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# An E-learning Comparative Alignment Framework

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**Abstract:** Researching the factors influencing e-learning effectiveness is a complex and contentious task due to the dynamic, complex and interrelated factors in education and training environments. A recent major study of the Australian Army's use of e-learning courses approached the understanding of e-learning effectiveness factors by aligning multiple perspectives across e-learning activities. A model was proposed that highlights that e-learning effectiveness was framed primarily in terms of the alignment of the e-learning culture with the organisational culture. This paper presents the development of an E-learning Comparative Alignment Framework (ECAF) based on this model. This framework provides a scaffold and a comparative analysis approach for understanding e-learning effectiveness factors from multiple perspectives across an organisation. The practical and theoretical implications of the ECAF are discussed.

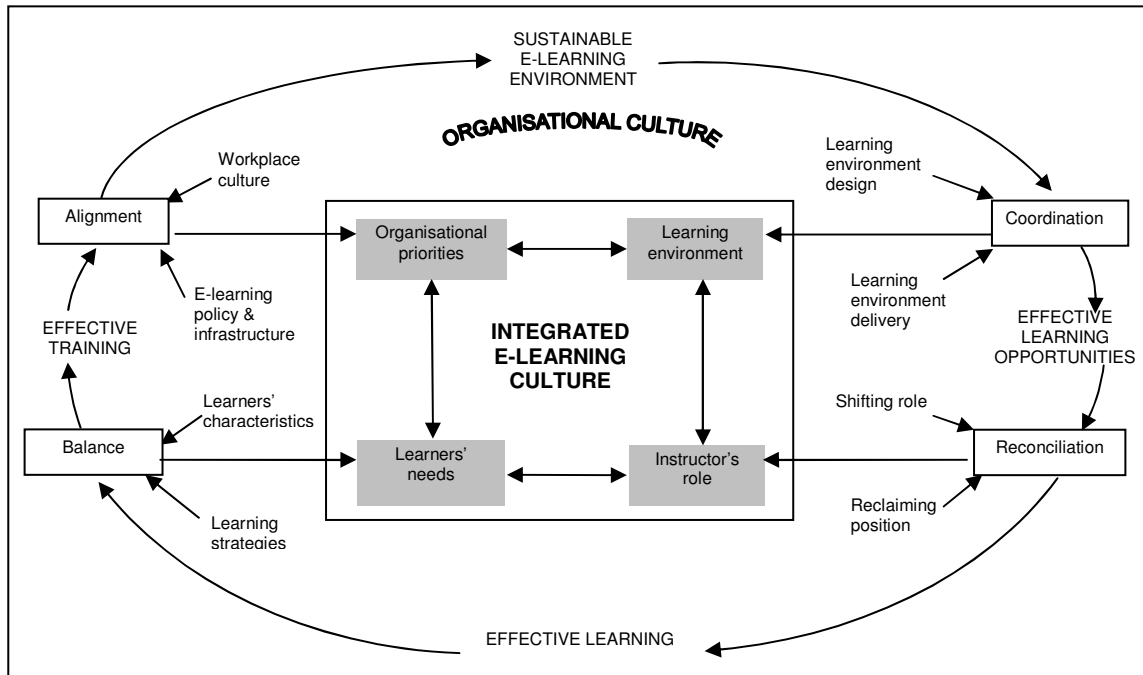
## Introduction

Understanding the influences on e-learning effectiveness in workplaces is a necessary, but contentious task. As 'effective' is defined as 'producing a desired or intended result' (*Oxford English Dictionary of Current English*, 2007), the concept of effectiveness implies that there is a desired outcome related to an activity. The measurement of e-learning effectiveness is discussed in the literature primarily in terms of discrete economic, pedagogical or technological criteria, which do not necessarily reflect the social or political complexities of education and training environments (Newton, 2007). Further, the transfer of knowledge about effective e-learning courses and environments from higher education to workplace situations has resulted in discursive tensions between expectations and practice (Newton, 2007). Welle-Stran and Thune (2003) expressed the contentions they observed between the intent and experience of e-learning use in workplaces as "a type of organizational schizophrenia". Thus, the nature of intended outcomes of using e-learning approaches is subjective, depending on the context of the activity and who is deciding what is desired, when and how.

Few studies have investigated the factors influencing the e-learning use in terms of the diversity of factors in a workplace environment and there is a scarcity of relevant substantive models of e-learning effectiveness factors in workplace contexts. A major Grounded Theory (Glaser and Strauss, 1967) based study of the introduction and use of e-learning in the Australian Army (Newton 2007) aimed to improve understanding of the factors influencing e-learning effectiveness, particularly in large, dispersed workplaces and to develop a model based on the understanding of these factors. The Army's has had ten years' experience in trialing and using CD-ROM based learning packages for its core military training. The research from this study into the development and use of these courses and respondents' perspectives has been the subject of previous papers (Newton & Ellis, 2004; Newton & Ellis, 2005a; Newton & Ellis, 2005b; Newton & Ellis 2005c; Newton & Ellis, 2006). This paper presents the development an E-learning Comparative Alignment Framework (ECAF), which was based on an Integrated E-learning Culture Model proposed from the study. The ECAF provides researchers and practioners with a scaffold and a comparative analysis approach for aligning perspectives of e-learning effectiveness factors across an organisation.

## E-learning integration and alignment

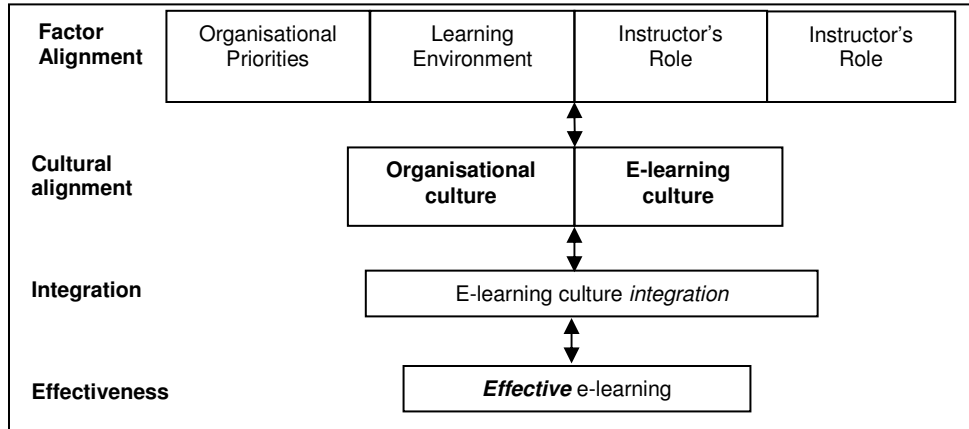
E-learning effectiveness was defined in the Army's evaluation of e-learning courses as achieving learning outcomes that at least matched outcomes achieved in face-to-face classrooms (Headquarters Training Command – Army, 2000). The core concern of the respondents was managing tensions by integrating e-learning into the organisational culture. That is, while the adoption of e-learning courses was based on the measurement of learning outcomes achieved, there were other factors influencing the effectiveness of the e-learning environment. A substantive model for developing an integrated e-learning culture in a large organisation, an Integrated E-learning Culture Model (IECM), was developed from the Army study (Newton 2007). The IECM (Fig. 1) represents the interactions between the main factors and the related concepts and processes influencing e-learning effectiveness.



**Figure 1:** A model for developing an integrated e-learning culture in a large organisation (Newton, 2007)

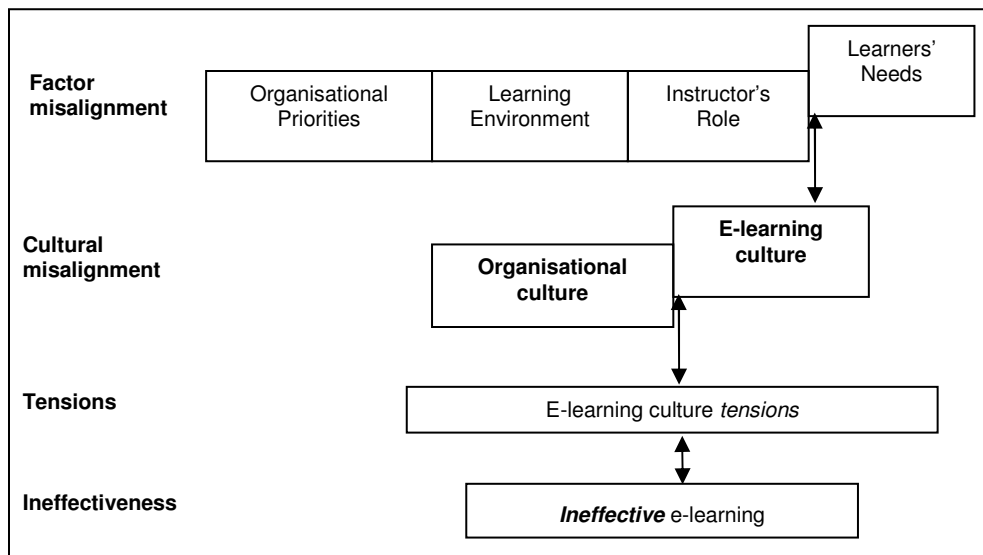
The IECM indicates the interrelationships between the organisational priorities, the learning environment, the instructors' role and learners' needs factors in the development of an integrated e-learning culture. The respondents were concerned about balancing the changes they were experiencing with their expectations of Army training and the Army culture. That is, they were concerned about integrating the e-learning culture into the organisational culture. Therefore, the e-learning solutions that gradually emerged over a few years of use reflected the alignment of e-learning activities (management, design, delivery and use) with the organisational culture. While the model was based on the experiences of respondents in the Australian Army, it will be useful for other large organisations using e-learning methods in their training programs to understand the factors influencing e-learning effectiveness.

An alignment model (Fig. 2) was developed to indicate the relationships between factor alignment, cultural alignment, the integration of the e-learning culture into the organisational culture and the influence on e-learning effectiveness. For example, if stakeholders' perspectives indicate that e-learning provides alignment with organisational priorities, supports an effective learning environment, provides for learning support needs and includes consideration of learners' needs, there is then cultural alignment. This alignment supports the integration of the e-learning into the organisation and effective e-learning.



**Figure 2:** An alignment model indicating the influence of the alignment of e-learning effectiveness factors on e-learning culture integration and e-learning effectiveness.

Alternatively, Figure 3 provides an example of the misalignment of a factor (e.g. learners' needs) on cultural alignment, e-learning integration and effectiveness. If stakeholders' perspectives indicate that there is alignment across all of the factors except consideration of learners' needs then there is a cultural misalignment, which leads to tensions and ineffective e-learning.



**Figure 3:** A misalignment model indicating the influence of a misalignment of e-learning effectiveness factors creating tensions for e-learning culture integration and e-learning ineffectiveness.

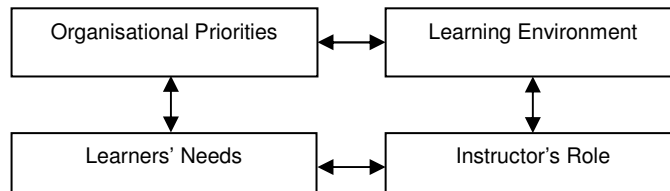
It is proposed that *the alignment of factors influencing e-learning effectiveness assists in the development of an integrated e-learning culture*. By understanding how embedded assumptions, goals and processes are influencing organisational priorities, the learning environment, the instructor's role and learners' needs, it is possible to identify areas of alignment and misalignment between these factors. Areas of alignment encourage support and areas of misalignment create tensions that influence e-learning effectiveness. That is, the factors influencing e-learning effectiveness can be further understood in terms of the *areas of alignment of the e-learning culture and the organisational culture that assist in developing an integrated e-learning culture*.

Therefore, it is necessary to identify and understand how the organisational culture is reflected in the decisions made about e-learning management, design, delivery and use from the perspective of the people involved. From gaining this understanding, it is possible to determine the social and political factors influencing the

development of the e-learning culture. This knowledge improves the identification of areas of alignment and misalignment between expectations and experiences, which can then be considered and addressed to improve e-learning effectiveness. To assist researchers and practitioners to apply these principles, an E-learning Comparative Alignment Framework is proposed.

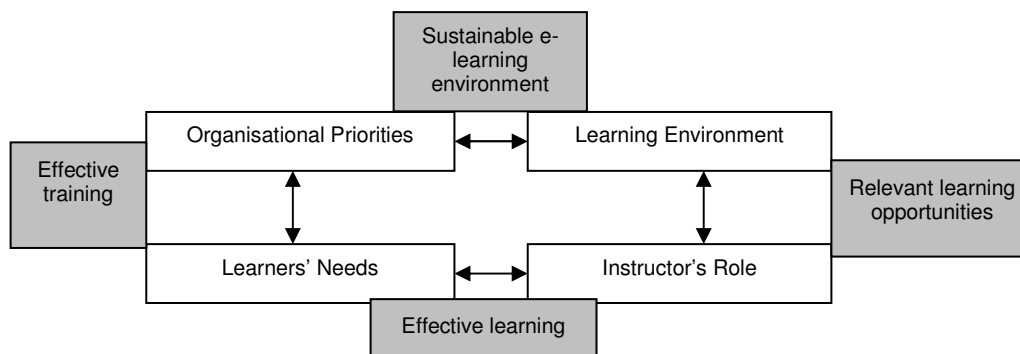
## E-learning Comparative Alignment Framework

The IECM presents the four main factors influencing e-learning effectiveness in a large, dispersed workplace. The interaction of these factors informs the understanding of the assumptions, goals and processes that form the e-learning culture. These four main factors are represented in Figure 4, which forms the basis of the proposed E-learning Comparative Alignment Framework (ECAAF).



**Figure 4:** The four factors that form the basis of the E-learning Comparative Alignment Framework (ECAAF)

The IECM also includes the interactions between the main factors influencing e-learning effectiveness that create alignment areas, which influence e-learning effectiveness concepts, which are a sustainable e-learning, effective learning opportunities, effective learning and effective training (Fig. 5).



**Figure 5:** An E-learning Comparative Alignment Framework showing the alignment areas (shaded) that influence e-learning effectiveness concepts.

### A Comparative Alignment Approach

A comparative analysis approach provides a systematic method to understand the factors influencing e-learning effectiveness across an organisation. While developing a model or theory from research analysis is not always the aim of applied research, using a comparative analysis approach to establishing areas of relative alignment, using the ECAAF as a guide could be useful. It is proposed that using an ECAAF with a comparative analysis approach can assist to identify areas of alignment (and misalignment) in the assumptions, goals and processes in the e-learning culture. A comparative alignment approach could involve the following steps:

- gaining the perspectives of the main stakeholder groups (managers, instructional designers, instructors, students) across the four main factors (organisational priorities, learning environment, instructor's role, learners' needs);
- comparing the main concerns to generate concepts;
- locating these concepts in relation to the main factors;
- mapping and comparing the concepts across the main factors to determine where the main areas of alignment or misalignment exist; and,

- mapping and comparing communication processes in the workplace culture influencing e-learning integration.


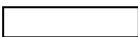
The stakeholder focus questions will reflect the stage of e-learning use and the intentions of the research project. The research aims could be to understand expectations prior to implementation, experiences of a pilot study or overall perceptions of advantages or disadvantages of e-learning after some experience of use. Qualitative methods, such as interviews and focus groups, provide respondents with the opportunity to provide in-depth views. However, using a semi-structured questionnaire, which can include quantitative data, will assist in focusing the research effort.

The main concepts included in IECM can be used as a guide for data collection and analysis as they were found to be relevant in this research:

- organisational priorities (e-learning policy, technical infrastructure, workplace culture);
- learning environment (learning environment design, learning environment delivery);
- instructor’s role (shifting role, reclaiming position); and,
- learners’ needs (learner characteristics, learning strategies).

By using a method of comparative analysis, an overall understanding of the alignment will be gained of the main concerns for respondents. The aspects of the ECAF shown in Figure 5 will assist researchers to focus on the main factors in order to understand the concerns that are being raised by the stakeholders. In a large, dispersed organisation, these factors tend to reflect the perspectives of managers, instructional designers, instructors and learners. Each stakeholder group may raise issues that reflect similar or different concerns, which can then be mapped and compared. An example of this comparative alignment process is provided in Figure 6. Where a concept (or issue) is raised within the context of each of the factors then this concept is entered under each factor. Where a concept was not related to a factor by the respondents, then this area is left blank in the relevant factor.

Organisational Priorities			Learning Environment		Instructor’s Role		Learners’ Needs	
E-learning policy	Technology Infrastructure	Workplace culture	Learning environment design	Learning environment delivery	Shifting role	Reclaiming position	Learners’ characteristics	Learners’ strategies
C1		C1	C1		C1			C1
C2	C2	C2	C2	C2	C2	C2	C2	C2
		C3	C3		C3	C3		
C4	C4	C4	C4					
	C5		C5	C5		C5	C5	C5

 Alignment     
  Misalignment

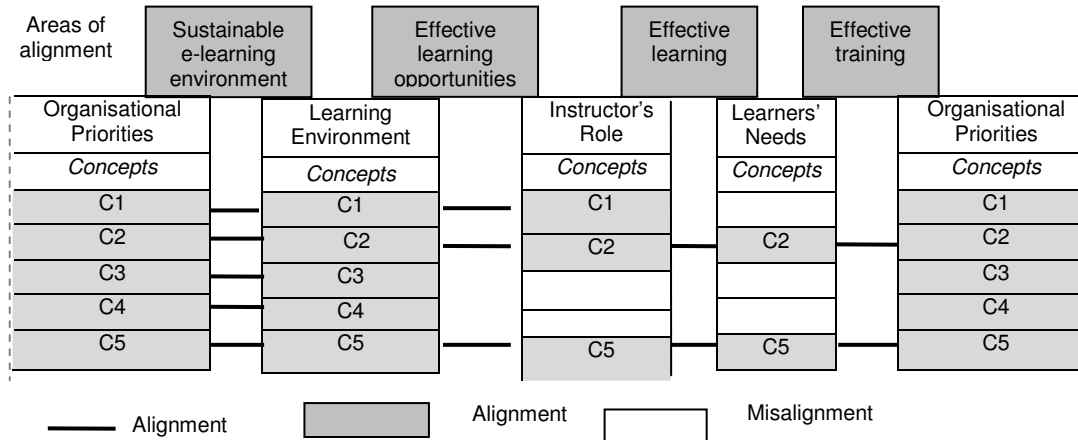
**Figure 6:** An example of using an E-learning Comparative Alignment Framework approach to map concepts (C) across the four main factors.

This mapping process indicates the main concepts within each main factor and allows comparisons within and across the factors. The concepts in this case are labeled C1, C2 etc. In the example in Figure 6, there is most alignment within and between the workplace culture and e-learning design factors. There is less alignment within the learners’ needs factor and in the learning delivery environment. Using the ECAF highlights where areas of alignment are concentrated and thus indicates the issues that could be supporting e-learning effectiveness. Misalignments or blanks in the ECAF reveal tensions that are influencing e-learning effectiveness. In turn, this process can be considered to reveal the alignment and misalignment of the assumptions, goals and activities in the e-learning culture.

If a concept has opposing views, these views could be separated into two concepts or be covered by an overall concept. For example, a priority for independent learning and a priority for instructor-led training could be called ‘learning independence levels’. Alternatively, a system indicating positive alignment (+) or negative alignment (-) could be developed. As a part of this research (Newton & Ellis, 2005b), a similar coding system was used to indicate positive or negative influences on the uptake of Web-based learning in the Australian Army. Other

coding systems could be developed to reflect relative alignments and priorities, or different contexts of alignment, and will be a focus for further research.

Mapping the alignment of the concepts across the main factors also highlights major areas of alignment or misalignment (Fig. 7). Where there is an area of alignment, there is likely to be support for the integration of e-learning into the organisation. Where there is an area of misalignment, there is likely to be tensions in the integration of e-learning into the organisation.

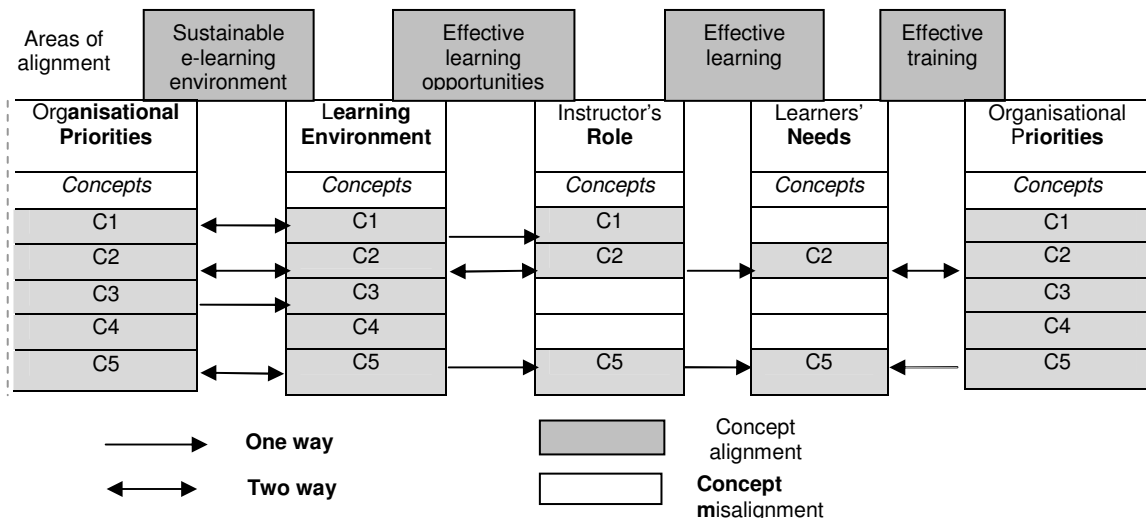


**Figure 7:** An example of using an E-learning Comparative Alignment Framework approach to map alignment of concepts (C) and alignment areas (dashed line indicates a wrap-around of this factor).

For example, in Figure 7 the concept C2 was aligned across all of the main factors, indicating a range of alignment areas. For example, the concept C2 alignment could indicate that the provision of standardised content in e-learning courses was a priority for managers, instructional designers, instructors and learners. This concept supports e-learning effectiveness outcomes in all of the alignment areas. Alternatively, concept C4 was aligned across organisational priorities and the learning environment, indicating support for a sustainable learning environment. However, this issue was not mentioned within the instructor's role or learning needs factors. This situation could represent an organisational priority for enculturation in e-learning design using virtual mentors, which was not raised by learners or instructors as an issue. The relevance of this concept for providing effective learning or training outcomes could be considered as a result of this comparative alignment process. It could also be possible to introduce a quantitative perspective of areas of alignment by counting the number of times each concept was mentioned in a factor. This would provide some indication of the relative strength and weakness across the alignment areas. However, the usefulness of adopting a quantitative approach will require further research.

A process of mapping and comparing alignment within factors and across alignment areas could be used at different stages of e-learning adoption and use. For example, prior to e-learning use, the alignment areas would reflect areas of expected relative support and tension, which could inform further consultation and planning. After e-learning implementation, the alignment areas would indicate existing factors influencing e-learning effectiveness, which can be addressed. An ECAF could also be used to understand the impact of introducing a change, such as a new technology or a new training policy, in order to understand the alignment of expectations and current experiences across the organisation.

After the concepts and alignment areas have been mapped across the ECAF, it would also be possible to include the communication factors influencing e-learning effectiveness. A proposed example of mapping and comparing communication processes is shown in Figure 8. Communication processes (aligning, balancing, co-ordinating and reconciling) were an essential part of the IECM to encourage alignment within and across the main factors. Data collection from the various groups of stakeholders will provide a cross-section experiences and perceptions, and indications of the communication processes between the four factors should emerge. These issues could also indicate directions of communication flows (e.g. one-way, two-way).



**Figure 8:** An example of using an E-learning Comparative Alignment Framework approach to map areas communication processes influencing e-learning effectiveness (dashed line indicates a wrap-around of this factor).

In Figure 8, there is little two-way communication available to communicate learners' needs. This could indicate a need to provide learners with more avenues to give feedback. Concept C5 indicates an issue that is communicated as an organisational priority reflected in the instructional design. It is influencing the instructor's role and it is a feature of learner needs. However, there is no avenue for feedback about the instructor's role or learners' needs to the other factors. Therefore, this mapping process using the ECAF indicates the priorities for communication and the gaps in communication that can influence e-learning effectiveness. One use could be to indicate where areas for formal and informal feedback are working and where improvements can be targeted. Understanding who has a voice and whose opinion is considered (or not) reveals the influence of the organisational culture on e-learning effectiveness.

## Discussion

The term 'e-learning integration' was discussed in the literature primarily in terms of the use of blended learning modes (Hede, 2002) or the integration of technology into teaching practices (Robertson, 2004). There were some similarities in concept of 'e-learning integration' (eds Jochems, van Merriënboer & Koper, 2003) and the holistic approach proposed in this study. However, these publications focused primarily on providing a constructivist approach in higher education contexts predominantly using networked, collaborative e-learning designs. Some workplace-based studies indicated that e-learning design should be aligned with organisational culture and provided some examples of successes and failures (Leacock, 2005; Overton, 2005). However, the research on the influences of organisational culture on e-learning effectiveness is generally brief and anecdotal and it does not provide an understanding of processes or methods of aligning e-learning culture with the organisational culture.

This paper has proposed an E-learning Comparative Alignment Framework (ECAF) that encourages researchers and practitioners to focus on the alignment of factors influencing e-learning effectiveness in workplaces. A method termed a 'comparative alignment approach' is proposed to enable comparison and alignment of issues for stakeholders across an organisation. This process provides understanding of areas of alignment or misalignment in stakeholder perspectives across key factors influencing e-learning effectiveness. Alignment areas indicate support, and misalignment areas indicate tensions for the integration of the e-learning culture into the organisational culture. The ECAF provides a framework to map the factors across management, design, delivery and use functions that are influencing e-learning effectiveness in organisations from the perspective of the people involved.

Organisations need a framework that can accommodate the complexity of factors that develop an e-learning culture. The framework needs to be flexible to reflect the dynamic environment as an organisation adopts and adapts e-learning to suit its changing priorities. It is proposed that using comparative alignment processes within a framework based on the factors that influence e-learning effectiveness from the IECM provides a useful approach.



By taking the perspective that e-learning environments are not value-free, it is possible to understand the competing priorities and discourses that influence how e-learning effectiveness is constructed and experienced. Furthermore, by understanding that there are likely to be emerging tensions about the perspectives of e-learning integration into an organisation, particularly in a large organisation, encouraging communication processes to align diversity in assumptions, goals and processes assists in achieving e-learning effectiveness.

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