A critical evaluation of the contribution of trust to effective Technology Enhanced Learning: A literature review

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Abstract

This paper, based on a literature review towards a PhD, explores issues of trust in work-place learning, particularly in a virtual context. It is based on sociological theoretical foundations and explores the building and development of such trust in learning contexts and its implications for Technology Enhanced Learning (TEL) in business. There is extensive recognition of the importance of trust in both business and educational contexts, while many contend that trust is even more vital in a virtual environment. Virtual training offers a range of potential benefits, but it has not been adopted as widely as expected. However, there are indications that trust may be a significant factor both in the low participation by businesses in TEL and in the effectiveness of such training.

This literature review examines the concept of trust and its creation and development in a virtual training environment. The review highlights that face-to-face meetings before and during TEL can increase the popularity and effectiveness of such training, although it is acknowledged that such meetings inevitably increase costs.

Having identified a significant gap in existing research, further investigations are suggested which it is hoped will result in recommendations to make TEL a
more effective and commercially viable training method for businesses, thus addressing many HRD issues.

**Introduction**

The importance of trust (Mayer, Davis, and Schoorman, 1995; Zand (quoted by Hugli, 2000); Blomqvist, 2002) in both business (Kouzes and Posner, 1987; Drucker, 1999; Vice and Carnes, 2001, Newcombe, 2012) and educational contexts (Mason and Rennie, 2008; Wankel, 2010) is widely recognised, while Handy (1995), Gignac (2004) and Loos, Mante-Meijer and Haddon (2008) agree on the importance of trust in a virtual environment. However, little research has been undertaken into how the formation and development of trust is influenced by a virtual environment (Kostner, 2001; Gignac, 2004; Henttonen and Blomqvist, 2005).

Key features of the literature across the social sciences indicate that lack of face-to-face contact reduces trust (Handy, 1995; Kostner, 2001; Gignac, 2004). Although on-line learning environments preclude face-to-face contact, the development of online communities indicates that opportunities for participants to meet as if face-to-face increases full and open participation (Loos et al, 2008; Miller, Fairhurst and Chubb, 2010). Some studies, such as Woolgar’s (2009), suggest a reluctance to undertake any business virtually with “strangers”. Similarly, in the field of education and training, whether students have met the trainer and / or each other prior to virtual training seems to greatly influence the creation of trust between them (Kostner, 2001; Wainfan and Davis, 2004; Miller et al, 2010). Furthermore, the suggestion that
such “meeting” can be virtual (Walther, Slovacek and Tidwell, 2001), merits more investigation in business.

In the current economic environment the need for cost-effective training methods is stronger than ever (Business Matters Magazine, 2012) and TEL could be seen as an attractive option (Shaw, 2012), especially as its availability is increasing (ONS, 2011; Turel and Serenko, 2010; Loos et al, 2008). However, its take-up is surprising low (Mote, 2012), although Head (2012) observes that how TEL is perceived could be very significant in its rate of adoption.

The literature search underpinning this review involved the use of keywords in different combinations in various databases as follows:-

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<th>Key Word / String</th>
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<th>Emerald No. found</th>
<th>Business Source Complete No. found</th>
<th>Web of Science No. found</th>
<th>Web of Knowledge No. found</th>
<th>Wiley No. found</th>
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<td>422</td>
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<td>9,565</td>
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<td>trust</td>
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<td>790,097</td>
<td>53,166</td>
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<tr>
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<tr>
<td>e-learning &amp; trust</td>
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<td>14,198</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1,720</td>
</tr>
</tbody>
</table>

Table 1: To show the number of occurrences of relevant words / word strings using various search engines
The results of these searches form the basis of the literature review.

Therefore, this paper seeks to answer the following questions:-

• What is trust and how does it affect learning?
• What role does trust play in virtual working? and
• What are the issues concerning trust in TEL?

The paper will look at each of these topics, examining research which is relevant both to each specific question and to the relationships between the questions. The third question will be examined in greater detail than the others by exploring barriers to the development of trust in TEL and factors which encourage trust to be established and to develop in TEL situations. Finally, the paper will give the literature review’s conclusions, summarising the key issues arising from it, the limitations of the review and suggested areas for further research.

What is trust and how does it affect learning?

Trust is a complex and multi-faceted concept (Lyon, Möllering and Saunders, 2012). Seppanen, Blomqvist and Sundqvist (2007) assert that there are over seventy definitions of trust, although academics widely use Zand’s definition:

“a willingness to increase your vulnerability to another person whose behaviour you cannot control, in a situation in which your potential
benefit is much less than your potential loss if the other person abuses your vulnerability,” (quoted by Hugli, 2000, p11).

Furthermore, McEvily and Tortoriello’s review (2011) of 96 case-studies identifies forty-seven different methodologies to measure trust.

Wankel (2010) acknowledges that trust is crucial in an educational situation and that ideas and information are unlikely to be shared without it, which echoes Mason and Rennie (2008). Drawing on twenty years’ teaching experience, Wankel (2010) suggests that teachers can earn students’ trust and commitment by giving away some control and building a long-term bond with their students, contending that an asymmetrical relationship is unlikely to achieve this result. Birchall and Giambona (2007) assert that the need for trust grows as students move through the phases of learning but that it is the process of moving through these stages which allows both relationships and trust to grow. Like Ubell (2010) and Wankel (2010), they believe that trust requires a student-centric environment, rather than a trainer-centric one, as the latter, with its assumption that students need constant supervision, does not encourage students to feel involved in the process.

**What role does trust play in virtual working?**

Trust has long been recognised as important in business situations (Likert and Willits, 1940; Zand, 1972; Kouzes and Posner, 1987; Butler, 1991; Stoner and Hartman, 2000). Järvenpää and Eloranta (2001) show that the development
of networked communication technologies in the 1990’s led to distance-working which consequently reduced face-to-face communication and so ultimately resulted in virtual organizations. Virtual working changes the nature of group work, Mingay (2002) asserts, which is reinforced by Handy (1995) who comments that such organizations require new forms of belonging. Therefore, he advises that workers should meet face-to-face occasionally to achieve the group's objectives efficiently and effectively. He affirms that managing people in different locations requires trust, stating that “virtuality requires trust to make it work: technology on its own is not enough” (1995, p44) and consequently he suggests that this needs a big change in organizational thinking. He further comments that trust cannot be taken for granted in such circumstances and therefore its role should be both acknowledged and managed. This aligns with the findings of Kostner (2001), who quotes (p62) Jimmy Treybig, former CEO of Tandem Computers: “Creating trust is hard to do with e-mail. We communicated heavily through technology. But you have to have the personal part, too.” The importance of building trust is reiterated by Gignac (2004) who sees it as the “virtual challenge” (p61), believing that solely focusing on technology will not bring success. She warns that lack of trust affects results, stressing that formation and growth of such trust is particularly difficult in virtual teams. Her reasons include the organization’s culture and leadership style as well as the extent and nature of employee training and development. Henttonen and Blomqvist (2005) agree that building trust in the virtual environment is challenging. Furumo, de Pillis and Buxton (2012) state that leadership style in virtual teams affects the initial formation of trust and the subsequent level of participation by
team-members. They distinguish between supportive leaders whose participative style engenders more trust and "commander leaders" (p125) whose authoritarian approach is likely to impede the growth of trust and therefore the resultant participation of team-members.

Järvenpää and Leidner's study (1999) of communication and trust in global teams shows that technology, through its lack of physical cues, can adversely affect the interpersonal aspects of team-working, such as trust, warmth and attentiveness. Similarly Donath (1996), Kimble, Li and Barlow (2000) and Ubell (2010) all observe that difficulties are created by the absence of cues which would be present in physical situations, with Ubell (2010) also stressing that the expectations of individual team-members are difficult to ascertain in the virtual environment. Contrastingly, Walther and Tidwell (1995) and Walther (1997) found studies of virtual teams having more social discussion, depth and intimacy than face-to-face ones and concluded, therefore, that the lack of social cues in virtual communication does not necessarily preclude the building of relationships and the establishment of identities, although it may take longer. Consequently Henttonen and Blomqvist (2005) believe that relationships can be built in virtual environments.

Preece, Rogers and Sharp (2002) observe that designers of interactive systems, which form the basis of both virtual working and TEL, must consider social factors, not just technology. They espouse that any form of working virtually needs both communication skills and collaborative activity and that the social mechanisms of these, that is conversation, awareness and
coordination, provide a framework to develop such skills for virtual working. This builds on Lewicki and Bunker’s (1996) view that the development of trust is closely connected with the development of relationships and Drexler, Sibbert and Forrester’s (1988) relationship-development model. As Adams and Smith (2008) note, virtual working presents unique challenges regarding trust, communication and the cohesiveness of the team, as well as highlighting potential problems relating to both technology and time-management. Furthermore Henttonen and Blomqvist (2005) note that the identities of participants in virtual teams may be more ambiguous due to their being separated by time and space.

Woolgar’s (2009) research demonstrates how electronic communications make contact between individuals easier and faster and also allow the establishment of relationships, although, like Hardy (1995), he asserts that some face-to-face contact is needed to progress relationships. He contends that this is especially valuable in projects' initiation phases as some respondents are reluctant to undertake any business virtually with people they have not already met.

**What are the issues concerning trust in TEL?**

In a training context, McCroskey and Teven (1999) contend that competence, evidence of caring and trust are all necessary for an instructor to be perceived as credible. Similarly, although Wankel (2010) highlights how electronic
learning can offer students opportunities for social interaction, he recognises that concerns exist about confidentiality and trust in the virtual environment. Bosch-Sijtsema (2007) notes that students who are in physical classrooms may think there are disparities between them and their fellow-students, but that in virtual training situations they have more problems verifying whether such differences really exist, which Hinds and Bailey (2003) attribute to the fact that the virtual environment prevents students from establishing common ground and expectations and thus limits the opportunities for building trust. Birchall and Giambona (2007) attribute limitations to the growth of trust to the lack of cues in virtual situations. They assert that this is particularly concerning as their own research, and that of Mason and Lefrere (2003), shows how trust affects virtual teams and virtual learning.

Although Ubell (2010) acknowledges that building trust online is very difficult, which he claims is mainly due to a lack of physical cues, he maintains that this can be overcome in training situations by using teams wisely, which he has done since 2002. He wants his students to concentrate on what he is teaching them, not on any short-comings of the virtual environment. Consequently he allows time for social interaction amongst the team and encourages his students to take part in this. He believes that to receive trust, it is necessary to give trust and that therefore a trainer should be accessible and responsive, keep confidences, communicate openly and frequently and be honest, consistent and predictable, doing what he / she says he / she will do. Ubell sets the tone for each virtual training team as it is set up, aiming to encourage future interaction and establishing strong business ethics from the start.
Although many definitions of interaction exist, they share two important features, namely information exchange and participation (Ha and James, 1998 and Steuer, 1992). Stephens (2002) contends that virtual training concentrates on information exchange to the detriment of participation, which supports Stork and Sproull’s assertion (1995) that technology is more appropriate for task goals than relational ones. Furthermore, Daft and Lengel’s research (1986) finds that virtual communication discourages social interaction, but is more successful in task-oriented contexts which accords with Krauss and Bricker (1967). Stephens and Mottet (2008) comment that, although favouring information exchange over participation, technology offers trainer-controlled tools which give opportunities for interaction. Castells (2001) concludes that electronic media allow online environments to be tailored to individual tastes and needs, leading to “me-centred networks” (p128), which Knowles (1990) claims adult learners favour.

Adams and Smith (2008), Stephens and Mottet (2008) and Fairhurst and Miller (2011) all contend that productivity can be improved through increased social interaction and by encouraging students who are undergoing regular virtual training as a group to email each other, thus forming a virtual team. Furthermore Stephens and Mottet (2008) contend that interaction increases student satisfaction, citing Arbaugh, (2000) and Stocks and Freddolina (2000). Although Stephens and Mottet (2008) also contend that online training’s nature allows little time or opportunity for relationships to develop between trainer and students, both Frymier and House (2000) and Faylor (2006)
suggest that such relationships can significantly enhance students’ learning and motivation.

The literature reviewed to date indicates that, although similar problems between students and trainers are likely to occur whether they are in physical or virtual environments, these areas of concern are likely to be exacerbated in non-face-to-face situations. TEL may result in feelings of isolation through the lack of “water cooler” moments (Fairhurst and Miller, 2011, p52) which are inherent in such circumstances, and there are indications that this could result in lack of trust between student and trainer and amongst students.

As trust is widely held to be important in all relationships, it is surprising that there has been little research into it in TEL situations, especially as there is evidence that measures can be taken to encourage the establishment and growth of such trust. The summary of the findings from this review are given below.

Conclusions

Having investigated what trust is, its effect upon training, its role in virtual working and issues concerning it which arise from TEL, it is apparent that little research has been carried out specifically regarding trust and TEL, particularly in a business context. The first of the key issues emerging from this literature review is that trust is widely seen as an important part of relationships in general business situations and in training contexts in particular. Secondly,
there is widespread agreement that trust is more difficult to establish and to nurture in the virtual world than it would be in face-to-face circumstances and, although some writers contend that trust will evolve naturally, there is agreement that building trust takes longer if those concerned are only communicating electronically. Thirdly, the main barriers to the development of trust in virtual environments appear to be lack of time, lack of physical cues, technological problems, feelings of isolation and ambiguity regarding the identity of one’s co-workers. Additionally evidence suggests that people who have met previously seem to work together virtually more effectively than those who have not. There are suggestions that such “meeting” can itself be virtual, but this has little research to support it. However, there are firm views that measures can be put in place to overcome, or at least minimise, TEL’s shortcomings.

Gillham (2010) asserts that a literature review should identify gaps in existing knowledge. The literature review underpinning this paper highlights a general shortage of research into TEL and the issues of trust in business, which suggests that further investigation in this area could benefit businesses of all sizes. Although the search shows the potential value of virtual training, it also highlights that difficulties in establishing trust in the virtual environment may be impeding both the adoption and effectiveness of TEL. Particularly little research has been undertaken regarding the effect on the training of whether trainer and students, and students themselves, have met face-to-face prior to virtual training. Furthermore, although Walther et al’s research (2001) investigated whether such “meeting” could itself be virtual, in their case
through using photographs, little other research has been undertaken into the
effects on training of “meeting” virtually, for example via chat-rooms, email or
telephone. Therefore, a specific gap exists as to whether pre-TEL “meetings”
could themselves be virtual and so it is likely that the rest of this PhD will
examine this area.

The literature review has also shown that there are other areas which merit
investigation regarding how they influence the adoption and effectiveness of
TEL. These include the type of training, the nature of the business, the age of
the students and the amount of time needed for the training. Therefore,
although the time constraints of a PhD demand that only one area is
investigated thoroughly, all of these suggestions could be areas for useful
future research.

It should be noted that this paper is being written during the Literature Review
and much work remains to be done, particularly the exploration of conceptual
frameworks including Communities of Practice (Lave and Wenger, 1991;
Wenger, 1999; Wenger, Snyder and McDermott, 2002) and Identity Theory
(Turkle, 1997; MacBride, 2006; Turkle, 2011).
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