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Improving the Effectiveness of End-User Training Outcomes

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Abstract

End-user training (EUT) does not deliver the expected value to the organisations when end users do not transfer the skills learned to their workplace. Training effectiveness occurs when end users not only have the ability but are willing to transfer the skill learned to improve their job. This study proposes a model of EUT effectiveness which explicitly considers training effectiveness outcomes and incorporates attitude and motivation as two key antecedents. We propose a longitudinal field experiment to examine the influence of persuasive communication and goal-matching on EUT effectiveness. The proposed theoretical framework is based on a thorough review of literature from multiple disciplines such as Psychology, Education, Organisational Behaviour and Information Systems.

Keywords

End-user training, Training effectiveness, Persuasion, Goal-matching

INTRODUCTION

Training is one of the most pervasive methods for enhancing individual productivity and improving job performance in the work environment (Goldstein and Ford 2002; Gupta and Bostrom 2006). For instance U.S. organisations with 100 or more employees budgeted to spend $51.4 billion on formal training in 2004 and that more than one-third (38.4%) of the training programmes were aimed at improving the computer skills of employees (Dolezalek 2004). End-user training (EUT) aims to increase end users' (i.e. employees who have direct interface with the computers) understanding, motivation to use and ability to use tools or software applications (Compeau et al. 1995; Nelson et al. 1995). Unfortunately, the literature suggests that these investments are often wasted as employees do not transfer the learned information technology (IT) skills to their work (Jasperson et al. 2005). Ineffective computer use is mostly caused by organisational and psychological issues rather than technological issues (Au et al. 2008). Research from the educational literature reveals that while trainees might have the knowledge and abilities to do their job, they might <u>not</u> be willing to apply that knowledge (Noe 1986). Learning and skill transfer will occur only when trainees have both the ability ("can do") and the intention to transfer their knowledge ("will do") to acquire and apply new skills (Noe 1986; Tannenbaum and Yukl 1992). To maximise the effectiveness of EUT, end users must possess the right attitude and motivation (i.e. affect). They must have the ability and skills to apply their knowledge in various job contexts and continue to do so over an extended period of time (Baldwin and Ford 1988). Training effectiveness must cause behaviour change (i.e. skill transfer for job performance), thereby resulting in organisational performance (Goldstein and Ford 2002).

Over the past two decades, EUT research has focused on ways to increase learning performance (i.e. interpreted by different authors as knowledge, skill and/or satisfaction). Much of this research focuses on training material (Olfman and Mandviwalla 1994), mental models (Bostrom et al. 1990; Davis and Yi 2004; Karuppan and Karuppan 2008), and training approaches such as instruction-led, self-paced and behaviour modelling training (Compeau and Higgins 1995; Davis and Yi 2004; Simon 2000). Other research focuses on motivational factors for increasing learning performance. Examples of these areas are perceived usefulness and perceived ease of use (Bhattacherjee and Premkumar 2004; Davis et al. 1989; Lee et al. 2005), self-efficacy (Bandura 1994; Compeau and Higgins 1995), and computer anxiety (Martocchio 1994).

Although there is an increasing number of training methods used in EUT such as instruction classroom training, behaviour modelling, on-the job training and eLearning, there is limited evidence to verify the effectiveness of EUT in a real job setting, particularly in a job performance context (Mahapatra and Lai 2005). Most studies are undertaken in a laboratory setting using students as participants (Davis and Yi 2004; Davis and Bostrom 1993; Santhanam 2002; Thompson et al. 2006). However, motivation contingencies of students are not necessarily the

same as trainees in paid employment (Webster and Martocchio 1995). In the context of EUT, there is no guarantee that even if knowledge and skills have been acquired in training, they will be transferred to the workplace. There is support for additional research to explore new training methods or techniques that would extend knowledge and skills to the technologically dynamic workplace (Gupta and Bostrom 2006; Jasperson et al. 2005).

Training is of little value to organizations unless it is transferred in some way into performance (Goldstein and Ford 2002; Kirkpatrick 2007). Training effectiveness is a measure of how well training achieves its intended outcomes, for example, to improve job performance (Kraiger et al. 1993). Research in the area of EUT effectiveness focuses on training design (Compeau et al. 1995; Olfman et al. 2003; Sein et al. 1987). The challenge for information systems training researchers is how to achieve successful training transfer to the workplace (Machin and Fogarty 2003), meet users' expectations (Au et al. 2008; Shayo and Olfman 1994) and enhance users' intentions to use the information technology (Santhanam 2002). Effective EUT should facilitate a positive attitude towards the system, increase knowledge and skill, and encourage system usage (Choi et al. 2007). However the evaluation of EUT effectiveness to skill transfer and organisational effects is rare in IS practice (Mahapatra and Lai 2005).

The high level aim of this study is to investigate training techniques that will enhance end-users' perceptions, attitude, motivation and meet end users' expectations for successful training transfer. The main objective is to improve EUT in order to maximise training effectiveness. As a first step in a longer term research project, we propose a model for EUT effectiveness that incorporates (pre-training) attitude and (pre-training) motivation as two key antecedents to facilitate end user learning and interaction during EUT. The model includes a holistic conceptualisation of EUT outcomes which extends the effectiveness of training to the workplace. We also consider two techniques that the literature suggests are effective in changing (pre-training) attitude and (pre-training) motivation respectively: persuasive communication and goal-matching. These techniques have been successfully tested in multiple alternative domains of training (e.g. work motivation) but have not been widely tested in EUT. To our knowledge, none of the prior studies in EUT has investigated the combined effects of persuasive communication and goal-matching. We intend to examine the combined effects of the two techniques on EUT effectiveness in a longitudinal field experiment.

The structure of the paper is as follows. We review the relevant literature in Section 2 and propose a EUT Effectiveness model in Section 3. We conclude with a discussion of future research and conclusions in Sections 4 and 5, respectively.

TRAINING EFFECTIVENESS

There is no theoretical EUT framework that explicitly demonstrates the skill transfer to the workplace. The latest EUT framework proposed by Gupta and Bostrom (2006) is limited to Kraiger et al.'s (1993) three learning outcomes: cognitive outcomes, skill-based outcomes and affective outcomes. Cognitive outcomes refer to outcomes expressed through verbal knowledge, knowledge organisation and cognitive strategies. Trainees should know what, how, and when to apply the learning. Skill-based outcomes refer to outcomes resulting from skill compilation and skill automaticity. Trainees must have the ability to apply their skills after they receive training. They must have the ability to accomplish a task without conscious monitoring. Affective outcomes refer to outcomes related to trainees' attitude and motivation to change behaviour. Effective training should increase trainees' self-efficacy, develop a positive attitude and set goals to accomplish the task (Kraiger et al. 1993). Although Kraiger et al.'s (1993) skill-based outcomes might implicitly include the ability to apply the skills, it is not explicitly clear if end users apply their skills to the job.

Kirkpatrick (1998) suggested a four level framework for evaluating training effectiveness. The four levels are: reaction (the satisfaction with trainer, training material and training programme), learning (the acquisition of knowledge and skill), behaviour (the effect of training on job performance), and result (organisational effect). Mahapatra and Lai (2005) enhanced Kirkpatrick's framework by adding technology (the usefulness of the technology). They also used the concept of skill transfer (the ability to apply skill learned at work for job performance) instead of behaviour. Mahapatra and Lai's (2005) evaluation of EUT effectiveness builds on Kirkpatrick's (1998)'s four levels of evaluation training effectiveness. It helps to explicitly distinguish between skill acquisition and skill transfer. However Kirkpatrick's (1998) reaction measure has been criticised by other researchers (e.g. (Alliger et al. 1997; Kraiger et al. 1993)). Much of this research argues that reaction may also be measured in term of utility reaction such as transfer ability or utility of the training (Alliger et al. 1997). It may also be measured in terms of attitude (preference of change behaviour) and motivation (tendency to change behaviour) as the affective outcomes after training (Kraiger et al. 1993). Numerous earlier studies suggested that effective training occurs when trainees have the ability ("can do") to use their knowledge and skill as well as the intention ("will do") to apply the skill learned in the workplace after training is completed (Bostrom et al. 1988; Compeau et al. 1995; Noe 1986; Olfman et al. 1986; Santhanam 2002; Tannenbaum and Yukl 1992; Wexley

1984). The favourable reaction to a training programme does not necessarily translate into an intention to use the skills nor a transfer of training ("does do") to the job environment (Alliger et al. 1997).

Past research suggests that attitude and motivation are key determinants of successful training (Mathieu et al. 1992; Noe and Schmitt 1986; Tai 2006; Tsai and Tai 2003). We now consider their impact on learning and skill transfer.

Attitude

Attitude is defined as "*a learned predisposition to respond in a consistently favourable or unfavourable manner with respect to a given object*" (Fishbein and Ajzen 1975 p. 6). The importance of attitude on behaviour change is strongly rooted in social psychology and learning theories. It affects how people react to new learning situations (Bandura and Locke 2003). Attitudes involve what people think about, feel about, and how they would like to behave toward an attitude object (i.e. "thinking", "feeling" and "acting" states). Behaviour intentions may direct to overt action (Fishbein and Ajzen 1975).

In the training literature, Facteau et al. (1995) found that employees' perceptions of training affect pre-training motivation and perceived training transfer. It was revealed that when training is perceived as a waste of time (negative attitude), employees may lack the motivation irrespective of the actual quality of the training programme. Machin and Fogarty (2003) found that a positive attitude is related indirectly to transfer intention. Moreover it was revealed that negative attitude is significantly related to learning during training but positive attitude is not. Machin and Fogarty (2003) argued that knowledge gain and reaction to training do not predict transfer outcomes but motivational factors such as self-efficacy and job attitudes do. The preceding discussion suggests that attitude may affect learning and skill transfer.

Motivation

Motivation is "*the psychological processes that causes the arousal, direction, and persistence of voluntary actions that are goal directed*" (Mitchell 1982 p. 81). Motivation has been positively linked to learning performance (Mathieu et al. 1992; Quinones 1995; Webster and Martocchio 1992) and task performance (Davis and Wiedenbeck 2001). Motivation has also been correlated with satisfaction (Guerrero and Sire 2001; Webster and Martocchio 1992) and skill transfer (Ford et al. 1997).

Past research in the training literature has revealed consistent results of motivation on learning/training (Howard et al. 2006; Tai 2006; Venkatesh 1999). For instance, Facteau et al. (1995), and, Guerrero and Sire (2001) argued that individuals are poorly motivated when they do not believe that training will lead to improvements in their work, career or remuneration. As a consequence, their interest in training will decline. Colquitt et al. (2000) argued that even if trainees possess the ability to learn the content of a course, they might fail to benefit from training because of low motivation. Tai (2006) found that motivation can influence the willingness of employees to attend the training programme, exert more effort and transfer what they learned into their job. Narayan et al. (2007) found that individuals who have the ability, desire, and enthusiasm to attend training are likely to acquire more knowledge, skills, and behaviour change. Hence individuals who have a greater motivation to learn are more likely to learn the given material. They may exhibit higher levels of readiness to change.

RESEARCH MODEL

This study proposes a research model of EUT effectiveness (see Figure 1). The proposed model aims to fill the gap of EUT related to skill transfer to the workplace. This model has two major contributions:

(i)   We operationalise training outcomes in such a way as to explicitly demonstrate skill transfer to the workplace.

(ii) We incorporate attitude and motivation as two key antecedents of learning and interaction which indirectly affect training outcomes.
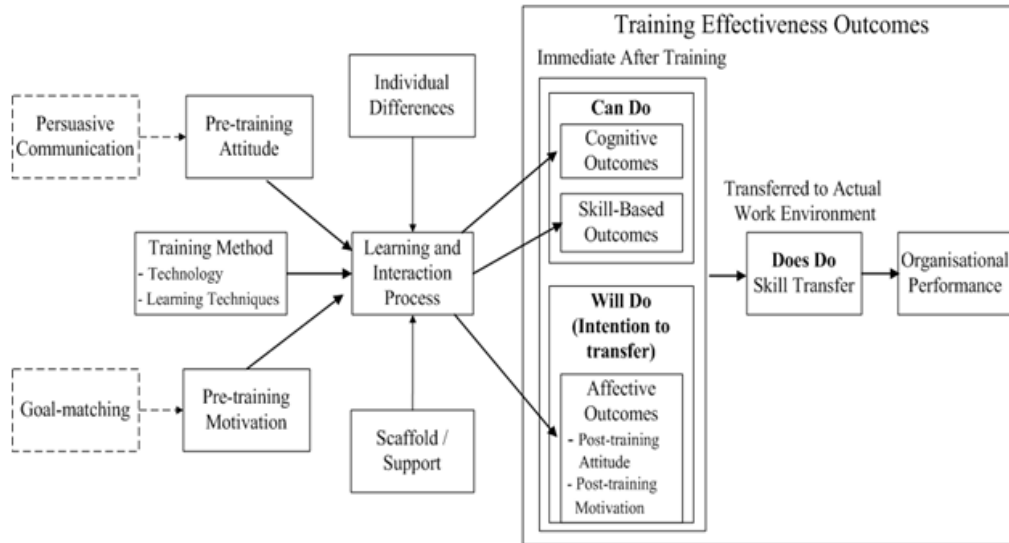
Figure 1: A Research model of EUT effectiveness

(An extension of EUT framework of Gupta and Bostrom (2006))

In defining EUT effectiveness, we integrated and adapted from several sources - Gupta and Bostrom's (2006) EUT framework, Kraiger et al.'s (1993) classification scheme of learning outcomes, and Marapatra and Lai's (2005) framework of evaluating EUT effectiveness. In our study, EUT effectiveness is defined as being composed of:

(i)   "Can do" refers to the ability to use knowledge and skill learned to accomplish the task. It will be measured by Kraiger et al.'s (1993) two learning outcomes: cognitive outcomes and skill-based outcomes.

(ii) "Will do" refers to the extent to which trainees express their feelings (willingness) and reactions (intentions) to use the training objects (i.e. information system application) immediately after training or in the near future after training is completed. It can be measured by Kraiger et al.'s (1993) affective outcomes: post-training attitude (preference to change behaviour immediate after training) and post-training motivation (tendency to change behaviour immediate after training).

(iii) "Does do" or Skill Transfer refers to the extent to which trainees (end users) actually transfer the learned knowledge, skills and attitude deriving from EUT to their workplace. It is a long-term effect of training outcome. It can be measured by system use, frequency of use, ability to use the skill and job improvement.

Training method refers to the method by which trainees learn. It includes both technology (i.e. capabilities for the execution of instructional strategies) and learning techniques (i.e. specific procedures used in training method). Learning and interaction process is the psychological learning process. Individual differences are end users' characteristics such as traits and learning style. Support refers to social support and organisational support.

We raise two arguments to incorporate attitude and motivation as antecedents to improve EUT effectiveness. Firstly, people bring along with them attitude to a new learning environment. People have their own judgment toward the objects, people and events around them. They will be favourable to the objects, people and events that are close to their interest (Fishbein and Ajzen 1975). In the EUT context, end users who feel that the training objects (e.g. IT) are meaningful to them, and are close to their interest and values, will have a more positive attitude towards the training objects. We argue that when end users have a positive attitude towards the training objects, they may be more attentive to EUT and may be more willing to transfer the skill learned than those who do not have a positive attitude. We therefore add the pre-training attitude construct into our model of EUT effectiveness to describe the attitude of end users before EUT. Adapting from Fishbein and Ajzen (1975), we define pre-training attitude as the feelings (meaningful, value, interest) that end-user have towards the training objects prior to EUT.

Secondly, people who receive motivational forces such as perceived task value, career opportunity, self-improvement, or perceived task engagement may be motivated to perform better. In the EUT context, end users who receive motivational forces that match their interest, expectation and value, will exert more effort, set their

goal and self-regulation in order to achieve the desired outcomes. We argue that end users who receive such motivational forces prior to receiving EUT will be more attentive to EUT and be more willing to transfer the skills learned than those who do not have motivational forces. We therefore add a pre-training motivation construct into our model of EUT effectiveness. Adapting from Mitchell (1982), we define pre-training motivation as motivation forces that end users receive prior to EUT which arouses and directs them to learn.

The model can be briefly described as follows. Pre-training attitude and pre-training motivation affect learning and interaction which in turn affect training outcomes and skill transfer. Likewise, training method, individual differences and support may affect training outcomes as mediated by learning and interaction process (Gupta and Bostrom 2006). Training outcomes are measured by: cognitive outcomes and skill-based outcomes represented by **'can do'**; and affective outcomes represented by **'will do'** influence skill transfer represented by **'does do'**. An improvement in job performance as resulting by skill transfer will result in organisational performance (i.e. return-of-investment).

The model also incorporates techniques that may be used to affect pre-training attitude and pre-training motivation. We will only briefly consider two examples which we aim to examine in some detail in our future research (Section 4).

- Persuasive communication has been extensively studied for its effect on attitude change in the social psychology and mass communication literature (Brinol et al. 2007; Fishbein and Ajzen 1975; Perloff 2008; Petty and Wegener 1998). It refers to information that is designed to change the receiver's attitude in the advocated direction (Ajzen et al. 1996).

- Goal-matching is the match between purpose goals (end users' need) and target goals (training design such as training method and training material). According to Harackiewicz and Sansone (1991), goals have two levels: high level purpose goals (i.e. what an individual hopes to accomplish in a particular situation) and task specific target goals (i.e. activities design to achieve purpose goal). Expectancy Theory (Vroom 1964), Goal-setting Theory (Locke 1968) and Goal Matching Model (Harackiewicz et al. 2004) help to explain how matching between end users' expectation and goals with the training design should increase end users' intrinsic motivation to use IT applications. These motivation theories have been widely used in a variety of settings particularly in learning and teaching (Bandura and Locke 2003; Harackiewicz et al. 2002), organisational training (Mesmer-Magnus and Viswesvaran 2007), work motivation (Locke 1978) and task design for information system professionals (Gambill et al. 2000).

FUTURE RESEARCH

Our study is in progress. Our objective is to investigate the influence of two techniques for their effect on EUT effectiveness: persuasive communication and goal-matching. We now briefly outline our rationale for studying these two techniques.

End users have their own judgments and perceptions toward the use of IT. They are affected by their attitude prior, during and after training. They need accurate information for their correct understanding of the purposes, benefits and values of using IT. Based on Yale's persuasive communication (Hovland et al. 1953), and Elaboration Likelihood Model (Petty and Wegener 1997), we argue that a message from active trainer prior to or during training plus the quality of the message may influence end users' perception and motivation; it subsequently influences behaviour change (i.e. effective skill transfer to the job). Persuasive communication results in messages relating to benefits or personal relevance; therefore it may make end users perceive the competitive advantages, benefits and values of using IT. It may change or promote end-user perceptions to the use of IT. It may also motivate end users to actively attend EUT and they may subsequently accept the use of that IT. Once end users gain positive attitudes (perceptions) toward the competitive gain from the use of IT, for instance, in terms of using that IT to improve their performance and job accomplishment, they may be more committed and willing to transfer their skill and continuously use the IT. This study posits that end users who receive persuasive communication (stimuli information) when they attend EUT will develop a higher positive attitude, be more attentive to training and be more willing to transfer their skills learned than those who do not receive persuasive communication.

Goal-matching between end users' needs (primary goal) and training design (target goal) may enhance end users' perception and motivation for skill transfer. EUT that brings about user involvement in training design could create positive end users' perception. Goal-matching may encourage end users to participate or cooperate more in training design. Once end users learn that the EUT is purposely designed to match with their needs and that their personal goals are consulted and incorporated in the EUT design, they may have a more positive attitude toward the EUT and the training objects (i.e. IT). This will motivate them to learn and transfer the skills acquired to their workplace. This study posits that end users who receive needs assessment and receive training

design that match their needs (i.e. goal-matching) when attending EUT will be highly motivated. They will develop a higher positive attitude, be more attentive to training, and be more willing to transfer their skill learned than those whose training programme are not subject to goal-matching.

We intend to test the effect of these two techniques (persuasive communication and goal-matching) using a 2 X 2 longitudinal field experiment. The experimental design will be based on the proposed model presented in Figure 1. Our control group will be exposed to well known training approaches commonly believed to be effective, such as cognitive and behavioural modelling. We will base our persuasive communication and goal-matching treatments on the existing literature discussed. For instance we will use existing theories (Cognitive Dissonance Theory (Festinger 1957), Social Judgment Theory (Sherif et al. 1965) and Theory of Reasoned Action (Fishbein and Ajzen 1975)) when formulating the persuasive communication statements.

Participants will be teaching staff at the Private International University in a developing country. We argue that it is a valid work setting since the subjects will be staff. They can be considered as knowledge workers with similar demands to staff in corporate organisations (e.g. they are exposed to line of command, competing deadlines and promotion). In addition, most employees consider personal benefit and interest (e.g. job performance and rewards) regardless of the type of organisation. We also believe that the techniques for manipulating attitude and motivation are similar in both settings. As the first step in investigating the combined effects of persuasive communication and goal-matching on learning and skill transfer in the EUT context, it is worthwhile to start operationalising in the workplace in the educational setting to avoid a complex business environment. Future research can re-test and re-validate the instruments in other corporate settings.

The IT system (training object) is a Learning Management System (LMS). The target university spent approximately $2.14 million in 2005 for building the IT infrastructure required to facilitate learning and student services. Initial contacts have revealed general low usage of the system (< 20%) by staff despite completion of staff training programmes. Therefore from the University's management perspective, there is a lot of incentive to support this current study. The expected findings will contribute to our understanding of how best to design training programmes to enhance the likelihood of skill transfer into the work place, resulting in improved individual performance and organisation performance.

CONCLUSION

Organisations are faced with a problem when their employees do not (fully) utilise the installed information technology. The problem of learning and skill transfer to the job becomes critical. This paper proposes a model of EUT effectiveness with future direction of investigating two training techniques: persuasive communication and goal-matching as key drivers to improve EUT effectiveness. It also details our future research direction involving a longitudinal field experiment to explore the effect of these two techniques on EUT effectiveness.

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