critical readers and a literature review.

Two international research advisors with extensive research and corporate experience in adoption and diffusion of innovations provided guidance, support and substantial input into the research and offered their own models and frameworks for

¹ The New Practices in Flexible Learning Project is one of 14 Framework projects. It funds and supports the development of innovative approaches to e-learning in workplaces, communities and training organisations across Australia.
<<http://www.flexiblelearning.net.au/newpractices>>

² The Framework is the national training system's e-learning strategy which is collaboratively funded by the Australian Government and all states and territories. It provides the VET system with e-learning skills, professional development, resources and support networks to strengthen the skills base of Australia. < <http://www.flexiblelearning.net.au>>

use and adaptation. The aim of working with the research advisors was to leverage their significant expertise to advance this research rather than to replicate what had already been done. It also provided insights and perspectives from outside a VET context.

Literature review

A comprehensive literature review investigated theories of adoption and diffusion of innovations in general and embedding innovative e-learning in particular. Sources included books, journals, weblogs, networks, websites and wikis. The literature review highlighted that education and training sectors all over the world are facing the common challenge of identifying how to transition 'innovative practice' to 'everyday practice'.

A broad range of enablers, barriers, implementation models and frameworks are well documented in the literature. While there are different configurations for local contexts, a synthesis of the content highlighted a common and consistent message; namely the embedding process must be based on a clear vision for e-learning, be driven by champions, explored from multiple perspectives, involve a range of stakeholders over a period of time, have committed support and that there is no one way to do it. In other words, embedding innovative e-learning is about systemic change.

Three key components must be considered in implementation endeavours:

1. **The innovation** – the types, attributes, market need, benefits and pedagogical impact.
2. **The innovators and adopters** – the human factor including beliefs and attitudes, readiness, collaboration, personal impact and relationships.
3. **The organisation** – the culture and systems including technology infrastructure, leadership, commitment and provision of appropriate support.

These three components provided a useful structure to explore the literature in more detail.

The innovation

Phase 1 of the research identified four focus areas for new practice, which ranged from generic tools a teacher could use independently and which complemented existing practice, to educational models that required significant changes in teaching practice and demanded other systems to change. This diversity can be an implementation barrier in itself as there are no clear guidelines about what is required to implement these innovations. Some require incremental change and others require radical change, but this is not explicitly stated. This is a key consideration for embedding an innovative practice as recent research in VET (Robertson 2006), suggests that e-learning functionalities that are congruent with existing practices, have been available for some time, require moderate level of technical skill and remain within practitioner control, are more likely to be adopted. This is reinforced by Collis and Moonen (2001), who found that innovative practices that promote incremental change and add variety, choice and flexibility to existing practice are more likely to be adopted because dominant models are difficult to change without a concerted and sustained effort. This is confirmed by other researchers who found that Rogers' innovation attributes of relative advantage (the degree to which an innovation is superior to what it supersedes) and compatibility (the degree to which the innovation is compatible with existing values and past experiences) are indicators

of embedding success (Grunwald 2002; Tornatzky and Klein 1982; Adams, Tranfield and Denyer 2006).

This suggests that incremental innovations that complement existing practice are more likely to be adopted and embedded than more radical approaches that require significant change of practice.

Innovation classification tools are available which identify types of innovations and their attributes (Adams 2003; Rogers 1995). If embedding innovative e-learning investments is now a high priority in VET, such tools may guide and support decision makers to make more informed choices about the types of innovations to invest in to ensure they are 'embeddable' in the current VET climate.

The innovators and adopters

To embed an innovation requires uptake by a critical mass – mainstream adopters. Three 'chasms' were identified in the literature that were barriers to mainstream adoption of an e-learning innovation:

1. **A chasm between early and mainstream adopters.** Early and mainstream adopters have different reasons to adopt and have different expectations, so momentum can be lost if these differences are not addressed (Moore 1999).
2. **A support structure chasm.** Mainstream adopters need qualitatively different support than early adopters, yet support systems are set up for early adopters. Mainstream adopter support includes shared decision making, peer support, a focus on teaching and learning, and highly 'adoptable' use of technology. As mainstream adopters are not so enamoured with the technology and are looking for practical solutions to real problems, early adopters who tend to focus more on exploring the technology may not be good role models for mainstream adopters (Geoghegan 1995; Forsyth 2004; Lambe 2003; Nutley et al. 2002; White 2002). Yet early adopters are often targeted to take on this role.
3. **A technology-pedagogy chasm.** E-learning technologies are adopted at a faster rate and are more advanced than e-learning pedagogies. This highlights the need to have sound underpinning pedagogy as technology use tends to sustain rather than alter existing patterns of teaching practice. Technology will do nothing to improve ineffective teaching. E-learning innovation may be less about the 'e' and more about the 'learning'. (Elgort 2005; Cuban et al. 2001; Geoghegan 1995). This has implications for modelling good practice, initial teacher training and ensuring that e-learning initiatives are based on sound pedagogical foundations.

The organisation

There is a growing interest in complexity science as a conceptual model for organisational development. From a complexity perspective, the best system to enable innovation to thrive is the complex system; which is adaptive, largely self-organised, networked and highly connected, where interactions are fluid and interdependent and there is flexibility to embrace both radical and incremental changes (Carlisle and McMillan 2006). If an organisation is too stable, there is resistance to change. If it is too unstable, disintegration is possible. Innovation requires both exploration and utilisation and these may require different roles, talents, ways of doing things and support system requirements. Organisations must be flexible enough to respond to what is required at any point in time as there will be iteration between the need to explore and the need to utilise and both are important for meeting current and future needs. Embedding an innovation is about consistent

utilisation in everyday practice and this infers stability – the need for robust systems and processes which identify what needs to be done, who is responsible and how the embedding process can best be supported.

‘RIPPLES’ implementation model

While several e-learning implementation models were identified in the literature review, this research used the RIPPLES model as the basis to collect and synthesis data from the VET community. RIPPLES is a generic macro model for implementing e-learning innovations. RIPPLES is the acronym for the seven components of the model: *resources, infrastructure, people, policies, learning, evaluation* and *support*. It was developed by Dr Daniel Surry, Associate Professor in Instructional Design and Development, University of South Alabama in the USA and David Ensminger, a Clinical Assistant Professor in the School Technology program at Loyola University, Chicago. Informed by the authors’ own research on implementation of technology innovations, their experience as change agents in higher education and extensive literature reviews on implementation of educational technology innovations, RIPPLES was well aligned with the intent of this research. It was developed to help senior decision makers in the implementation of web-based learning in the higher education sector. This research project provided an opportunity to test the model in a VET context and to leverage the significant foundation work on which the model is based. Dr Surry designed, administered and analysed the survey results.

The results of the survey indicated that RIPPLES is a viable and practical implementation model. It identified a focus on learning outcomes as the key enabler of innovative e-learning practice and technology infrastructure as the key barrier. Support was identified as a pressing need. All seven components of the model were considered important to an embedding process reinforcing a key theme emerging from the literature that several key components must be aligned for an innovation to move forward.

A significant contribution to this research was the use of the model to collate and synthesise a comprehensive set of enablers for embedding innovative e-learning which were submitted by the VET community. These enablers address each of the seven components of the model and provide a substantial ‘checks and balances’ planning tool (included in Appendix 2). This highlights the benefit of utilising existing models and working collaboratively with researchers from different contexts who are exploring similar issues.

Key findings

This research has produced eight key findings.

Key finding 1: Available time and competing priorities are limiting factors for engaging with e-learning innovations

Increasingly the VET work environment is becoming a crowded landscape and a significant barrier to engaging with an e-learning innovation is time. To introduce something new is a time based process and individuals make decisions about prioritising their time including whether or not e-learning is a worthwhile investment. For some it is, for others it is not and others need a tipping point to be convinced either way. The criteria for making such a decision includes several interrelated enablers: a work culture that embraces and supports innovation; a robust technology infrastructure; technology tools that are appropriate for teaching and learning purposes; a senior champion who drives the process; a willingness to consult and

share; and supportive managers, peers and support professionals. This cluster of enablers requires both individual and organisational commitment and provides a signal that e-learning is a desired and valued component of a teaching and learning repertoire and worth the time and effort.

Key finding 2: There is a shift away from the 'e' and back to 'learning'

To enable embedding of innovative e-learning practice requires a shift in emphasis from exploring technology tools to a need for better understanding of e-learning pedagogy, client perspectives and the demonstration of good examples of working models in local contexts. Considering whether the 'e' is still required or is becoming a distracter signals a change in thinking about the role and status of the 'e' in e-learning. Currently, e-learning innovations tend to complement existing teaching practices indicating embedding efforts to date have been incremental. Greater clarity about what we are aiming to embed is needed – new technologies ('e') or new pedagogies ('learning'). They may not be one and the same.

Key finding 3: There is an organisational readiness chasm

Innovative practitioners are outpacing the readiness of organisational systems and services to provide the infrastructure required to support those practices. While individuals have benefited from professional development opportunities, what has fallen short and is now becoming evident is the lack of equal and parallel attention to stakeholders, like educational and information technology (IT) managers whose 'buy in' is required to support implementation. The results of this research indicate that embedding an innovative practice requires the right innovation, innovative practitioners, innovative managers, innovative business systems, innovative workplaces and a commitment to a common e-learning vision. It requires strategic alignment between all the seven components identified in the RIPPLES model. If one component is out of alignment it creates barriers to progress. Technology infrastructure was noted as a significant barrier to progressing an innovative practice, particularly the lack of access to Web 2.0 tools and limited consultation regarding technology-based decisions. The other key concern of practitioners was the lack of active management support. Consequently, the focus on embedding – the use of an innovation by the critical mass as a routine practice – may be ambitious and premature until the systems are more fully aligned with each other and with practitioner requirements.

Key finding 4: Purposeful use of technology is a core competency in a knowledge society

Productive functioning in the knowledge society requires a mix of individual and social competence and purposeful use of technology (Collis and Moonen 2005). Social software, rather than being adjunct 'cool tools', are instead 'core tools' that are integral for participating and contributing in a knowledge society to express, share, collaborate, communicate and co-construct. This provides another perspective as to why e-learning innovations, like social computing, are important to VET delivery. They support the new competencies required for living, learning and working in a knowledge society and need to be supported as legitimate and credible innovations.

Key finding 5: Targeted support is required to implement an innovative practice

The focus on e-learning has moved from ‘why’ to ‘how’ and this orientation requires relevant stakeholders to actively support implementation efforts. The need for better support was a dominant message from the field. The types of support included training, technical support, pedagogical support and administrative leadership. Support enablers for training included time, mentoring, practical hands-on experience, access to networking opportunities, and support for training that was personalised, localised and just-in-time. Technical support enablers related to competent, service oriented IT staff, access to up-to-date hardware and software, and reliable robust systems. For pedagogy, personal qualities and attributes including motivation and willingness to engage and take responsibility was well represented. Other factors included modelling by peers and mentors, sharing and collaborating, and experimenting with different learning models that incorporated technology. Administrative leadership enablers included champions at senior level and actively supportive and enthusiastic line managers. These types of support enablers align well with Geoghegan’s (1995) early mainstream adopter needs. His observation was that early majority (mainstream) adopters are more concerned about teaching or learning solutions, demonstrated benefits and proven application of technology. They require shared decision making, peer support in a local context, a focus on teaching and learning, and on highly adoptable uses of technology. This has implications for the design of professional development and marketing programs to encourage and support potential early mainstream adopters to engage with e-learning innovations.

Key finding 6: Embedding innovative practice requires diverse strategies and styles

Diverse strategies are essential for a comprehensive approach to embedding an innovation. Miller (1999) proposes that all people have the capacity to be innovative, they just have different styles, approaches and strategies. These different strategies include: *Exploring* (discovering new perspectives, assumptions, and uncharted territory); *Visioning* (developing a clear sense of long-term purpose, with bold, ideal solutions to achieve it); *Experimenting* (combining and testing existing elements in novel combinations) and *Modifying* (building on and optimising past and present achievements). All four styles represent legitimate and valuable kinds of innovations and all are important to the creating, implementing and embedding process. In addition, these strategies point towards a critical issue that impacts on whether innovative e-learning products will be readily adopted by educators and their organisations: Does the degree of innovativeness of the product or service match the degree of innovativeness sought by the educators and their organisations? Catering for this diversity and matching innovation to need must be more explicit in planning and implementation processes.

Key finding 7: The skewed view of ‘innovators’ limits opportunities to embed innovative practice

Practitioners and managers nominated by their peers as ‘innovators’ tended to have one particular innovation style – *Exploring*. This focuses on only one of four legitimate approaches to innovation. If this group of practitioners is predominantly perceived to be innovative by their peers and their profile is *Exploring*, there are several issues to consider for supporting the embedding of an e-learning innovation:

- The perception that innovation is about exploring new territories can be seen as a limiting one.
- The *Exploring* profile may not be the most effective for embedding an innovation, yet those with this style are associated with being innovative.
- Raising the profile of other approaches to innovation will be important for embedding as a suite of approaches is important to move an innovation forward.
- Innovators with different approaches and strategies may not be recognised as innovators either by themselves or by their peers.
- There may be benefit in a greater emphasis on the diverse skill set required for successfully embedding an innovation.
- There may be different types of support required to meet the learning needs of these diverse approaches.

There may be great benefit in profiling the suite of different approaches required for creating, adopting, diffusing and embedding e-learning innovations.

Key finding 8: A strength-based orientation fosters innovation and builds capability

Recent research on capability development in VET promotes a strength-based orientation (Staron et al. 2006). This research shares many similarities with the findings from Staron's research. While one focuses on embedding e-learning innovations and the other has a broader focus on capability development, there is a meeting point. Both emphasise that rich learning environments, organisational enablers, diverse approaches and interconnectedness between stakeholders are critical to the change process. Put simply, barriers are deficits, enablers are strengths and embedding anything is fostered by a strength-based orientation. The enablers identified for fostering innovative e-learning practice by VET contributors to this research (see Appendix 2) align with the organisational enablers identified in recent research on a strength-based orientation to developing capability for working and learning in the knowledge era. This suggests that embedding innovative e-learning practice is really about building individual and organisational capability.

Resources from the research

This project provided the opportunity to collect, collate and consolidate a wealth of VET knowledge and expertise about embedding innovative e-learning practice. Four resources informed the development of an embedding strategy which is a key deliverable for this project. These resources include feedback to the Framework from participants in current and previous Framework initiatives; three case studies that consider embedding factors from an organisational, an innovator and an innovation perspective; and a comprehensive set of enablers for embedding innovative e-learning framed within the seven key components of the RIPPLES model. These are substantial resources in their own right and provide practical tools and processes that could be adapted to different contexts.

Feedback to the Framework

Participants in current and previous Framework initiatives were invited to give feedback on what they believed different stakeholder groups could do in the future to effectively enable innovative practice in e-learning to be embedded. Stakeholders

included the Framework funding body, the New Practices in Flexible Learning Project National Management Team, the organisations sponsoring a new practice, the New Practices in Flexible Learning Project teams, intermediaries who promoted or supported new practices and the adopters of new practices products and services. The resulting insights and suggestions are documented in Section 8, and highlight the value of considering increased multiple stakeholder involvement in planning and implementing new initiatives.

Case studies

Three case studies provided different perspectives of e-learning innovation diffusion within the VET sector. They included a focus on an organisation, an innovation and an innovator. The case studies informed the development of the embedding strategy.

An organisation perspective – getting down to business

This case study identifies the key organisational enablers that have progressed GippsTAFE's (Central Gippsland Institute of TAFE) vision of becoming the best quality provider of flexible learning solutions in Australia. Key organisational enablers included flexible learning as the vision, a CEO who drives the vision, an e-learning innovation champion at a senior level, an experienced and talented innovation team dedicated to the task, a business approach to building capability and committed and supportive senior managers. Ten top tips for successful embedding provide practical advice for those with responsibilities for embedding e-learning practice. An independent analysis of the innovation styles of the Innovation and Organisational Development Team at Gipps TAFE identifies different innovation strategies and provides guidelines on how to work with team strengths to more effectively support embedding processes.

An innovator perspective – there's something about Michael

This case study mapped Michael Coghlan's journey as a pioneer of online voice tools in VET. It provides insight into the role and contribution of an innovator in VET and captures the essence of what is required to enable the unique talents of an innovator to be effectively utilised.

An innovation perspective – embedding digital storytelling

Digital storytelling is an e-learning innovation that is being successfully embedded across the VET sector. This case study maps the development of digital storytelling from the perspective of Carole McCulloch, a pioneer in digital storytelling in VET. This case study used Rogers' (1995) five perceived attributes of an innovation as a framework to document the critical success factors that have contributed to embedding digital storytelling in VET. These attributes are: *relative advantage*; *compatibility*; *trialability*; *observability* and *complexity*. The aim was to provide a practical example of mapping an innovative practice against specific attributes to determine its embedding potential. It also provided an example of an implementation plan based on Rogers' five stages in the adoption process: awareness; interest; evaluation; decision and adoption.

Enablers for embedding innovative e-learning

This resource is a synthesis of the enablers for fostering innovative e-learning identified by approximately 300 VET contributors to this project. It is an amalgam of open-ended questions from the RIPPLES survey, the input from case studies, feedback to the Framework, the collaborative work on the research wiki and input from interviews. The enablers are structured around the seven components of the RIPPLES implementation model and represent a VET perspective of the types of

support required to embed innovative e-learning practice. It reinforces the need for a systemic approach.

Strategy for innovators in VET

This resource was the result of an invitation to 17 practitioners and managers who were nominated as 'VET innovators' by their peers to identify enablers and barriers to innovators in an e-learning context. They were also asked to offer suggestions for maximising the talents of innovators for the benefit of both the innovator and the organisation. They worked collaboratively in the research wiki for approximately two weeks to produce this resource which provides insights into effective strategies for supporting innovators within a VET context.

The key findings and the resources emerging from this research have informed a four-phase strategy for embedding innovative practice in VET.

Four-phase strategy for embedding innovative practice

This strategy was developed in collaboration with William C Miller, an international consultant on the adoption and diffusion of innovation within corporate environments, who was a research advisor to this project. It incorporates some of his original work. The strategy is based on a cross-functional team philosophy.

Key features of the strategy

The strategy recommends that representatives from different stakeholder groups work together from the outset to develop and coordinate processes aimed to maximise the development, implementation and embedding of e-learning innovations. The following are key features of the strategy.

1. It is a strategy not a model

As a strategy it provides a general framework rather than a detailed prescription. This acknowledges that there is no one way or no one model to embed an e-learning innovation. Adapting the strategy to local needs is encouraged and expected as its purpose is to alert stakeholders to the range of issues that need to be considered if embedding is to be successful.

2. It incorporates key research findings

- It addresses the readiness chasm by aligning what is being proposed with what the adopter groups require and are ready to adopt.
- It recognises the interconnectedness between different stakeholder groups by including them in all phases of the strategy.
- It recognises the key role of champions in driving an innovation forward.
- It gives equal attention to the innovation, the adopters and the organisation.
- Key questions are framed around issues emerging from the research.
- It explicitly plans for different levels of readiness to adopt.
- It can be customised to different contexts.
- It utilises the four innovation styles to ensure different perspectives are considered.
- It utilises the resources generated by VET contributors to this project.
- It utilises useful tools identified in the research.

3. There are four phases

- needs-assessment/selection/funding
- development of the innovative practices
- early adoption
- mainstream adoption.

Each phase focuses on current needs and prepares for the next phase of implementation. While phases 1–2 are well known and well documented processes, phases 3–4 which focus on early and mainstream adoption are not as formed and will require stakeholder groups to provide the details as adoption and embedding develop.

4. There are three foundation questions

1. Is there a portfolio of both incremental and breakthrough innovations – for short-term and long-term needs?
2. How well does this innovation match the short-term and/or long-term needs of the adopter groups?
3. To what degree is the organisation ready to implement the innovation?

5. The process is inclusive of all stakeholder groups

Five stakeholder groups have been identified: funders/project managers; developers; early adopter champions; mainstream adopters; and IT managers. IT managers have been targeted as a stakeholder group because of their explicit role in enabling implementation. These key stakeholder groups have significant impact on the outcome of an investment in an innovative practice. By considering different frames of reference and perspectives, all stakeholders have a voice from the outset and are alerted to the issues that must be considered and addressed if the challenge of embedding innovative e-learning is to be realised. Based on the concept of cross functional teams, this approach seeks to leverage diverse perspectives and expertise to achieve a common goal.

6. It is managed horizontally

The project managers coordinate activities across the five stakeholder groups throughout the four phases.

7. It is based on a portfolio approach

A portfolio approach ensures the best mix of incremental and radical innovations to meet present needs and to explore future possibilities. Short-term improvements build momentum for success and longer term investments lay the foundation for the future. A percentage of modifying, experimenting, visioning and exploring initiatives is required to ensure a diverse portfolio that meets a range of needs.

8. It is time based

A three-year process is suggested based on corporate models and input from VET contributors.

9. There are tasks and key questions for every phase

The key questions help focus on tasks and processes and ensure a balanced perspective.

10. Four innovation strategies provide a structure

The innovation strategies are adapted from the work of William Miller and are used with permission.

11. There are two generic analysis templates

Two analysis templates have been developed for use in all four phases. The templates are designed to capture developer and adopter perspectives on key issues to ensure the best possible outcomes and to ensure there is a good spread of innovative initiatives that meet both present needs and future possibilities. Protocols for teamwork are also considered.

Concluding remarks

The fundamental focus of this research project was on embedding innovative e-learning practice within a VET context. To embed means to 'set in place' and to become an integral part of something. Embedding also has a nested connotation – one component is embedded within another. This reinforces the key findings in this research that embedding innovation requires alignment between different components and stakeholders.

To successfully embed an innovative practice may not only require the identification of a set of good practices to model or the production of implementation models and checklists of enablers. It is clear from the research findings that the VET community understands and can articulate that it takes more than this.

It also requires a mindset change and an acknowledgement of the lived experience of learning and working in the crowded landscape that is VET. This research concludes that the real innovation may be to embed a way of thinking about innovation, learning and change that promotes a strength-based orientation. There is no doubt that embedding innovative e-learning is a challenge. It requires vision, will, determination and drive to jump the readiness chasm identified in this research to enable innovators, early adopters and 'the other 85%' to not only take on e-learning innovations – but also to see them through.

A strength-based orientation is a key enabler to this embedding process as such a leap takes planning, preparation, commitment and collaboration because:

You can't cross a chasm in two small jumps.

David Lloyd George