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The influence of organisational culture on e-learning design in the Australian Army

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Abstract

This study identified that organisational culture is significantly influencing e-learning design in the Australian Army. For organisations with hierarchical and authoritarian management and training cultures, e-learning provides opportunities for standardising content, delivery and course management while challenging traditional priorities, beliefs and practices. This research-based case study of the Australian Army focussed on the perspectives of key stakeholders in the Army involved in e-learning, including senior training managers, instructors, instructional designers and trainees. Within this context e-learning design was found to reflect the priorities in organisational culture and it is also explicitly designed to enculturate learners. This inductive approach was used to develop a model which maps the sources of organisational cultural influence on e-learning design. Implications of these findings for further research in different contexts are provided.

Keywords

e-learning, educational design, organisational culture, socio-technical approach, Australian Army, case study

Introduction

Previous research by the authors of the e-learning literature indicated a need for more exploratory research into the processes involved in the adoption of e-learning in different contexts (Newton 2002; Newton, Hase & Ellis 2002). While there is research into e-learning in the military sector overseas, particularly in the U.S. (Wisher, Sabol & Franklin 2002; Abell 2003) this study represents the first external research investigating e-learning in the Australian Army.

Some current research in the Vocational Education and Training (VET) sector suggests that there are organisational influences on e-learning design which need to be better understood. For example, the Australian Flexible Learning Framework (AFLF) (2003) has summarised a range of e-learning cultures and models. Examination of their summary reveals that, in general, traditional learning models have been transferred to the dominant e-learning model adopted: in the VET sector teacher-led classrooms and workshops were replaced by teacher-facilitated classroom based online learning. Therefore, the AFLF research suggests that priorities, beliefs and practices that have developed in an organisation's traditional training environment are influencing e-learning design.

Bate, Robertson and Smart (2003) also found in their Australian VET based research that there are many different approaches being used to combine delivery technologies and learning design models to cater for a range of learning situations. In particular, they found that within the VET sector e-learning content was primarily being delivered in non-Internet environments while design guidelines were based on Internet settings. This situation highlights a misalignment where assumptions about educational design do not match the realities of the context. Similarly, Bonk and Wisner (2000) discuss the importance of recognising inherent organisational differences including learning culture, social interactions, motivational and affective factors in designing e-learning. They argue that understanding these contextual factors is particularly important when attempting to transfer knowledge of learning innovations in one context to another context, for example

from higher education to workplaces. However, we raise the question of whether these contextual factors are often recognised in developing e-learning design?

This article provides a brief background to our study and highlights some of the findings that are informing the development of a model of factors influencing e-learning design in the Australian Army. While the Army provides a specialised context for e-learning, it also provides an excellent case study of an organisation where the organisational culture is well-defined. A model of organisational influences on e-learning culture is also proposed that provides an understanding of this process.

Research methodology

This article presents preliminary research findings of an ongoing study that asks:

- What factors are influencing e-learning design in the Australian Army context?
- How do these factors contribute to the development of a model of influences on e-learning design in this organisation as a case study?

To address the research questions it was necessary to use an approach that allowed the emergence of factors that were important to the soldiers and the development of a model. As there are insufficient research studies with a theoretical basis to form *a priori* hypotheses, an inductive Grounded Theory (Glaser & Strauss 1967) approach was selected as the appropriate methodology on which to base this research.

To gain a depth of understanding of the social phenomena and processes influencing e-learning in the organisation a qualitative approach was adopted. Gaining an understanding of the perspectives of the key players in the organisation to inform the development of the model was based on the advantages of 'stakeholder analysis' as described by Dick (1997). Thus, the chosen epistemology for this study was interpretivist as understanding the perspectives of stakeholders of e-learning design within the context of the Army was required.

The selection of respondents in the case study followed the tenants of 'theoretical sampling' described in Grounded Theory (Glaser & Strauss 1967: 47). Gaining access to soldiers involved about six months of negotiations between the researcher and the Army Training Command. This process has led to interviews with 96 respondents and 129 responses to questionnaires. The data collection methods reflect the need for in-depth qualitative data to address the research questions and the type of access permitted by the organisation. Triangulation of data collection methods included:

- senior training managers: 9 interviews, including Past General - Commanding Headquarters Training Command, past and current Commandant Army Training Technology Centre (TTC), Commandants Regional Training Centres (RTC), Deputy Commandants RTC (2004)
- TTC e-learning instructional designers and course developers: 22 interviews (February 2004, March 2005)
- instructors (including Senior Instructors) in 7 RTC: 35 interviews with involved with the Subject One Corporal e-learning course (May-June 2004, September-October 2005); 7 questionnaires for instructors involved in Grade 2 e-learning course (October 2004)
- active Reserve soldier trainees in the trial distance learning Subject One Corporal e-learning course: 30 interviews (16 trainees at three stages during course), 16 responses to pre-course questionnaire, Researcher participation in post-course Army feedback session (August-October 2004)

- regular soldier trainees in Subject One Corporal e-learning course: 54 responses to pre-course questionnaire, 48 responses post-course questionnaire (September 2004)
- observation of e-learning classrooms using a range of e-learning packages
- analysis of relevant Army historical and policy documents.

A convergent interviewing technique (Dick 2000) was used as it allowed the content to be unstructured but provided a structured approach to the interviews. That is, predetermined questions were not used but questions emerged thorough constant comparative analysis of the data. The respondents were asked the opening questions: "What do you think of computer based learning?" and "What are the advantages and disadvantages?" The respondents were free to discuss any issues that they considered important and to continue talking with prompts from the researcher for more information and clarification. The questionnaires for students and instructors were based on these interview findings and included Likert type ranking questions and open-ended questions relating to their perceptions of e-learning.

The data was analysed using the tenets of Grounded Theory (Glaser & Strauss 1967). Through iterative processes of data collection and constant comparative analysis, conceptual categories are confirmed as important, their properties and reasons for disconfirmation emerge assisting in theory development. The following discussion is very firmly grounded in the data collected. Previously published papers are referred to which provide further details of the background to the study and respondents' perspectives.

Organisational culture influences on e-learning design

From the analysis of the interviews, questionnaires, policy and historical documents it has emerged that there are three main factors that are important for effective e-Learning in the Australian Army. They were:

- drivers for change
- training culture
- learners' needs (Newton & Ellis 2005a)

This analysis is continuing but the organisational culture aspect within these factors has emerged as a major influence on e-learning design in this context. Factors relating to the influence of organisational culture on e-learning design are the focus of the following discussion and contributed to the development of a model.

The Australian Army has used e-learning since 1993 and with strategic support developed its first multimedia CD-ROM all corps soldier training packages embedded in the Army Doctrine Electronic Library in 1996, including first aid, navigation and weapons training (Ellis & Newton 2004). Senior training managers involved in planning for e-learning stated that the organisational commitment to e-learning development in 1996 was largely in response to the Department of Defence requirements for more training efficiencies including cost savings. However, these managers also aimed for a shift in focus from 'delivering training to facilitating learning' and to develop standardised training for trainees across Australia. These aims were reflected in the decision to develop CD-ROMs with rich multimedia content including structured interactive learning activities and formative assessment tasks (Ellis & Newton 2004; Newton & Ellis 2005a).

Headquarters Training Command Army (HQTC-A) did not initially focus on the development of networked Web-based learning development or consider it a priority. Policy documents indicated that this decision was due to operational factors and technical limitations that impacted on the required educational design:

- 'soldiers spend much of the year training in the field, where they do not have access to the Intranet or Internet
- the limited bandwidth available on the Defence Network significantly restricts the instructional design of electronic and TBT products
- the Defence Restricted Network is not yet considered sufficiently reliable to support the efficient delivery of training' (HQTC-A 2003:7).

From 1998, with the top-down support for e-learning delivery it was possible to provide the infrastructure to develop RTCs with computer facilities, local area networks and access to the Defence Restricted Network (DRN) in major concentrations of military population. The Army's main goals for RTCs were economic and operational: 'to reduce the costs of moving students to centralised training establishments' and 'to minimise time spent away from their home location' (HQTC-A 2003: Annex A).

The Army's TTC was created in 2000 to co-ordinate the development of CD-ROM packages that aim to incorporate Army doctrine, practices and culture into interactive learning activities. The TTC provides an interdisciplinary skilled team to design, develop and evaluate e-learning packages that are distributed to Army training centres (Training Technology Centre-Army 2003). TTC instructional designers and course developers are trained internally and through external courses in instructional design and technical skills. External contractors are used to fill technical skill gaps and to encourage skill development in the team as development requirements have increased. The TTC staff value this training and mentoring (Newton & Ellis 2004, 2005c). Thus, e-learning design and delivery processes have become an established part of the Army's training infrastructure with support through the chain of command.

Recently there was a directive from the Department of Defence to provide Web-based content for a Learning Management System available on the Defence Restricted Network (DRN) to encourage more flexible learning opportunities (Deare 2004). However, the commitment to CD-ROM multi-media learning activities conflicts with this external directive. Instructional designers and course developers indicated there were problems with limited bandwidth availability on the DRN and the associated directives coming from the Australian Defence Organisation about maximum file sizes (Newton & Ellis 2004).. The TTC was managing this transition with the use of a hybrid model of Web compatible CD-ROM multi-media content that could be delivered over the DRN. However, this shift has not occurred due to continuing inadequate access to the DRN in some training units, concerns about doctrine security and the need for trainees to be supervised while learning (Newton & Ellis 2005c).

The Army has a well-entrenched behaviourist model of educational design that is formalised in the Army Training System (ATS) that must be used in all training situations (Training Technology Centre-Army 2003). The TTC's instructional design and development is based on behaviourist theorists including Gagne's (1985) model of 'conditions of learning' and Keller's (1983) model of motivation (Greenberry 2004). It was argued by TTC staff that these behaviourist principles "have stood the test of time" and meet the Army's training requirements (interviews). In line with the behaviourist training approach the TTC follows the ADDIE (Analysis, Design, Development, Implementation and Evaluation) process of instructional design development. TTC staff argued that these

principles provide a structured approach to learning design which is consistent with the ATS. Further, they proposed that this design provided a model example of the ATS for the Corporal students who needed to learn to train small groups in their course using the ATS (Newton & Ellis 2004, 2005c).

To reinforce the Army culture in the e-learning packages considerable effort and reviewing goes into presenting doctrinally correct content and modelling of Army values and traditions. For example, providing vicarious learning through the use of virtual mentors who are dressed, act and speak in the required Army protocols has been integrated into all of the e-learning packages. Instructional designers considered that this aspect was vital to provide a human feel and a sense of empathy with the characters that model skills and lead the learners through the e-learning packages (Ellis & Newton 2004; Newton & Ellis 2004). Thus, the e-learning design and development is explicitly intended to be a part of the enculturation process of students into Army attitudes and procedures.

The CD-ROM packages were originally developed with the aim of providing more flexible delivery opportunities through distance learning. However, it was recognised by Training Command that "cultural and IT issues" led to residential classroom delivery (HQTC-A 2003: Annex A). E-learning packages are provided to students in residential classrooms as self-contained learning with access to an instructor in the room to answer questions. This situation involves more independent, self-paced learning than traditional face-to-face classes but these are still structured learning situations where students are largely constrained by the time limits of the class sessions (Newton & Ellis 2005b).

E-learning also challenged traditional face-to-face classroom management strategies and instructors viewed the shift in role to a facilitator as a change in their overall function (Newton & Ellis 2005b). While instructors described their new role as easier, they also indicated that they felt more isolated from the learning process than in traditional classrooms. Further, instructors valued their position as a role model for trainees which had been reduced with e-learning. While some instructors supported eLearning as the "way of the future", others resisted eLearning as they felt that it was imposed on them and they were reluctant to change as "the traditional approach to training was OK" (Newton & Ellis 2005b). Instructors' relative isolation from the e-learning design and development process has created some uncertainty and reduced support for e-learning. This uncertainty has led to resistance from some instructors who are in a direct position to be able to influence student perceptions and final outcomes of e-learning projects (Newton, Ashman & Ellis 2005).

There is an assumption of homogeneity about trainees in the Army with a stereotyping of their learning needs and characteristics despite evidence that there are some significant differences in skills and knowledge (Newton & Ellis 2005b). An instructor explained that the Army aims to generate "one culture, one standard" as "it does not tolerate differences" (interview). These assumptions include computer literacy, despite about 10-20% of each class not having any experience in using computers (Newton & Ellis 2005b). With increasing operational tempo and decreasing retention rates, the Army has also piloted distance learning for Reserve soldiers using CD-ROM packages at home (Ashman & Ellis 2005). However, considerable problems emerged due to inadequate support for learners and instructors in distance learning skills and the need for practical reinforcement of learning. Instructors also indicated that the training culture encourages an authoritarian teacher-student relationship and that there was concern from instructors that communicating online with trainees online could reduce their authority if they said something incorrect. (Newton & Ellis 2005b). Some instructors did not support the use of online collaborative learning, especially for soldiers in lower ranks (Newton & Ellis

2005b). However, a training manager indicated the importance of context: 'The ability to voice personal opinion in Army is prized and paradoxically equally punished depending on the learning environment, the difference often is the ability of the trainee to judge the learning situation' (Ashman & Ellis 2005: online). Thus, inherent aspects of the traditional training culture are influencing e-learning delivery.

There are feedback processes within RTCs where instructors can negotiate with Senior Instructors for changes in delivery within the Training Management Plan requirements. However, instructors also indicated some frustration with the higher hierarchical decision-making processes that are slow to respond to their suggestions for e-learning design based on the experiences of e-learning (Newton & Ellis 2005b). Trainees are also under considerable pressure to pass the e-learning package modules and it was recognised that feedback on the packages was being influenced by opinions of some instructors who did not support e-learning implementation (Ashman & Ellis 2005; Newton & Ellis 2005b). Instructors suggested that improved avenues for feedback from instructors and trainees to influence e-learning design and delivery should be provided but they recognised the problems inherent in the hierarchical chain of command (Newton & Ellis 2005b).

Organisational culture influences model

To further understand the influence of organisational culture on e-learning design it is useful to take a socio-technical approach that focuses on understanding the social context of technological innovations (Slevin 2000). Taking this approach means that e-learning can be viewed in terms of how it is socially structured by the organisation and how it is influencing the socially structured aspects of education in the organisation. That is, rather than viewing e-learning as a neutral-free environment and studying what happens in it, it is important to look at how e-learning is being influenced by the organisational context.

The authoritarian and hierarchical culture has been embedded in the design of the e-learning packages and has provided the context for e-learning delivery. For the Army, this approach was an intentional process as enculturation of the students is an explicit part of their educational process. Further, due to the authoritarian culture there was an expectation that instructors will follow directions from their superiors on how to deliver the packages. The organisational culture influences on e-learning design are summarised in Figure 1.

Some of these influences are priorities in the organisation's flow of decisions about e-learning design and others are less influential on this process. In particular the model highlights the influence of organisational training priorities and training system on the design of the e-learning packages. The priority for the provision of technology in training centres to deliver training also influences the e-learning design. However, the external influence of the DRN on e-learning design and delivery was less due to issues with limited bandwidth availability.

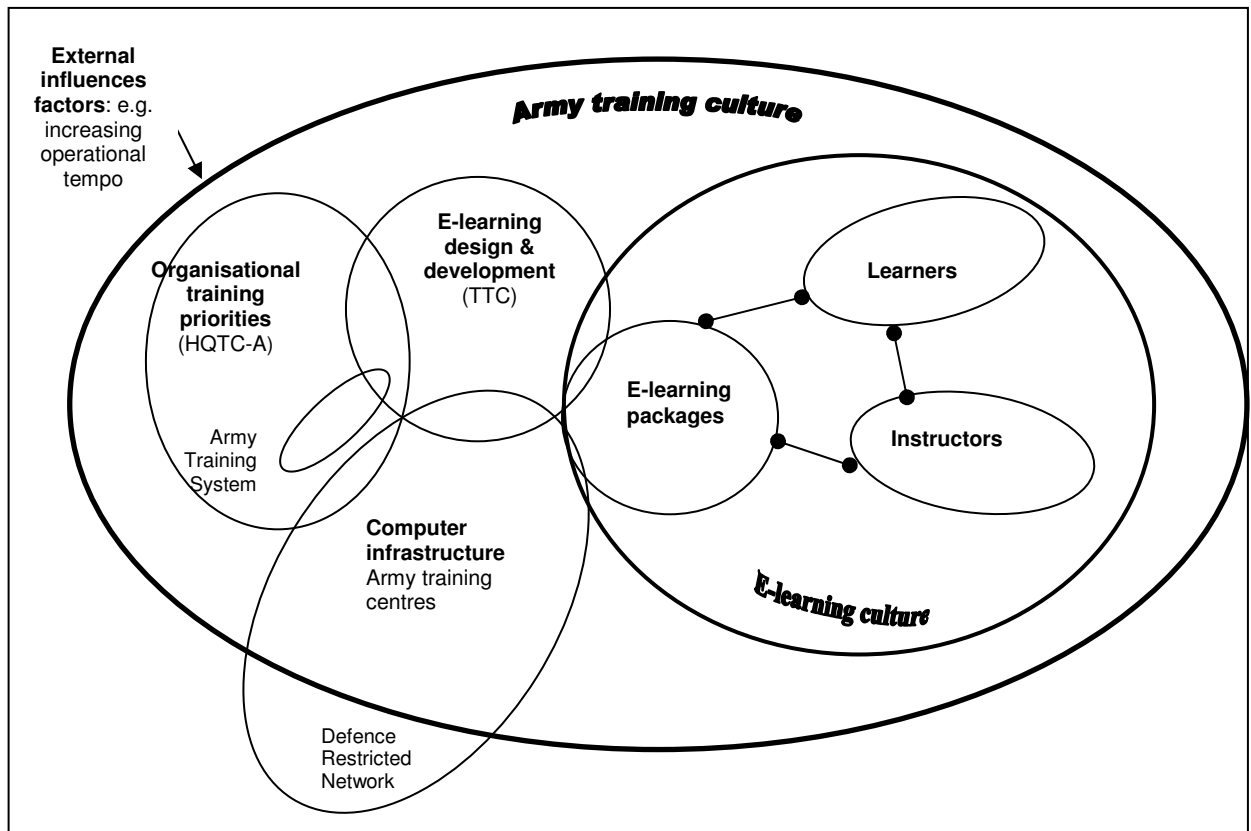


Figure 1: Organisational culture influences on e-learning design. Areas of influence (overlap) and potential for increased influence (●—●) are indicated.

Overlapping areas in this figure indicate areas of relative influence on e-learning design and delivery. The e-learning packages are both a product of the organisational culture and a transmitter of this culture to the learners. However, this mapping process highlights the gap between the design of the e-learning packages and the delivery process. While there are some potential areas for influence by instructors and learners on the e-learning design, there are some barriers to these feedback processes evident. Therefore, while the organisation's hierarchical chain of command has supported and influenced e-learning design it has also created some barriers for action.

Taking an analogy from biology, the organisational culture can be considered as a neurotransmitter that is released and transferred from one part of the organisation to another that enables the communication of information. A dynamic flow of information within the e-learning culture and the organisation requires there to be facilities that enable reception of this communication. If these receptors are available then action will depend on whether the cultural communication encourages or inhibits action and change. The organisation's culture can encourage a good connection (a nerve synapse to fire) to provide a dynamic flow of feedback, ideas and experiences within the organisation. Alternatively, there can be inhibitors that stop, reduce or deflect these processes.

Further, taking a socio-technical approach encourages these questions about the influence of an organisation's culture:

- How is e-learning design socially constructed?
- How are e-learning delivery technologies socially constructed?
- How and where do influences on educational design and technologies converge?
- How does an understanding of organisational influences on e-learning design improve learning opportunities?

This perspective has provided useful insights into the influence of organisational priorities, beliefs and practices in this organisation. It is expected that this mapping process will produce different results for e-learning in other contexts reflecting differences in organisational cultures and approaches to education and training.

Conclusion

This study of the Army's e-learning has provided some understanding of how organisational culture influences educational design in this organisation. There is evidence that e-learning both reflects and transfers organisational culture. This finding supports adopting a socio-technical perspective that educational design and technologies are not neutral free and that there is a need to recognise the cultural influences on e-learning environments.

This research into the Australian Army's e-learning is continuing and it is planned that further data collection and analysis will focus on understanding this nexus between organisational influences on e-learning design. This will also include an investigation into any evidence of e-learning influencing the socially structured aspects of education in this organisation. There is a need for more case study research that explores the socio-technical context of e-learning.

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