

21st Century Learning

Harnessing Technology to Enhance Performance and Improve Return on Investment

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21st Century Learning: Harnessing Technology to Enhance Performance and Improve Return on Investment



The compelling context to re-shape learning

Many organizations are facing difficulties of both capability and capacity – in simple terms, having enough of the right skills and knowledge to be able to sustain competitive advantage. Even prior to the astonishing developments in the global economic and social scene, those pressures were becoming evident. Developments during 2008 and into 2009 will only increase the pressures on organizations and individuals

to have the right skills and knowledge to remain competitive, to adapt rapidly – and these pressures are likely to accelerate for the foreseeable future. Entire world economies and markets are now re-shaping, on a scale and with a level of structural change never seen before – which in turn, means that organizations and their employees are facing a similar level of unprecedented change. This picture is acknowledged by the majority of leaders, employers and many of their employees.

Against this backdrop the delivery of learning which supports the development of skills, knowledge and behavioral capabilities, with speed, scale and responsiveness has never been more important. Or, viewed in another way, the ‘industry’ of learning is facing challenges and opportunities to re-shape itself to keep pace with the world. It follows that harnessing the diverse power of technology to deliver learning should now be central to the learning strategy of all organizations – and the expert advisors who work with them.

Purpose and scope of this paper

This paper examines how learning can be enabled and enhanced through the strategic and innovative use of a range of technologies. The focus is on the learning of individuals and groups within an organizational context.

It sets out to:

- 1 Present a vision of multi-component learning which benefits from the full range of technologies now available
- 2 Draw a distinction between this new vision and historic approaches to learning – including technology enhanced, and more traditional learning approaches
- 3 Examine the organizational drivers and strategic implications of a technology enhanced learning strategy
- 4 Describe current thinking on how to design learning solutions focused on optimizing the best use of a variety of available technologies
- 5 Show how a proven cycle of decision making (The Five Principles™) underpins an integrated approach to measurement strategies and ensures that the optimum solution creates demonstrable value

The paper is intended for:

- OD, HR and L&D people who are reviewing the learning strategies of their organizations, especially with a view to considering different ways in which learning can be deployed
- Individual practitioners, who are looking for practical guidance, based on latest thinking and research, on how to create optimum learning solutions

Technology Enhanced Learning – a working definition

The paper uses the term Technology Enhanced Learning (TEL) to describe a multi-component learning solution, delivered in an organizational context, which makes use of computing technologies to a lesser or greater extent. It includes learning which is conventionally considered 'e-learning' but is a broader and more over-arching concept or approach. The European Commission (2001) defines e-learning as the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration. TEL augments this by recognising that technologies and ways of working and learning are converging. By adopting a multi-component approach, we are now able to use technology or other approaches depending on what will work best in a given context for a given group of people. This opens up many more flexible and creative ways to deliver learning. See Appendix 1 for more details.

Looking back with urgency

In proposing a definition for TEL which goes beyond e-learning, it is worth reflecting on the initial promises of 'traditional' multimedia e-learning objects. Predictions for e-learning were bold, and the industry press was fully of predications that within a very few years it would replace large amounts of classroom and more conventional training. Many organizations invested in 'converting content' into an 'e' format. They were surprised to find that take up was slow, grudging and that user numbers, and impact, were small. With the benefit of hindsight, there are lessons to be learned from this experience. This approach to e-learning ignored the basic tenets of successful adult learning in the workplace. In particular:

- ❑ Learning was generic – rather than tailored and customized for the learner and their organization. The impact of terminology, concepts and tools which did not connect with the learner's work environment confused, frustrated and even irritated the learner., E-learning amplifies these issues as there is no facilitator there to observe and take corrective action.
- ❑ Motivation was assumed – learning content was made available and organizations assumed that this was enough to ensure that their workforce was highly skilled. We know that this is not the case, people need to know why the learning is relevant, to link it to their own needs and to get recognition for their development.
- ❑ Learning was inflexible – often created in such a way that it could not easily be tailored or customized, without incurring considerable additional investment – thereby defeating one of the promises i.e. cost effectiveness with scale. Presentation was un-interactive and un-engaging – in other words, e-learning which was text heavy and didn't support active engagement with the concepts and learning experience.
- ❑ E-learning lacked sophistication in terms of not allowing for individual learning styles. Many early forays had one pace, one learning path and no scope to build on strengths without avoiding duplication.
- ❑ Assumptions were not tested about what was suitable for delivery through e-learning and what kinds of learning do not easily translate into an e-format. Early 'conversion projects' failed to distinguish between learning aims e.g. developing skills, knowledge, behaviors/beliefs and how, or whether, these should be addressed in an e-format.

This paints a deliberately stark picture of some of the historic reasons why e-learning has failed to flourish in many organizations, several years on from the initial optimism and promise.



However, if we consider every other aspect of the personal and workplace experience, technology has made a phenomenal impact – in terms of accessibility, cost effectiveness



and enriched experiences. In fact, one key factor which means that the economic challenges in today's world will be very different from the depression and privations of the 1930's is the universal accessibility to technology and its contribution to a much broader swathe of societies and individuals.

We have a generation of learners, used to technologies which allow them to work rapidly and which allow them to vary their approaches to getting work done, learning 'just-in-time' and to multi-tasking.

Learning is no longer considered as something one does in preparation for a successful career, rather as something one does throughout it! Younger learners, joining the workforce, may not even see a difference between learning and working. This is bound to affect the appetite for prolonged learning experiences which are not easily integrated into the flow of their working lives.

Against this backdrop, has the whole field of organizational and adult learning kept pace? Has the impact of technology been as transformational in adult learning as it has in other aspects of life? Is there now some urgency for the practice and profession of learning to catch up – especially when the pressures to prove value and justify investment will never be greater? The fact is that converging technologies has moved the opportunities for learning way beyond the historic approaches to e-learning and whatever the shortcomings of the past, TEL really does hold the promise of a new era for learning.

Organizational drivers for TEL solutions

Organizational drivers imply urgency and the need for action.

- ❑ The skills and knowledge that people require to be able to work effectively are developing at an unprecedented pace. Put another way, becoming out of date is likely to happen faster and with more obvious and immediate consequences.
- ❑ Complex, remote, matrixed and often global organization structures present logistical problems in developing and maintaining consistent levels of skills and knowledge.
- ❑ Despite the developments in how we can meet learning needs, the principles of adult learning remain the same. Individuals have different learning styles, preferences and motivations. When individuals learn in a way which is most suited to them, they are more engaged and active participants. This has an effect on the impact of the solution and the ROI.

- In addition to styles and preferences, individuals need different depths of learning ranging from a quick refresher to an in depth master class. TEL can help select the most appropriate learning journey for the learning need.
- Applying learning and sustaining improvement remains a high priority for most organizations – yet gathering evidence of the long term value of the learning investment is challenging. TEL solutions can track and collect data automatically to support these evaluations.

The following section expands the thinking around these key organizational drivers.

The skills and knowledge that people require to be able to work effectively are developing at unprecedented pace

Regardless of a person's skill and qualification level when they enter the workforce, the nature of work in the 21st century dictates that a job can change rapidly with implications for the skills, knowledge and behaviors required to do it. In this environment supporting development and nurturing talent is the key to meeting current, and future, business goals and to maintaining a competitive advantage.

Despite this, there is a need to balance skill and knowledge development with 'getting the job done' and other more informal and self-directed learning interventions. TEL solutions do not have to be formal. As we will see later on, technologies such as blogs and wikis can be used to support informal learning and may be combined with other web 2.0 technologies to put the participant at the centre of their learning.

Complex, remote, matrixed and often global organization structures present logistical problems in developing and maintaining consistent levels of skills and knowledge

Whilst organizations recognize the need for ongoing learning and development, the factors associated with providing it are increasingly complex. These can range from logistical factors such as training large numbers of employees to the same standard across a global organization to training a small number of specialists for whom long periods away from the job on training is not possible.

TEL solutions can provide an organization with the flexibility to:

- Support 'just in time' learning.
- Increase the flexibility of training provision by reducing the need for physical attendance on a training course.
- Reduce the time spent in the classroom by using interactive materials to cover theoretical/conceptual elements prior to attendance.
- Deliver learning in different, culturally appropriate ways whilst maintaining core messages.

The importance of individual learning styles and preferences

In a face to face scenario the facilitator works closely with the participants, reacting to their individual needs to generate enthusiasm and motivating them to engage with the learning experience. There is a well established body of research examining the role of the facilitator in a learning context. The importance of the role of the facilitator is magnified for large scale roll outs of learning solutions, where teams of facilitators work across multiple courses and contribute to the success of the solution as a whole. This challenges an organization to ensure that everyone benefits from the 'best of the best'. TEL can provide alternatives which maximize the effectiveness of facilitated learning, including guaranteeing the highest level of consistency, with the flexibility of local adaptation. A TEL solution could therefore include elements such as virtual classrooms, moderated discussion forums, web chat sessions or even automatic responses from animated characters or avatars. These forms of immediate feedback and guidance support the participant throughout their learning and create personalized, reactive learning environments. TEL solutions can also provide participants with choices around how, when and where they learn, allowing them to learn in the most effective way for them.

Delivering the right kind of learning

Around any given subject learning requirements can range from the need to revise a process, refresh knowledge, develop new skills, or even master skills and behaviors at a very high level. These different needs require different approaches to learning. One of the traditional challenges for the industry is ensuring that the right people access the right kind of learning. TEL solutions can contribute to this by supporting the decision making and enrolment process, either using automated systems or providing participants with baseline information to inform development discussions.



Application of learning and sustaining improvement remains a central challenge of most organizations

In order to balance the needs of an organization and individual, any effective learning solution must recognize that individuals need to apply knowledge and alter their working practices. The relationship between their needs and motivations to engage in learning and the combination of components within a learning solution is therefore central to its success.

For a TEL solution, the planning and combination of components involves careful choices about the components, based on factors such as:

- ❑ Organizational culture
- ❑ The individual learners (or groups of learners), including their working patterns, exposure to different types of learning etc. For example, to address similar learning issues, one group of participants may engage with an interactive 'game' style learning solution, whereas others may see that as trivializing an important issue. A TEL solution can incorporate the flexibility for different learners to reach the same goals by different means and offers greater scope to incorporate individual preferences than many more conventional solutions
- ❑ The nature of the learning and the organizational change it is intended to deliver.

TEL solutions create opportunities to account for the investment in different ways

Early e-learning solutions assessed the value of technology by focussing on delivering ROI by cutting costs based on a mechanistic approach and were reliant on 'converting' training content to e-learning. Attractive ratios suggesting an ability to reduce the time spent learning in a classroom were often quoted as the key way of demonstrating the value of e-learning. A formula would be presented along the lines of:

Hours of classroom learning: e-learning equivalent time

Cost of delivery of classroom learning (including on-costs): cost of development of e-learning

However, what this approach did not cater for was the very low take up of e-learning (sometimes quoted as being as low as 4% of the intended population) which actually made the investment in e-learning very unattractive.

In contrast, current approaches to TEL offer many ways to stage investment and create economies of scale, whilst catering for easy adaptation and the ability to incorporate updates and continuous improvement. In many cases, there are now well established formulae for calculating the level of investment, with greater sophistication in accounting for the value of the TEL solution over its life cycle.

The value created by an effective TEL solution can now be quantified in many more of ways:

- ❑ The value to the business of moving x% of their people from medium to high performers (e.g. what is the value to the organization if 20% more of their sales people deliver sales revenues equivalent to the highest performers?)
- ❑ Speed to competency through shortening induction periods, plus having a positive effect on retention
- ❑ Reduction of error rates in key processes

- Speed to market through improvements in project management disciplines

The key point here is that the greater flexibility and opportunities for multi-component design of TEL solutions mean that, at the very outset, the solutions can be built to deliver demonstrable results. With the many more opportunities to sustain application, deliver just in time reinforcements and incorporate testing and validation of learning, TEL solutions can move the debate regarding the use of technology forward from simply reducing costs to one of real value creation.

Aligning learning needs and elements within a TEL solution

Research and experience has revealed that the use of different learning technologies is dependent upon the individuals, the organization and the learning need. In real terms this means that not all technologies will be appropriate for any given learning context. For example, a stand alone multimedia e-learning object may be a really good way of enabling everyone in an organization to learn about the main health and safety dangers in an office. However, the same approach may not be suitable for supporting the development of managers' communication skills. This is because they will have very different levels of existing knowledge and will need to apply this knowledge in different ways. E-learning may offer a flexible way of learning about key communication models and theory, however, for maximum impact this should be combined with other technologies and approaches to learning as part of a multi-component solution.

Effective TEL solutions do not equate with a 'sheep dip' approach to learning. By combining technologies and approaches to learning, and work, we are able to offer personalized, flexible learning journeys which cater for different learning needs and styles. A table summarizing some of the most appropriate applications of a number of different technologies within a multi-component TEL solution is available in Appendix 1.



Whilst the technologies that are used will change, there are three main elements within the standard learning journey, which can be delivered at different times and over different time periods, depending on the learning need:

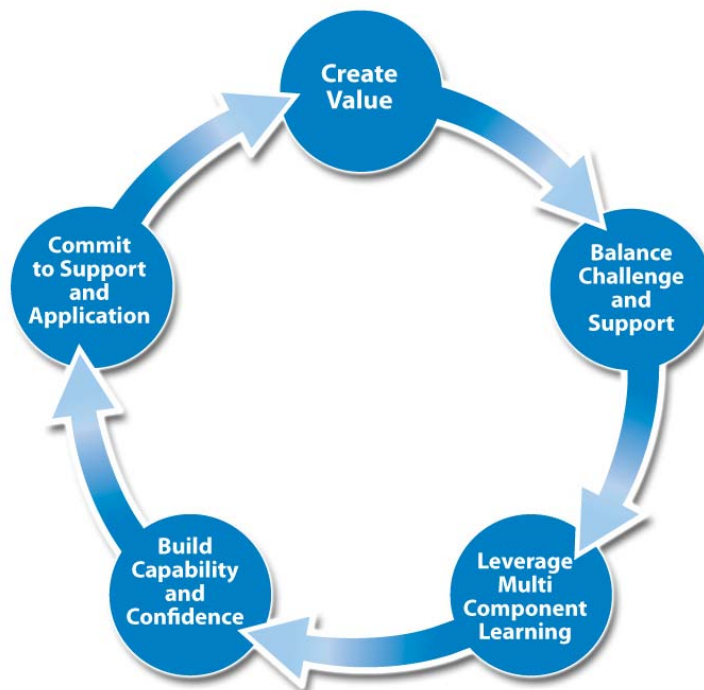
- a period of pre-work
- the core learning content or experience
- post work and application support

Depending on the approaches chosen, the participant's experience of the learning journey could be focused through a Learning Management System (LMS), enabling a wide variety of functions to be integrated within the solution, and for access to be managed and monitored. When combined within a wider TEL solution, an LMS has the ability to engage and support participants throughout their journey, including providing personalized updates and organizational tracking data.

Creating and delivering the optimum TEL solution

Hemsley Fraser has developed a cycle of Five Principles™, which work in a set sequence to guide decision making at the key stages of creation and delivery of a learning solution. By focussing on learning, the Principles are applicable to any learning solution and can also be used to audit a portfolio of learning solutions.

This section describes the Five Principles™, with particular reference to a TEL solution.



Create value for the organization and the individual

At the outset of designing a TEL solution, understanding how value will be created is an essential part of engaging with stakeholders and sponsors, together with participants. From a stakeholder/sponsor perspective, it is essential that the solution is rooted in their business strategy and goals and has links to key metrics. High levels of integration between a learning solution and business goals also provide greater opportunities to generate support and promotion at all appropriate levels of the organization.

For participants, it is essential that a TEL solution is rooted in their world – addresses their real work challenges, provides them with learning which they can use to perform to higher standards and above all, captures their imagination.

Bringing these two sources of value together at the outset of the design of a TEL solution forms the basis of the measurement strategy and the ability to report results to the organization and the individual. TEL which is solely driven from an organizational perspective is likely to suffer low take up and engagement for individual learners. In contrast, TEL which is directed solely towards the development of the individual, however rewarding for them, will suffer challenges about value for money and being able to report business impact. The most effective TEL solutions incorporate value for both the organization and the individual from the outset of the design process.

Key point:

Invest the time up front when developing a TEL solution to develop the value case, focusing on both the organisational metrics and the individual value drivers. This will speed up adoption later, integrate measurement and accelerate the ability communicate success and results

Balance challenge and support

This principle is especially important for the design of a TEL solution. The central principle of adult learning in the workplace is to honour and build on the learners' existing experience. At the same time, the learning must incorporate a sufficient level of challenge to move forward, create change and lift performance.

For a TEL solution, there is the additional consideration of how much the technology itself introduces a balance of support and challenge. This is the point in the decision making cycle where discussions around the track record of being able to innovate and embrace new methods of learning are considered, together with exploring attitudes to risk. It is also the point where the most creative TEL concepts can be tested for issues of ease of use and integration with existing IT policies. This will uncover any fundamental barriers in the technological aspects of the solution.

Despite the fundamental nature of technological barriers, the most important implications around balancing challenge and support lie in understanding the culture of organization (TEL readiness) and the profile of the learner audience.

Key point:

TEL solutions are less successful when they move too quickly from the technologies that are familiar and known. A successfully solution will innovate and create a level of stretch which is carefully managed

Leverage multi-component solutions

It has long been the aspiration of those in the learning business to be able to design truly inter-changeable components of learning to speed up the design cycle, reduce costs and drive for consistency. Modular learning for non-technology based learning has gone some way towards achieving this. However, the breadth and flexibility of the technologies available within TEL means that there are massively increased opportunities to design multi-component solutions, which allow for redeployment of the individual learning components. The greater flexibility in the structuring of learning and content within a TEL solution also allows for rapid tailoring and contextualizing.

If the opportunities for a multi-component approach to a TEL solution are considered at an early stage, it also changes the way in which the cost/return equation works and can create a business case for investment in a much more creative, interactive, multi-media component, which has a longer life and broader application.

In essence, the approach to multi-component design borrows from the technology sector itself (and indeed, other leading edge sectors), where complex products are designed, using as many common core components as possible. This brings the concept of mass customisation to the heart of TEL solutions.

Key Point:

ALL TEL solutions should combine more than one component by definition, which means that there is an opportunity to increase the value of the solution by considering other ways in which the components can be used.

Build capability and confidence

An extensive analysis of the various potential elements of TEL enables the designer to consider the main focus of the learning. To an extent, all learning must deliver a combination of capability (knowledge and skill) and confidence (motivation and enthusiasm to apply). However, a TEL solution means that elements can be combined to ensure that the learning has the right balance of the two. If the main challenge is capability, it points towards TEL elements which are effective in delivering knowledge and skills – with an element of practice and validation. Tools such as online quizzes can be used to test knowledge, whereas collaborative tools such as wikis can be used to apply knowledge to address problems and share ideas. Where a more capable group of learners requires confidence building, the selection and combination of methods would be very different. Despite this, even where the main focus is confidence, a TEL solution can enable quick reinforcement and efficient validation of knowledge or skills.

A multi-component TEL solution offers many more opportunities to incorporate the needs of different learners within one architecture – including self paced, synchronous and non-synchronous learning. Additionally, the integration of diagnostics, leading to self tailoring of learning paths enables the learner to focus their efforts on areas where improvements are needed and relevant. The organization is then able to target investment in the development of sufficient capacity of critical skills and knowledge. Testing and validation drives for consistency.

Key Point:

TEL solutions can be designed with the flexibility to support skill practice, building confidence through interactive and instantaneous feedback.

Commit to support and application

The use of the word 'commit' is deliberate. No matter how sound the design, how creative and engaging its deployment, there needs to be a surrounding set of organizational conditions which support the application of the learning. These could include:

- ❑ Early opportunities to practice the learning (e.g. joining a new project team or leading an initiative)
- ❑ Reward and recognition
- ❑ Celebrations of success
- ❑ Career progression
- ❑ Links to talent management



The designer of any solution will explore all possible opportunities to incorporate application and support for the learning. However, a TEL solution has many more opportunities for just in time application support, testing and validation, reinforcement, capture and communication of results. Effective use of the potential of TEL removes some of the variability and creates more systematic reliability around application and support.

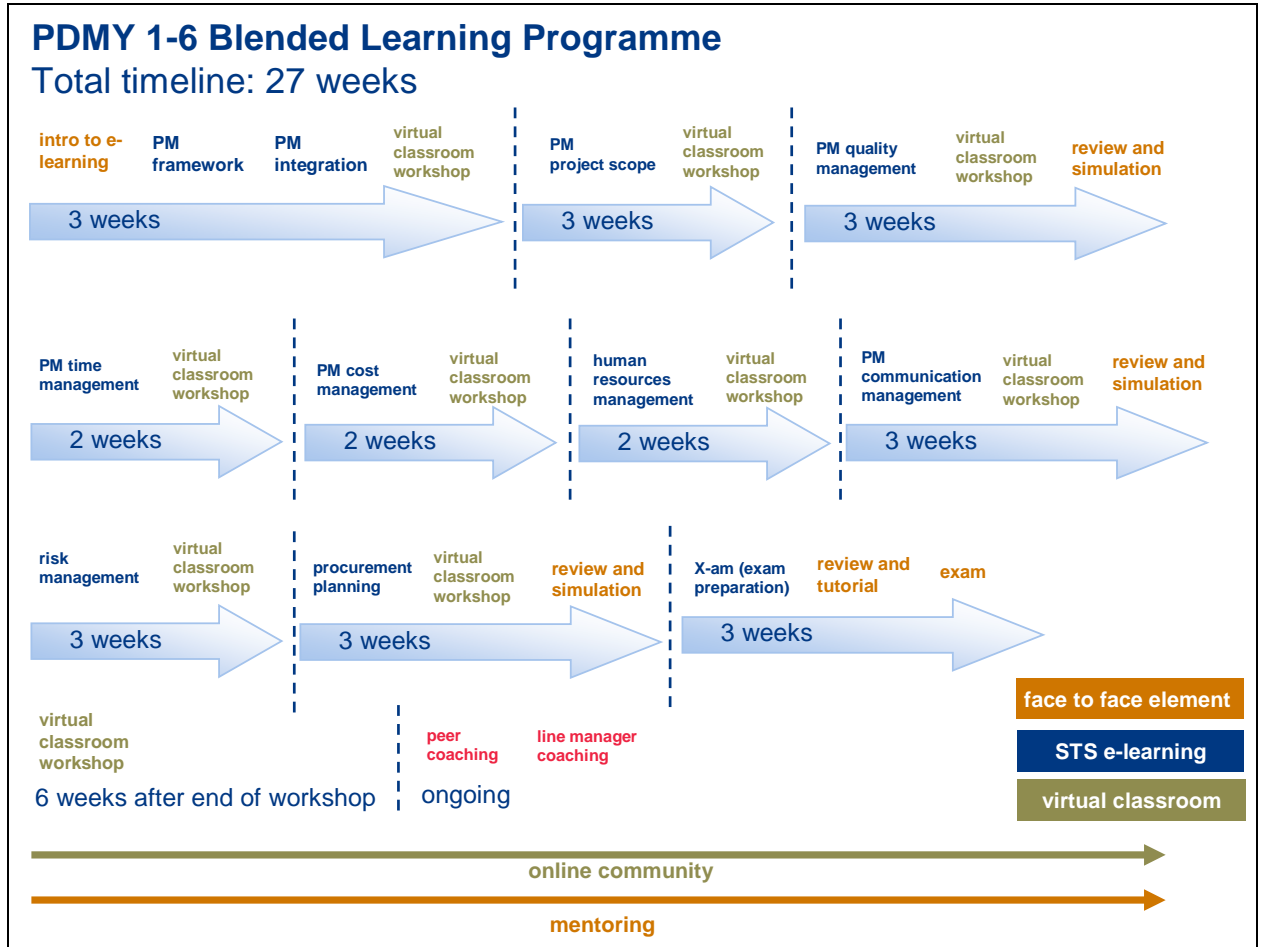
The cycle is completed by the *demonstration* of the value of TEL for the organization and the individual.

Key Point:

TEL solutions offer the opportunity to integrate additional support to enhance consistent application. Maximising the use of integrated support mitigates the risk of uneven adoption and application of the learning.

An effective, multi-component TEL solution

The following example shows a multi-component blended Project Management (PMI's PMP) qualification training program. The objective of this program is to support a number of teams through the process of gaining the PMP qualification, and ensure that the new knowledge and skills are fully implemented in the workplace.



This particular example works well because:

- ❑ The learning is aligned to the **creation of value** for individuals through a recognized qualification and the integration of real work creates value for the organization.
- ❑ A combination of learning methods creates a **balance of challenge and support**:
 - ▢ Meeting face to face allows the group to become comfortable with the tools and approaches – and get to know each other (which helps to aid ongoing collaboration).
 - ▢ Creating a development plan with the tutor allows the participant to tailor the learning approaches to their personal situation and learning style.
 - ▢ Providing theoretical content via e-learning enables participants to learn at their own pace, but tracking ensures that everyone is in the ‘same place’ when it comes to the virtual classroom sessions.
 - ▢ Collaborative virtual classroom sessions help consolidate learning and provide opportunities to ask questions of an expert and engage in practical exercises and discussions.
 - ▢ Face to face simulations allow participants to test out their developing skills in a realistic, yet safe, environment.

- o The X-am online exam preparation tests participants' knowledge ahead of the actual test and increases their confidence

The solution is inherently **multi-component**, creating flexibility and opportunities for re-use of the components.

There numerous mechanisms throughout the learning journey which develop **capability** (including validated skills and knowledge) but also incorporating interactions which build **confidence**.

There are a number of measures which provide for **support and application**, including:

- o The ongoing mentoring and support from the tutor ensures that the milestones are clear, the group stays together and is focused and that each individual achieves their personal learning objectives.
- o The feedback and commentary the participant receives throughout the e-learning and the 'scores' that participants can use to judge their progress.
- o The reporting opportunities which the e-learning elements present for the tutor to assess achievement offer personalized support.



Participants using the STS SimulTrain Project Management simulation

Conclusions

In this paper we have

- 1 Presented an expanded vision of Technology Enhanced Learning, which benefits from the full range of technologies now available
- 2 Drawn a distinction between this new vision and historic approaches to learning – including more traditional approaches to e-learning
- 3 Examined the organizational drivers and strategic implications of adopting a Technology Enhanced Learning Strategy
- 4 Described current thinking on how to design learning solutions focused on optimizing the best use of a variety of available technologies
- 5 Shown how a proven cycle of decision making (The Five Principles™) underpins an integrated approach to measurement strategies and ensures that the optimum solution creates demonstrable value

In conclusion, Technology Enhanced Learning (TEL) offers great opportunities for addressing the learning needs of organizations, enabling them to improve their effectiveness and productivity, and to flourish in rapidly changing times. Just as approaches to work and learning are converging, so are our attitudes and approaches to using technology. In the past, 'conversion' approaches to e-learning used technologies because they were there, and because they offered significant cost savings. In contrast, today's TEL solutions use the most appropriate technologies for the learning context, offer flexibility, and deliver real value to both organizations and individuals.

Whilst understanding the applications of the available technologies is important, the challenge for learning and development professionals is to maintain the focus on learning and the learner, rather than the technology. We have shown how the cycle of Five Principles™ can be used as a decision making tool to support the creation of high impact, multi-component TEL solutions, which maintain this focus. A TEL Project Checklist is available in Appendix 2 to support learning and development professionals to clarify initial thoughts around developing a TEL solution.

About Hemsley Fraser and the Demos Group

We are experts in learning.

We use the most appropriate learning intervention to effectively solve the learning need and our customer's objective, within budget. We utilize a multi-component blended approach to learning technologies in order to optimize the learning experience and deliver the desired outcomes – skills, knowledge, behaviors and attitudes.

Our learning solutions are designed with you to match your needs precisely. Working with you from the earliest possible opportunity, we ensure your objectives are met in full and that the outcome has a sustained impact back in the workplace.

We will design and deliver the solution that best fits your need, culture, values, learning style and way of working.

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Appendix A: Applications of a number of different technologies within a multi-component TEL solution

Learning approach	Strengths	Weaknesses
<i>Classroom based (instructor led training)</i>	<p>Interactive, supports peer networking and 'real' play, good retention rate, can avoid office disruption.</p> <p>Most suitable for creating alignment around complex business issues (e.g. strategy) and for addressing underlying attitudes and beliefs which drive behaviors. Greatest leverage at the beginning of changes which need to be cascaded</p>	<p>Cost, away from workplace, often includes travel and accommodation.</p> <p>Complex logistics and other factors may limit access to learning opportunities.</p>
<i>Coaching</i>	<p>Interactive, supportive, low drop out rate, high impact, convenient.</p> <p>Most suitable for personalized learning and development on specific issues. Works well as part of wider program. Effective when the implications of individual or small group behavior has widespread implications</p>	<p>High cost, not necessarily away from workplace distractions, very dependant on quality and availability of coach.</p>
<i>Mentoring</i>	<p>Interactive, supportive, good low drop out rate, low cost.</p> <p>Most suitable as part of a wider development program.</p>	<p>Not necessarily away from workplace distractions, very dependant on quality and availability of mentor.</p> <p>Both mentor and mentee may require training for an effective outcome.</p>



Learning approach	Strengths	Weaknesses
<i>Multimedia e-learning objects</i>	<p>Great variety of interaction and presentation methods possible e.g. simulation, serious game, 3D modelling, no travel and accommodation, not away from workplace, convenient.</p> <p>Most suitable for high participant numbers, or frequently repeated programs. Transmission of information, basic concepts and skills, including practice</p>	<p>Without skilled instructional design can become 'page turning' with low levels of interactivity leading to low utilisation, low retention and low impact on workplace performance.</p> <p>The most creative e-learning can create bandwidth problems which prohibit use in certain organizations</p> <p>Cost can be prohibitive for small numbers of participants.</p> <p>Can be poor cultural fit, unless it can be easily adapted and customized.</p>
<i>Technology Enhanced Simulation</i>	<p>Interactive, can bring real work environment to the training session, high impact, engaging, challenges behaviors, good retention rate.</p> <p>Most suitable for training on high impact issues</p>	<p>May require additional theoretical input via e-learning or further instructor led training.</p> <p>Can be high cost.</p>
<i>Virtual classrooms</i>	<p>Participants in different locations can learn together, some interactivity, can demonstrate software or processes. Can be saved and made available for revision.</p> <p>Most suitable for short (max 2 hour) sessions to support knowledge or skill development, or support ongoing learning.</p>	<p>Interactivity is limited, requires audio or parallel telephone conference, not necessarily away from office distractions, requires skilled facilitator to engage participants, may require technical support.</p>



Learning approach	Strengths	Weaknesses
<i>Practice tests</i>	<p>Effective in support of qualification programs, good to consolidate prior learning and to validate learning.</p> <p>Most suitable for compliance topics or for exam preparation.</p>	<p>Not a replacement for learning, can be a bit 'dull' – depending on the range of testing vehicles available within the application</p>
<i>Podcast / audio clip</i>	<p>Low cost, easy to create. Can be downloaded to personal device for mobile access.</p> <p>Most suitable for short briefings, tips and techniques, offering quick personal insight into an issue e.g. interview with x about developing a personal 'brand'.</p>	<p>Not appealing to all learners, requires audio (not all organizations have this), not suitable for more complex or deeper learning, factual or detailed content without the support of a wider learning program.</p>
<i>Distance learning</i>	<p>Combines a number of approaches to learning e.g. forums, podcasts, e-learning and more traditional text based study materials.</p> <p>Most suitable for longer term, professional training and academic qualifications, self paced learning.</p>	<p>Not suitable for all learners, interactivity varies depending on approaches to learning used, requires ongoing facilitation and very self disciplined learners</p>
<i>Online collaboration and communities of practice e.g. using Blogs, Forums, Wikis</i>	<p>Interactive, potential for peer networking and developing communities of practice, help with on-the-job and just-in-time learning by creating a permanent information resource.</p> <p>Most suitable for online action learning and case studies, peer-to-peer or peer-to-expert support as part of a wider program.</p> <p>Also useful for informal learning initiatives.</p>	<p>Difficult to control, direct and structure user content, require moderation, success is dependent on large or active user group</p> <p>Some organizational IT policies restrict use of such TEL methods</p>



Learning approach	Strengths	Weaknesses
<i>Mobile learning – e.g. mobile phones, iPods, PDAs</i>	<p>Convenient, works well for dispersed teams, gives learners more control, no travel or accommodation costs.</p> <p>Most useful for essential, just in time learning or decision support for field workers e.g. engineers or sales people</p>	<p>High cost, platform dependent, not suited for large volumes of text, not ideal for office environments</p>
<i>Knowledge management</i>	<p>Helps with on-the-job and just-in-time learning, helps maintain productivity levels, convenient, time saving</p> <p>Most useful where a large number of people repeatedly need access to the same up to date information to enable them to do their job.</p>	<p>Time consuming to set up initially, requires close attention to ensure accuracy and up-to-date</p> <p>Success depends on the culture of knowledge sharing and collaboration, including senior level sponsorship</p>



Appendix B: TEL Project Checklist

The following high level Project Checklist can help to clarify initial thoughts around developing a TEL solution.



Clarity of roles within the project team	
Early involvement with IT – ensuring any restrictions and policies are understood	
Clear sign off process at key stages to ensure quality is built in, minimizing post pilot work	
Early consideration of the measurement strategy	
Integration with the learning culture of the organization	
Where the TEL solution represents a considerable innovation, ensure effective sponsorship and stakeholder management to support adoption	
Ensure that the overall TEL architecture, design and learning experience is tested against best practice principles of workplace learning (e.g. The Five Principles)	



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