Implementing virtual classroom technology: The challenges and opportunities

A case study of an Irish based Insurance Company

Introduction

As organisations look to more efficient ways of updating employees' knowledge and skill the role of e-learning as a method of training delivery has become increasingly more important (Wargnier 2010). Authors such as Rosenberg (2006) recognise e-learning as an important structure that supports both formal and informal workplace learning. Research into e-learning in workplaces is limited however and tends to consist of anecdotal accounts from organisations with a US focus (Newton & Ellis 2005). There is a need for more exploratory research into the processes involved in adopting e-learning in different learning contexts and as Newton & Ellis (2005) suggest it is important for research to identify the distinct traits of work place learning and the aspects which may influence effective e-learning implementation.

This case study explores the implementation of web conferencing software as a means to deliver training both synchronously and asynchronously within an Irish insurance company. It provides a perspective on the challenges encountered during implementation and how issues affecting the production of high quality e-learning content were overcome. The insurance company was set up in Ireland 40 years ago and has grown to become one of the largest insurance companies in the Republic of Ireland, providing insurance for over 500,000 customers. Currently the company employs approximately 1,000 people; two-thirds of the workforce is based in Dublin with the remaining employees located in 32 sales offices around the country. Prior to implementation of the technology, training in the organisation has been delivered using asynchronous e-learning modules and by departmental trainers who teach in classrooms or provide one-to-one coaching. The case study was undertaken during an eight month period prior to the planned launch of the technology by the researcher who was a member of the Learning and Development (L&D) function and part of the project team assigned to implement the technology. The research questions which guided the data collection for the study were:

1. What are the steps taken to ensure successful implementation of new learning

technology in the organisation?

2. When creating content using new learning technology, what are the factors that affect quality?

Why organisations implement e-learning

The reasons for implementing e-learning within corporate organisations tend to centre around its cost effectiveness, consistency, flexibility and convenience to users (Gunasekaran et al. 2002). However the main reasons for implementation in organisations can be discussed under two main themes which are cost reduction and flexibility (Macpherson et al. 2005)

Within the area of cost reduction organisations can experience savings through "learning compression" see (Kineo 2012) which is a reduction in the actual time taken to deliver training. For example, Toshiba American Business solutions (TABS) transformed a seven-hour, instructor-led session on Six Sigma8 for management into three, 45-minute, self-paced online training modules (Mallon 2009). For companies with geographically dispersed employees there can be huge costs saved in travel expenses and time away from the workplace, Xerox cut travel expenses in Europe by as much as 10% (Hopp 2012), while the implementation of a virtual instructor led training programme saved Emerson Network Power Liebert Services over $100,000 in travel costs (Weinstein 2011). Other areas where cost savings may be experienced are in the reduction of the number of trainers required (Macpherson et al., 2005; Mallon, 2009), a reduction in the organisations carbon footprint through presenting learning content online or providing alternatives to paper based forms of communication (Kineo 2012) and the ability of e-learning to deliver training to large numbers of employees (Arth, 2011). While corporations may implement e-learning to reduce costs, this is not always the outcome. At the end of the 90s the enthusiasm for e-learning coincided with the internet bubble bursting, leaving managers to review their e-learning investment and wonder what value had been achieved (Rosenberg, 2006). Challenges affecting return on investment are long implementation cycles and investment in systems which do not integrate with the existing infrastructure (Pack 2002) or investment of

time and money with a vendor who is subsequently unable to meet the requirements of the organisation (London & Hall 2011a).

The discussion on flexibility tends to focus on two aspects; flexibility in delivery and flexibility in the pace and dissemination of learning (Macpherson et al. 2005). The traditional definition of the workplace as being a single location with normal daily hours is being replaced by global organisations and communication networks that change the notion of standard work hours and incorporate multiple geographical locations (Jones & McCann 2005). They contend that technology provides the answer to providing the flexible learning environment that employees now require. Rosenberg (2006) supports this argument contending e-learning "conquers" (p. 4) time and location and facilitates immediate content updates and interconnectivity. As a medium e-learning has the flexibility to deliver across all areas of work based learning such as induction, new product information, career development training and updating work knowledge and skills (Wargnier 2010). From an employee perspective, employees often have different needs for information and want to learn at a time and pace that suits their own ability and lifestyle. E-learning provides organizations with a medium that can be adapted to different trainees without modifying the actual training content (Long & Smith 2004).

Barriers to the effective implementation of e-learning

While the use of appropriate pedagogical design is imperative for effective training through any medium, literature highlights other factors that may impede or increase the effectiveness of e-learning within the corporate context. Waight & Stewart, (2005) propose the success of corporate e-learning is reliant on "championing factors" (p. 338). These factors are defined as leadership, learning culture, technology infrastructure and financial support and are explored here in further detail.

Research has indicated a higher level of resistance to e-learning from more senior levels in organisations (Macpherson et al. 2005). There is a need for senior management to lead the way and embrace new ways of learning, as if they fail to do this there is no encouragement for the rest of the workforce (Hopp 2012). Employees judge the importance of a training initiative by their managers' reaction to it, this reaction will either promote or discourage

their participation (Weinstein 2011). The study completed by (Cheng et al. 2012) supports this view with their findings indicating that supervisor and manager reinforcement acts as a motivator for employees expectations of gaining a beneficial outcome from using e-learning.

Learning culture can be defined as "a collective set of values, processes and practices that influence and encourage self-sustaining and continuous learning in the organization" (Arth 2011), (p. 26). Tynjälä & Häkkinen (2005) propose e-learning is not a "miracle remedy"(p. 325) to workplace learning and contend the success of e-learning is reliant on the learning culture. Roy (2010) agrees and argues that the development of an e-learning culture is a requirement to ensure an effective transition to e-learning. Responsibility for creating a learning culture lies within the role of the manager. Managers need to raise awareness with employees of the role of e-learning in their own individual development and in organisational development (Masie 2001; Roy 2010). The difficulty that exists for organisations is that different units within the same organisation may have a different learning culture which adds to the complexity of implementing an e-learning strategy (Hodkinson and Rainbird 2006).

While technology enables e-learning it can also be a barrier within organisations to the achievement of its possibilities (Macpherson et al. 2005). Medárová et al. (2012) highlight barriers such as poor connectivity, inadequate software and a lack of technical support. Sun et al. (2008) argue that as e-learning needs the internet the learning environment is more complex and slow response times or regular technical difficulties deter learners from taking online courses. There is a need to upgrade employees skills in technology, ensure technical support is available and increase bandwidth where needed to overcome the barriers identified (Roy 2010) while Sun et al. (2008) remind us that flexibility is an important factor in e-learning satisfaction and system administrators need to ensure all system functionalities are always available to ensure it accommodates learner needs.

As financial resources support the learning culture and the technology infrastructure, they are a key component in creating relevant and authentic learning experiences (Waight & Stewart 2005). The case study completed by Newton & Ellis (2005) emphasises the need for policies supporting on-going infrastructure funding. They contend where e-learning projects

were not centrally funded development was “erratic and often inadequate” (p. 388) and suggest strategic support resulted in e-learning acceptance and a coordinated approach to course development, training methods and infrastructure requirements.

The evolution of e-learning within organisations

In his book *Beyond E-Learning: Approaches and Technologies to Enhance Organizational Knowledge, Learning, and Performance* Rosenberg (2006) refers to the thoughts of a colleague who suggests that organisations go through three stages with e-learning. The first stage is “we need to get into e-learning” (p.2) the focus during this stage is on producing as much content as possible as quickly as possible. For learning and development departments new to the concept of e-learning the use of learning technology to deliver training can prove difficult. Learning professionals are interested in using new tools and technology but do not have an understanding of how to do so and struggle to create innovative content (Bozarth 2012, Holcombe 2005). Littlejohn et al. (2008) suggest understanding how technology may be used is evolving and they contend teachers are in the position of learners as they explore how technology may be used effectively to deliver training. There is a tendency to use a technology oriented approach to training rather than the use of technology in tandem with other strategies to deliver training (Holcombe 2005). Wang et al. (2010) suggest this focus on technology has led to a perception that e-learning content is poorly designed and lacking in quality. (Wang et al. 2010)

It could be argued that it is this realisation that technology itself will not deliver effective training that leads organisations to move to the second stage that Rosenberg describes as “we need to get better at e-learning” (p.2). For many organisations pedagogy is not viewed as a relevant issue as there is an expectation that effective learning will automatically occur once the technological infrastructure is in place, (Welle-Strand & Thune 2003). They propose there is a need for a corporate learning strategy that combines technological and pedagogical considerations for the use of e-learning. By ensuring the appropriate pedagogical approach is taken organisations are laying the foundation for effective e-learning which is more likely to achieve its full potential (Mitchell & Honore 2007; MacPherson et al 2005). Anderson (2009) illustrates the inter relationship between technology and pedagogy through the metaphor of dance, comparing technology to music

and pedagogy to choreography. He argues technology and pedagogy "reveal and develop our human creativity and responsiveness and allow us to learn effectively and enjoyably". (p. 2)

The third and final stage discussed by Rosenberg (2006) is "we need to support workplace learning and performance across the organisation" (p.2). During this stage the aim is to move from formal learning to both informal and formal learning and organisations design e-learning solutions that encourage knowledge sharing, collaboration and performance improvement within the context of work itself. For learning and development departments the shift towards informal learning and social learning within the workplace means their traditional role of content creation and delivery is changing. There is a need to acquire new skill sets to cultivate social learning and manage the level of content creation within the organisation (Mallon 2009). During this stage web 2.0 technologies can be used to promote employee controlled learning environment, company customised sites similar to Facebook, Twitter and Youtube help employees understand and simplify information and resolve problems (London & Hall 2011b). Arth (2011) describes the influence of web 2.0 on e-learning design as "next generation e-learning" (p.12), and suggests it is a trend towards smaller chunks of content often designed by the employee which is framed in the context of work and is available at any time. The result is a continuous learning process rather than a one off event. The topic of quality within e-learning was contentious during earlier generations of learning technology and is even more contentious when web 2.0 technology is used in learning (Ehlers 2009). He contends with more traditional e-learning methods the need is to check and control quality whereas with e-learning 2.0 scenarios quality development is becoming the "role of enabler" (p. 303) of learning advancement with procedures such as feedback, reflection and recommendation becoming increasingly important.

Exploring the Challenges and Opportunities

The case study begins by reflecting back on previous e-learning experiences before exploring the current implementation of learning technology to support synchronous and asynchronous online learning. It uses the championing factors for successful e-learning implementation defined by Waight & Stewart (2005) as a lens to explore the elements which

were present or absent during early implementations and the current implementation.

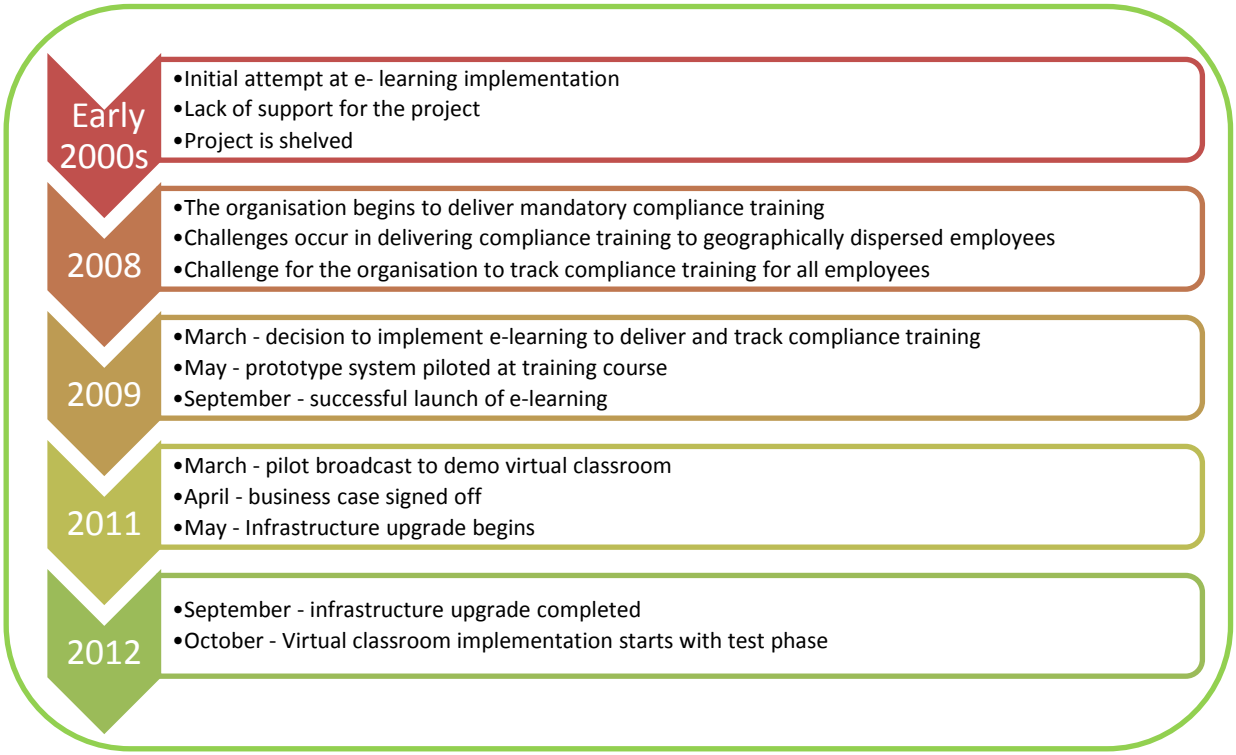

Fig. 1 Timescale of previous and current e-learning implementations

Previous e-learning experiences in the organisation

The first attempt to introduce e-learning into the organisation was in the early 2000s see fig 1. At that time it was seen as a means to deliver training cost effectively to the network of geographically dispersed sales employees. This attempt failed – an examination of Waight & Stewart's (2005) championing factors illustrates none were present. There was a lack of support for the solution from senior management. Anecdotal data indicates management were not fully aware of the affordances and benefits of the solution. The team proposing the implementation reflect that this may have been because they were unable to align the e-learning solution to the organisation's needs. At that time the training culture within the organisation tended to avoid training solutions delivered by external consultants. The perception was, the level of expertise within the organisation was sufficient to meet training requirements. This view extended not only to external e-learning solutions but also to the provision of face-to-face soft skills or technical training interventions by external providers. The existing technology infrastructure within the organisation was insufficient to support e-

learning requirements and broadband was not widely available. The organisation had just heavily invested in installing a computer system in each of its regional sales offices and anecdotal evidence suggests there was no appetite to invest further in technology at that time.

With the launch of the Irish Financial Services Regulatory Authority (IFSRA) in 2003 the increasing regulation of the Irish financial sector led to the implementation of Minimum Competency Requirements (MCR) in 2007. These requirements became mandatory on the 1st January 2008 see fig. 1. Although the organisation began to deliver the required training, challenges arose in the area of tracking and recording the completed training and in delivering the required training to geographically dispersed employees. In March 2009 e-learning was identified as a possible solution to deliver and track compliance training and the decision was taken to implement a customised version of the open source Learning Management System (LMS) Moodle as a platform to deliver and track asynchronous compliance modules designed using the Articulate software package. An analysis of Waight & Stewart's (2005) championing factors indicates that this time all were present. There were significant changes in the leadership of the company which opened the door to investigating new possibilities. Newly appointed heads of Information Technology (IT) and (L&D) brought innovation and knowledge of open source e-learning tools into the organisation. Schein (1999) contends it can be difficult for insiders to recognise their own cultural strengths and limitations and suggests projects for cultural change work best with a combination of "outsiders and insiders working together" (p. 342). This combination of outside and inside expertise led the way to ensuring the leadership support required for e-learning implementation. In terms of the learning culture, Shapiro (1999) discusses the concept of "Infectious Commitment" (p. 344) suggesting if employees can catch the infection of advocating change it has the potential to become an epidemic within an organisation. In April 2009 a prototype system was built and piloted at a two day training course which took place during May 2009 and was attended by over 200 employees. The prototype engaged employees with the system, generating confidence in the system's ability to deliver training and in the employee's own ability to use the system without any technical difficulties. These early advocates engaged other employees with their

experiences of e-learning and contributed towards a successful launch and uptake of the new system in September 2009. To ensure continued use and create ownership of the LMS and the content, e-learning modules were designed using input from employees and managers from all areas of the organisation. The technology infrastructure in 2008/2009 was inadequate to support e-learning, in view of the urgent need to implement a solution, medium term infrastructural issues rather than long term infrastructural issues were prioritised to ensure delivery of the technology requirements within the project timescale. This led to the installation of dedicated e-learning PCs across the organisation. Finally in the area of finance, it was recognised that there was a need to improve the existing technology infrastructure to support e-learning implementation. A budget was made available to support the upgrade in hardware that was necessary.

It can be seen that the presence of all championing factors ensured appropriate leadership support was present, employees were prepared for a new form of learning, the infrastructural changes deemed necessary were completed and finance was available to ensure successful completion of the project.

New Challenges

Within a year of its launch e-learning became an accepted medium for training delivery within the organisation. Feedback from employees indicated they liked the ability to learn at their own pace and at a time that suited their busy schedules. Access to the LMS from home was available at the time of launch and continued to be a feature regularly used by employees as they completed their mandatory training. Managers too were quick to realise the benefits of the medium which delivered training without the need to take employees out of the workplace. To build on the ownership of training content which was achieved at the time of launch, it was decided to continue to design bespoke e-learning modules and an instructional designer was appointed to bring content creation in-house and liaise with internal Subject Matter Experts (SMEs). In 2010 approximately 20 online courses were available for completion on topics ranging from compliance and product information to technical and process updates, with over 8000 hours of mandatory compliance training completed by 500 employees before the year end.

With an ever increasing demand for e-learning from within the organisation and external economic factors leading to constant change in employees' roles and thus a constant requirement for immediate training, a review was undertaken of current methods of training delivery by the L&D manager. The result of the review was that there was a need to facilitate faster content development and take a more blended approach to training delivery. On this basis it was decided to implement virtual classroom technology which would facilitate synchronous and asynchronous online training. It was anticipated the technology would facilitate quicker content development through the use of pre-recorded modules and enable the blended approach to training delivery that was desired.

A web casting system supplied by an Irish company was identified as a viable solution. The system enabled live web casts which could be recorded for future reference and featured text chat which facilitated interaction between the trainer and the learners. In March 2011, to influence leadership support for this new form of training, it was decided to prepare a short broadcast for all senior managers and executives to demonstrate how the technology worked. Managers who attended the demonstration agreed the technology provided a viable solution to not only training requirements but also to the organisation's new communication strategy. Evaluation of the championing factors indicates that although leadership and financial support were present, the existing technology infrastructure was unable to support the increased demands of the new technology. The required upgrade to the infrastructure was a significant project which was estimated to take between a year and 18 months to complete. It commenced in May 2011 and was completed in September 2012 and during that time it was not possible to continue with the virtual classroom project. On completion of the infrastructure upgrade, a project team consisting of a member from the organisation's IT department, two members of the L&D team – one of which was the researcher – and other employees as required, began to work on implementing the original solution identified, to deliver synchronous and asynchronous online learning.

The implementation stage – ensuring the championing factors are in place.

The impact of the infrastructure upgrade was that, all citrix terminals across the organisation were replaced with new citrix terminals which could support audio and video. This was quite significant as now all employees could complete e-learning modules or access

live webinars at their own desk. This aspect was important for a number of reasons, firstly for compliance purposes evidence of attendance at compliance webinars would require employees to log in individually to the webinar using their unique network identifier and secondly management felt that the impact of a live web cast would be lost if employees could only access it on a dedicated e-learning PC. The decision was taken to implement the system first used for the pilot broadcast see fig 2.

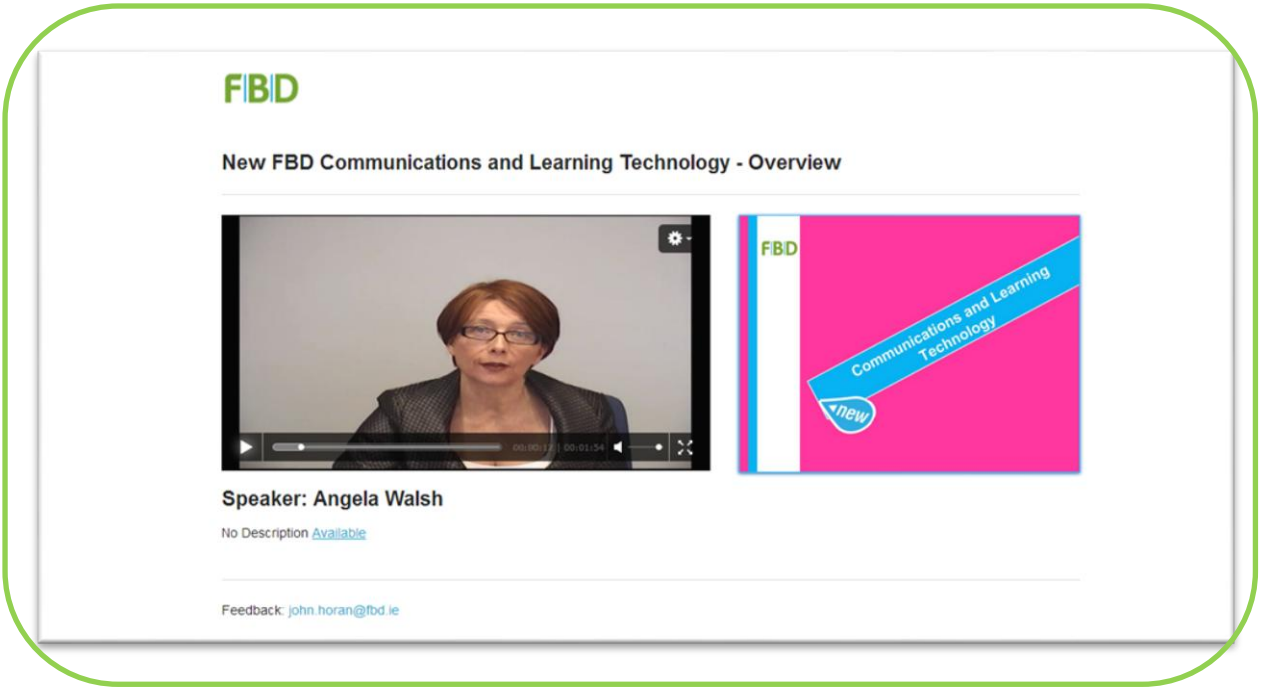

Fig 2 Example of user interface for virtual classroom

This technology is currently used by several third level institutions to deliver lectures through live webinars and includes a text chat facility to allow students pose questions. Live broadcasts are recorded and may be accessed through the institution's LMS. Although this solution does not include several features of other applications such as white boards, polling or breakout rooms it was decided the ability to broadcast live with text chat and pre-record training sessions met the immediate requirements of the project and the system would be reviewed after a year to discuss if it continued to meet the needs of the organisation. Several layers of testing were required: firstly proof of concept testing to ensure a high level of audio and video quality and secondly load testing to ensure any training or communications delivered using the technology would not impact on the business critical

applications required for day to day business. The level of testing required proved to be significant as the vendor had never implemented the system in a corporate setting using a citrix network. In view of the high level of investment which had already been made it was agreed that any compromise on quality standards would negatively impact the continued use and acceptance of the system and it was agreed that testing should continue until the desired quality levels were achieved. The impact of the extensive test phase was a delay in the launch of the technology; however parameters for the number of users accessing the technology and for the quality required for audio and video have been identified which would reduce test schedules for any similar type technology in the future.

At all stages during the test period and before launch, opportunities were taken to involve senior management in discussions about how the technology could be used in their business area. Short recordings were made using the technology to enable managers visualise what could be achieved. Some managers felt the medium demanded a higher level of presentation skills and it was agreed to engage a media expert to provide coaching for presenters. The short recordings succeeded in generating a high level of interest in the technology. Sales managers began to review how their monthly communications to sales offices could be delivered using the medium, broker managers reviewed how the technology could be used to deliver updates and training to external brokers and in so doing build and strengthen business partnerships and underwriting managers planned to use the technology as a means to record compliance modules they had developed, so that they could be shared with other areas of the business.

Opportunities were also taken to involve employees with the technology before it was officially launched with a view to creating a link with early adopters and engaging them as proactive advocates of the technology. For example a short recorded link was shown at an employee communications forum and a short live broadcast was demonstrated during the annual sales conference. In both cases feedback was positive; at the forum employees commented on the quality of the link while at the sales conference attendees favoured the ability to interact with a trainer online without the need to travel. This reaction may have been influenced by the fact that the attendees had already attended several day long training sessions in the months prior to the conference which meant that in addition to

being away from the office they were also away from home.

The L&D team consists of the L&D manager and a core team of three people – one of whom is the researcher. This core team work on e-learning projects and provide e-learning support to five departmental trainers who deliver classroom style training and one to one coaching. Initial interviews with the core L&D team and departmental trainers indicated all with the exception of the L&D manager, the researcher and one other trainer had no experience with synchronous online training either as a student or a facilitator. Reaction to delivering online whether recorded or live was generally positive with trainers realising it was a natural progression from what had already been achieved online though one trainer did suggest it was not for her and there may be a need for trainers to design content with the aim of it being delivered by a "broadcaster". This sentiment was echoed by the L&D manager who although she was the project sponsor felt she would not be part of the team in front of the camera, preferring to act in the role of "producer or director" behind the camera. The provision of media training for trainers was viewed as a positive addition by everyone, with trainers regarding the workshops as a safe environment where they could practise and receive feedback from a media expert. They also felt the workshops would allow them to interact and become familiar with the technology which would increase their levels of confidence when using it in the future.

The early sign off on the business case for the technology indicates the level of financial support for the implementation. During implementation additional costs arose in the area of the purchase of additional hardware and the provision of media training. Whilst there was no open ended budget, the feedback from senior management was that there was a preference that the project be launched with high quality content, their thoughts were that the significant investment would be lost if the content was not high quality and employees have a negative experience during initial usage.

Creating content and using the technology

In March 2013 a 14 month Management Development Programme (MDP) for 220 managers from all business areas was launched with 6 two day workshops. This programme was the

organisation's first attempt at a blended learning solution. The rationale for this approach was the result of a discussion with the CEO who felt that a programme should be designed which embedded the learning achieved during the workshops and allowed managers to reflect on how they were applying their skills. Therefore after the first two day workshops, managers were required to complete monthly activities online. Each month's activities concentrated on a specific topic covered during the workshop and it was decided to use the virtual classroom technology to create short pre-recorded modules using the trainer who delivered the original workshop content. In addition it was hoped the monthly activities would eventually include live online webinars with SMEs from industry.

With short lead in times before the recordings were required, it was decided to take an agile development approach and engage an external media expert to provide advice to presenters during the recording sessions. For the first online module 12 short recordings were required. Eight of the recordings were to be completed by the trainer who delivered the MDP content during the workshops. The CEO, L&D manager, Human Resources manager and an internal trainer completed the remaining recordings. During this phase the team encountered several challenges which led to three iterations of content development before the desired level of quality was achieved.

At the first recording session constraints were found with the virtual classroom technology. Although the technology was selected for its ability to facilitate a synchronous online classroom and as a method to pre-record asynchronous training modules, its strengths lie in the area of live broadcasts or in creating pre-recorded modules where the trainer is seated close to a webcam and microphone. Acting on feedback from the media expert it was decided that the trainers and presenters should stand throughout their delivery, as it was more engaging and inclusive than being recorded seated behind a desk. The system was unable to record the audio satisfactorily in this case. This led to the decision that the best usage of the web casting system was for live broadcasts and it would be necessary to use other methods for pre-recorded modules. Secondly the scripts developed for the presentations were written to be read rather than spoken. Feedback from the media expert indicated how the scripts could be changed, as this feedback was not received until the day of the first recording session a significant amount of recording time was taken up with

rewriting scripts. Presenters also needed additional rehearsal time with the new scripts incorporating feedback from the media presenter into their delivery style and presentation. The recordings from the first session were deemed not to be of the desired quality.

During the second day of recording the challenges encountered centred on the equipment used which was a video camera and microphone. When the recordings were reviewed it was felt that presenters were not as engaging as they had been in the first set of recordings, presenters said this was because of issues with the microphone used, they were unable to move even slightly during their presentation which led to a more stilted delivery. In addition it was felt that because there was no autocue used presenters were unable to talk directly to the camera and this also detracted from their delivery. Although the audio and video quality of the second set of recordings was much improved on the first set, it was felt that the presenters' delivery lacked the level of energy and engagement desired.

The deadline for online content continued to impose a level of urgency. Discussions with senior management led to the decision to withhold the launch of the online modules until the desired level of quality was achieved. Management felt that a substantial investment was made in the MDP programme to bring about change in the management culture of the organisation. The first workshops were highly successful with managers energised and enthusiastic to implement new ideas. It was felt that high quality training content in the monthly online modules was vital to embed and build on the learning achieved during the workshops. To ensure that the third recording session was successful it was decided that the following was required:

- The media expert was to be present to provide feedback on personal appearance and delivery style
- Autocue to be used
- Clip microphones to be used
- Playback facility to be made available to view the recordings on the day

The completed recordings reflected the benefit of the additional equipment and the learning achieved from the previous two recording sessions. The recordings were deemed to be the desired level of quality and were used for the first month's online activities of the

MDP programme.

After the recordings were completed feedback on the experience was obtained from all of the presenters with the exception of the CEO. The external trainer, who had the most modules to record, had previously seen recordings of himself. He acknowledged the media expert improved his delivery style and script and felt the final recordings were the best he had ever achieved. The other presenters had no experience in delivering training in a video format. They also acknowledged the input of the media expert as being invaluable during the process. The L&D manager in particular felt she was confident she had gained the skills required to feel comfortable in front of the camera and deliver in an engaging manner. All presenters commented that the use of autocue in the final set of recordings helped them to improve their delivery style, they felt it reduced the number of elements that they needed to concentrate on during their delivery.

The high level of presentation skills and delivery has set a benchmark within the organisation for those who will use this medium, and this in itself could be seen as a deterrent to others who may feel that they could not produce similar results. To ensure that the high level of quality is maintained all managers and trainers who will record training or communications will attend media training.

Conclusion

Critics of the case study as a method of research, point to its lack of objectivity and generalizability. However this study has provided what Creswell (2013) describes as "general lessons" (p.99) which may be used when implementing new learning technology within work based learning. The use of Waight & Stewart's (2005) championing factors for successful implementation of e-learning has proved valuable in illustrating what should be considered by organisations who may be contemplating the introduction of learning technology. The case study shows the presence of all factors have contributed to the success of the initial implementation of e-learning within the organisation and the most recent implementation of new learning technology. A factor however which is not considered by Waight & Stewart is the role of motivators or drivers be they external or internal to the organisation that provide the context or rationale for introducing new

learning technology. These drivers provide the reason why new learning technology should be introduced and can aid in aligning the technology to the organisation's learning strategy which supports the organisation's wider business needs and goals. Successful e-learning depends on increasing awareness of how learning takes place and how it is related to the organisation's strategy (Slotte & Herbert 2006).

The initial implementation of e-learning within the organisation coincided with the first stage of e-learning in organisations which Rosenberg (2006) describes as "we need to get into e-learning" (p.2); this stage saw the need to create as much e-learning content as possible as quickly as possible within the organisation. The case study illustrates that the organisation has moved to stage two "we need to get better at e-learning" (p.2). According to Rosenberg a characteristic of this stage is a focus on quality and impact. This research demonstrates that beginning with the test phase, and continuing on to the content design and delivery phase, quality and impact were the main reasons why the test phase was extended and why it took three iterations of content creation to achieve the level of quality required.

While the research indicates the organisation has moved to Rosenberg's (2006) stage 2. There are indications that the foundations are being laid for the organisation to move to stage 3 where the aim is to design solutions that encourage knowledge sharing and collaboration leading to performance improvement. The provision of training on how to use this technology appropriately to as many people as require it so that they can design and create their own training with the support of the L&D department is a first move to enabling a culture of informal training and collaboration.

Although it was anticipated the webcasting system would support live broadcasts by guest speakers and trainers throughout the MDP, experience gained during the design and recording of the initial online modules has led to a decision to introduce these new methods of delivering training on a phased basis starting with the asynchronous modules recorded by trainers and eventually moving to synchronous online broadcasts. It is anticipated that the skills acquired during the development of asynchronous modules will provide a solid foundation for the progression to synchronous online broadcasts.

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