Implementing e-Learning in Organisations: What E-Learning Research Can Learn From Instructional Technology (IT) and Organisational Studies (OS) Innovation Studies

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This article explores the applicability of interdisciplinary research on the implementation of technological innovations to the field of e-learning research. Arguing that there are important ways in which e-learning systems can be treated as "technological innovations," this article presents a review of several key theoretical and research design approaches that have been developed for use in the Instructional Technology (IT) and Organisational Studies (OS) fields. The literature review presented here demonstrates the complexity of the processes associated with implementation and observes that, despite the long-standing research interest in this area, unsatisfactory implementation outcomes continue to be encountered in practice. Given a high failure rate for e-learning implementations and the field's newness relative to the IT and OS disciplines, it is argued that e-learning research could benefit from greater interaction with these literatures. This article concludes with a discussion of the ways in which IT and OS research can be amended to make them more directly applicable to e-learning systems and offers some suggestions for future research.

The field of e-learning research remains a fledgling discipline in comparison to those literatures dealing with other types of technological innovations. Research on e-learning in organisations has, in fact, lagged behind the practical application of e-learning within enterprises, a fact which has contributed to the high failure rate of e-learning initiatives, which often occur against a background of unrealistic expectations.
While the late 1990s saw organisations across the world adopt e-learning at a rapid pace, more recently authors have begun to observe a plateauing in rates of uptake (Eklund, Kay & Lynch, 2003). This has been at least partially attributed to the less than optimal e-learning success rates that have been observed in practice and the general inability of real-world applications to live up to the hype that preceded them. The American Society for Training and Development (2003), for instance, reported a 62% failure rate of e-learning initiatives in Fortune 500 companies in the US and the UK. Eklund et al. (2003, pp. 11–12) therefore characterise this present period in e-learning as a time of “reflection and refinement based on an uneven march to maturity.” This, and the general need for both researchers and practitioners to develop and operationalise more insightful and robust theories of e-learning, has prompted some serious research effort into the processes involved in e-learning, in all its aspects.

As a method for the flexible delivery of training and development, e-learning practices can be understood as a subset of these traditional organisational functions. However, there are also many important ways in which e-learning systems are a type of technological innovation (Romiszowski, 2003). There is a large and diverse body of research, primarily from the fields of information technology (IT) research and organisational studies (OS), with a long history of studying the material, technical, and institutional aspects of innovation adoption. This literature therefore, offers large reservoirs of potentially instructive work on the diffusion of new technologies within organisational settings and the processes associated with innovation adoption in general. This article will present a sample of research from these fields and begin a discussion about the applications of this work to e-learning research, as well as the kinds of amendments that might be needed to make the research more specifically applicable to e-learning practice.

LITERATURE REVIEW

It is widely observed that despite a long and diverse research history in the area, a high failure rate continues to accompany the installation of technological innovations within organisations (Cooper & Zmud, 1990; Yetton, Sharma, & Southon, 1999; Griffith & Northcraft, 1996; Joshi, 1991). Failures are typically defined by a less than optimal return-on-investment for IT expenditure, ineffective diffusion of innovations within organisations, lack of user acceptance, or the “inappropriate” use of innovations (Cooper & Wolfe, 2005). Southon, Sauer and Dampney (1997: 112; see also Szajna and Scamell, 1993), for instance, report that the failure rate for large-scale technological innovations is 30% or greater. Markus and Benjamin (1996) locate the source of much of this failure in the implementation stage of the innovation process. While the term “implementation” can have varying defini-
tions, it is used here to mean the cumulative activities that constitute "organisational effort directed towards diffusing appropriate information technology within a user community" (Cooper & Zmud, 1990, p. 124).

This literature review is organised into four sections. The first section provides an overview of traditional theoretical approaches to the study of technological innovation adoption at the level of the individual. The second section introduces a theoretical framework for studying technology adoption at the organisation level, with a particular focus on the configuration theory of technology implementation. The third section examines the process- and stage-based models that have been widely used in research practice for studying adoption at the organisation level, while the fourth section examines two particular stage models in more detail. The first of these models is a hybrid model developed in the context of IT research, while the second model has been developed specifically for e-learning research.

**Classical Diffusion Theory**

Traditional approaches to implementation research have tended to converge around several theoretical frameworks for understanding technology implementation (Gallivan 1996, 2001). Notably, these have been Roger's (1983) diffusion of innovation theory (DOI) and Davis' (1989) technology acceptance model (TAM). These theories have been used by researchers to predict IT adoption behaviour, especially in factors research, but also as a lens for framing approaches to process research. Diffusion of innovation theory was originally developed to explain and predict the (non)acceptance of product innovations by consumers (Southon et al., 1997) and emerged from decades of prior studies on a range of innovations (Gallivan, 1996; Prescott & Conger, 1995). The technology acceptance model, on the other hand, was developed specifically to explain the adoption of IT innovations (Davis). Due to their overall similarity of approach, however, the two frameworks are often treated together (e.g., Agarwal & Prasad, 1998; Moore & Benbasat, 1991) as classical diffusion theory (Gallivan, 1996).

Classical diffusion theory has been widely used in implementation research and has received considerable validation within certain settings. The guiding assumptions of the theory mean that it has obtained optimal results when the individual user is the unit of analysis, the decision to adopt (or not adopt) is the dependant variable, and the decision occurs voluntarily in the context of noncomplex, personal use IT innovations (such as desktop computers and nongroup level software applications) (Gallivan, 2001). It has been observed, therefore, that a close fit between classical diffusion theory and innovation outcomes exists where the assumptions underlying the theory exhibit consistency with the context of the implementation and the characteristics of the innovation (Fichman, 1992).

Areas where classical diffusion theory has not received the same level of
empirical validation include mandated adoption scenarios and the implementation of complex innovations, especially where adoption requires coordination across groups and systems (Gallivan, 2001; Prescott & Conger, 1995). Importantly, many if not most organisation level technology implementations fall into these categories. In many organisational installations, individual use is either directly mandated through management communication, or is forced through the phasing out of former technologies for doing work. In these scenarios, the relevance of the individual choice to adopt as a dependant variable is questionable.

Further, the implementation of technologies that carry a high knowledge burden for use (that is, formal training or on-the-job learning is required to gain proficiency in use) has typically not demonstrated a good fit with classical diffusion theory (Gallivan, 2001). In addition, classical diffusion theory tends to be misapplied where implementation success is dependant on groups of individuals adopting new technologies in a coordinated, independent, and synchronised fashion. These examples constitute complex scenarios that are inconsistent with the kinds of adoption decisions for which classical diffusion theory was developed.

**Organisation Level Approaches for IT Implementation: Configuration Theory**

While classical diffusion theory presents a well-validated explanatory approach to the problem of individual, voluntary adoption of innovations, a similarly robust explanatory approach focussed at the organisation level of adoption has been more difficult to articulate. Further, it is debatable whether the decision to adopt is an appropriate dependent variable at the organisational unit of analysis. Rather, the extent, timing, impact, consequences, and processes leading to use are more productive variables for researchers to address.

Researchers working in OS have utilised a number of theoretical approaches to help explain the processes that occur at the organisation level during implementation. These theoretical approaches include (amongst others) those based on understandings of organisational politics (Levine & Rossmore, 1993, 1994/1995) and organisational learning (Argyris & Schön, 1996), while approaches to research design include the use of qualitative techniques such as case studies and ethnographic methods (Orlikowski & Barley, 2001).

One organisation level approach has been presented by Southon et al. (1997). They utilise configuration theory as a major alternative to classical diffusion approaches, arguing that the notion of IT – organisational fit encapsulated in configuration theory offers a much needed focus at the organisation level. The notion of configurational fit is based on a theory described in the OS literature (Miles & Snow, 1984), and encapsulates the extent to which the multivariate components of organisational life, such as strategy, structure, management processes, and technology, function in-tune with each other (Sauer, Southon, & Dampney, 1997). In the case of IT inno-
vations, organisational fit is attained when the innovation functions in a way that is consistent with the way the organisation functions, and is managed in the way the organisation is managed. Sauer et al. (1997) and Southon et al. reported on a technological innovation that demonstrated weak organisational fit along several measures. As a specific example, the innovation in question had an implementation strategy that was managed in a decentralised fashion, within an overall IT strategy that was centralised. In addition, the principal change management skills were located centrally. This is one example of weak configurational fit. The researchers in this case used factors such as IT and business strategy, organisational structure, employee roles, management processes, and skill distribution as the variables relevant to determining the overall configurational fit (Sauer et al. 1997).

In configuration theory, weak fit is the underlying condition that promotes the existence of risk-related behaviours in organisations. As such, the theory offers a behavioural explanation of performance (Sauer et al., 1997) that can be used to account for the persistence of undesirable risk factors during technology implementation. Sauer et al. (p. 350) referred to the outcomes of these risk factors as failure modes, which can commonly include process failures (cost and schedule overruns) and interaction failure (non-use of the innovation). While these failure modes are similar to project management metrics, the unit of analysis in configuration research is the organisation, rather than the project per se. Technological implementations are therefore cast as organisational initiatives with broad-reaching change implications, the management of which needs to demonstrate synthesis with the overall organisational management for successful outcomes to occur (Sauer et al.).

The core propositions of the model are therefore that weak configurational fit (a) creates the facilitating conditions for individuals to respond to competing motivations for action, and (b) constitutes the absence of an organisational unifying theme or logic, which can cause confusion amongst individuals as to the most appropriate decisions and behaviours needed to achieve organisational goals. The notion of intra-organisational tension or conflict is hereby incorporated although, in this theoretical perspective, this tension is not understood in an adversarial light, but is held to be the product of the “mixed messages” (p. 362) that arise from weak configurational fit. Figure 1 represents the core propositions of the configuration theory of information systems failure.

“Risk” (manifest, e.g., as poorly defined objectives) is therefore a central construct in this theory and increases the likelihood that the implementation (and the organisation by extension) will enter into particular failure modes. In this sense, the theory advances a systems-based understanding in which the component parts of the organisation are not examined in isolation, but with respect to the inter-relationships they exhibit with other component parts and the organisation as a whole.
While this theory of IT implementation offers a useful theoretical lens for interpreting and explaining outcomes, drawing as it does on theoretical work done in the OS field, it has not been as widely employed in the implementation literature as process or stage-based research. These approaches have been widely utilised in the IT literature, perhaps due to their affinity with modelling approaches that suit the applied nature of much IT research, which has historically concentrated on the "technical and practical exigencies of implementing and operating information systems" (Orlikowski & Barley, 2001, p. 154).

Process and Stage Research

Research into the implementation of technological systems within organisations has tended to fall into one of two categorical approaches: factors (or variance) research and process research (Sauer et al., 1997; Van de Ven & Poole, 2005; Robey, Ross, & Boudreau, 2002). Factors research has historically formed the largest stream of implementation research (de Abreu & Conrath, 1993; Sauer et al.) while process approaches have gained in popularity in recent times. While factors research has tended to focus on the individual "critical success factors" or variables that bear relationships to particular implementation outcomes, process research has sought to explain how implementation unfolds over time in terms of events and the contextual factors that prompt them.

The range of variables studied in factors research has been diverse, producing a complex and difficult to interpret body of work. Prescott and Conger (1995) noted that the variables uncovered by this stream of research depend on the unit of analysis. Much factors research has been aimed at the individual level of analysis and as such has unearthed user characteristics variables, such as user satisfaction (Rivard, 1987); user expectations (Szajna & Scamell, 1993); and personal innovativeness (Leonard-Barton & Deschamps, 1988). Factors research aimed at the organisation level has documented variables such as management support (Sharma & Yetton, 2003) and planning processes (Horner Reich & Benbasat, 2000) while research centred at the technology level has highlighted variables such as ease of use.
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(Rivard). Further, success in factors research has tended to be defined along the lines of traditional project management metrics (meeting project deadlines, finishing within budget, improved productivity) (Robey et al., 2002, p. 19), similar to the metrics used to measure IT innovation failure above. Poole, Van de Ven, Dooley, and Holmes (2000, p. 29) characterise this as one of the shortcomings of factors research, observing: "... this is a very limited way to conceptualise change and development. It overlooks many critical and interesting aspects of change processes".

There has therefore been a general movement towards incorporating a greater focus on processes in implementation research efforts. Process research typically attempts to offer insights into how implementation unfolds over time and may incorporate elements of factors research into study design by examining changes in related variables (Prescott & Conger, 1995), which has resulted in the distinction between factors and process research becoming somewhat blurred. Stage research, a subtype of process research (Gallivan, 2001), has been widely adopted for use as it focuses on how implementation unfolds while directing particular attention to the "time-ordering" (p. 58) of events, as well as the causal or facilitating conditions in which they occur.

Several stage models of implementation feature notably in the literature. Models in this sense are the product of a refining and a clarification of the cumulative knowledge about the implementation process. They are also a representation of the stages and events that occur, with guidance as to sequence, the interrelationships between events, and the contextual factors that influence outcomes. Rogers (1995) proposed an initial five-stage model, an approach that has been carried on by other researchers, notably Zmud and colleagues (Kwon & Zmud, 1987; Cooper & Zmud, 1990), who proposed the best known model in the context of IT research.

These models tend to be based on a rational planning approach to coordinating change. For instance, the model outlined in Cooper and Zmud (1990) consists of six stages labelled: initiation (problem or opportunity identification); adoption (management-level decision to adopt); adaptation (innovation development and installation); acceptance (individuals induced to use innovation); routinisation (innovation becomes part of the everyday running of the organisation); and, infusion (increased organisational performance stemming from innovation use). These stages, it is argued, unfold against a background of five major contextual factors identified by the authors from a review of relevant factors research. These are: (a) the characteristics of the user community; (b) the characteristics of the organisation; (c) the characteristics of the innovation; (d) the characteristics of the task to which the innovation is applied; and (e) the characteristics of the organisational environment.

Central to the stage models is the assumption that rational decision-making processes characterise the first few management-level stages, while organisa-
tional-change processes ensue as a consequence of the innovation implementation, which are resolved when the innovation becomes accepted as a routine part of organisational life. Stage models therefore tend to reflect assumptions proposed by Lewin (1952) in his influential model of change, which characterised the change process as a linear, stage-driven process unfolding in three parts: (a) unfreezing, (b) moving, and (c) refreezing. In Cooper and Zmud's (1990, p. 125) model, initiation is aligned with the unfreezing stage, adoption and adaptation are aligned with the change stage, and acceptance, routinisation and infusion are aligned with the refreezing stage. In addition to treating "the organisation" as a consistent entity, Srinivasan and Davis (1987, p. 67) noted that this approach is oriented to a view of organisational change that unfolds under the guidance of a change agent who, in the past, was often assumed to be the IT project manager, while more recent work has expanded this role to include other senior managers in the organisation (Markus & Benjamin, 1996). The stage models influenced by this view of change often therefore retain a strong focus on planning for change and developing effective managerial interventions for directing change.

As an illustration of the application of stage models to implementation research, two such models will now be examined in more detail. The first is a model proposed by Gallivan (2001), built upon the model proposed by Cooper and Zmud (1990). The second is a model proposed by Wilcox, Dexter, and Petch (2004) developed specifically to address the problem of e-learning through the lifecycle. While this model is not solely focussed at the implementation stage per se, it has been included here as a model, developed in the field of e-learning research, that draws heavily on work from the field of IT and is based on a staged understanding of technological systems development and use.

Gallivan's model for authority-based contingent adoption of innovations. Gallivan's (2001) proposition is based upon the six stage model described by Zmud and colleagues and incorporates some aspects of traditional individual adoption research, while addressing technology implementation in the context of mandated organisational adoption. Mandated technology adoption is typically conceptualised in the literature as a two-staged contingent adoption process. The first stage involves the management-level decision to adopt and the second stage, contingent upon the first, involves the adoption of the innovation at the individual user level.

Figure 2 presents the model diagrammatically, reproduced from Gallivan (2001). The model has been developed as multi-staged (incorporating the primary and secondary adoption decisions, as well as a third stage, organisational consequences) although Gallivan's primary focus is on the secondary adoption stage. In the secondary adoption stage, Gallivan has organised a set of influences and processes that, it is proposed, may serve to elu-
cidate the complexity of the organisational task this stage typically represents. These include constructs from the theory of planned behaviour (Ajzen, 1985), which are held to predict the likelihood that an individual will perform a particular behaviour (in this case, use a technology). In particular, Gallivan has incorporated the notion of subjective norms which, in the theory of planned behaviour, is a specific construct used to denote individual beliefs about the expectations of relevant others. In the context of the stage model, this construct therefore accounts for the social or workgroup pressures to adopt or not adopt a technology and acknowledges the influence of group-level concerns in determining implementation outcomes.

In this model, subjective norms therefore operate alongside managerial interventions in shaping individual and group behaviour at the secondary adoption decision-making stage. The managerial intervention construct acknowledges the influence of change agents at the management level, but also includes other actions such as mandated use. The additional construct, facilitating conditions, is highlighted by Gallivan (2001) as an open category of imperfectly defined factors that “make implementation more- or less-likely to occur” (p. 61). He noted that, in the past, researchers have tended to operationalise other facilitating conditions along the lines of narrowly

![Diagram](Figure 2. Gallivan’s model for authority-based contingent adoption of innovations (Source: Gallivan, 2001, p. 60))
defined technically-focussed measures that have not paid enough attention to the organisational or individual user context. The facilitating conditions construct is therefore an area of prime research interest in this model.

Wilcox et al.'s (2004) e-Learning Unified Process (eLUP) model. The model proposed by Gallivan (2001) comes from the IT literature on the implementation of new technological innovations. This research body has a longer and more in-depth history than does research on e-learning implementation, which remains largely underdeveloped. A search of the literature reveals several examples of e-learning models, however, many of these deal with other stages of the e-learning development cycle (Gery, 1987; Laurillard, 2002) or are proprietary in nature (Xia Systems, 2005).

One of the characteristics of the academic contributions to the field of e-learning research is that they tend to reflect the different knowledge bases from which the research focus emerges. In addition, there is an absence of a unifying framework to bring together the various stages of e-learning development, implementation, and use. Wilcox et al. (2004) have acknowledged the “lack of a common language” for integrating various stakeholder concerns and contributions into the e-learning development process and have proposed a higher level model for describing the end-to-end e-learning lifecycle. This model, termed the e-learning Unified Process (eLUP), is an example from the e-learning literature of an approach that builds directly on inter-disciplinary effort to propose a staged understanding of the full and integrated e-learning process.

This modelling approach was prompted by the observation that individual pockets of endeavour have contributed to the development of tools and techniques for accomplishing discrete stages of e-learning development, but that “many practitioners are still struggling to understand where these tools and techniques fit into a strategy or plan” (Wilcox et al., 2004, p. 4). Developed in the context of e-learning for higher education institutions, eLUP adopts an approach the authors have labelled educational engineering (p. 4, emphasis in original) and is based on some established standards developed in the software development community. As such, the model reflects various key ideological and theoretical assumptions of this community. As Gallivan’s model discussed, Wilcox et al.’s model adopts a theoretical position on technology development that is angled towards the rationalist approaches to planning for change. It also shares a number of characteristics in common with the process models previously discussed, including its longitudinal approach, staged progression, and focus at the project level.

As Figure 3 demonstrates, eLUP incorporates a high degree of complexity in attempting to impose order on what has traditionally been a set of disjointed approaches to e-learning development. One of the most important features of the model is therefore the extent to which it attempts to provide a sense of context for its various component parts.
eLUP is therefore a staged model depicting the e-learning lifecycle end-to-end, with these stages represented along the time axis. The model relies heavily on the standard management tool, used in the software development industry, called the Rational Unified Process (RUP). In Figure 3, the RUP has contributed the core terminology and structure utilised in the model. The disciplines contained along the content axis have been drawn directly from the RUP and modified to reflect the particular demands of e-learning development. In RUP the term disciplines does not so much refer to particular organisational units or workgroups, rather, it is aligned with the particular workflows or tasks that characterise each discipline. As the humps along the time axis in the eLUP denote, each discipline may have greater or lesser involvement at particular stages of the e-learning lifecycle. Finally, a key feature of the model is that it allows for nonlinear progression through the stages, as represented by the concept of iterations, shown along the bottom of the figure.

Discussion

This article has reviewed a number of significant streams in the literature from IT and OS research on the implementation of technological innova-
tions within organisational settings. It has reviewed traditional theoretical approaches to innovation diffusion that are focussed at the individual unit of analysis, and as such have been found wanting in the more complex organisational adoption scenarios.

Process and stage-based research approaches have also been discussed. These approaches have gained in popularity in response to the need to address the organisation level events that influence implementation outcomes. An example of a stage model from the IT literature was outlined in more detail as a demonstration of the value and applications of this approach. As this model demonstrates, stage models tend to provide a high level of descriptive insight into the processes associated with implementation. A further strength of the model presented by Gallivan (2001) is the author's acknowledgement that the construct labelled "other facilitating conditions" is an area that demands further research effort.

Modelling approaches have a number of advantages to offer the study of technology implementation. For instance, there are important practical gains to be made from a well-designed model, such as a guiding framework within which practitioners can plan and coordinate their on-the-ground efforts. In outlining an understanding of the relationships between constituent parts of an organisational implementation effort, models can offer practitioners important cues regarding what to manage and when.

Modelling approaches are valuable for researchers for the same reasons, in that they attempt to consolidate and order a large body of research into a sequence of inter-relationships and progressions leading towards a set of defined outcomes. Models are useful therefore for both describing the change processes associated with implementation, as well as ordering the factors and events that influence them (Gallivan, 2001).

Process research and stage models have, however, been criticised by some authors (Robey et al., 2002) for providing overly descriptive accounts of implementation and for relying too heavily on rationalist assumptions about the nature of change. For example, most models assume that organisational change stems from technology implementation, not the opposite, that the innovation adoption originates at the management level, that users need to be persuaded or supported into adoption, and that the sequence of events leading to successful implementation is linear and possessed of an inherent logical order. Van de Ven and Poole (1995) observed that stage models utilise a "lifecycle" mechanism to describe the change process in organisations, which assumes that the organisation itself, as well as the change process, has an underlying form, logic, program, or code, (p. 515) that guides the change events towards some definable end. These assumptions, coupled with the overly descriptive output of stage-based research, have tended to limit the power of these approaches to explain or predict the outcomes of implementation research, which continue to be contradictory (Robey et al.).
This deficiency is perhaps reflective of the epistemological gap between IT and OS research described by Orlikowski and Barley (2001). This gap, characterised on the one hand by an IT research focus on “situated explanations”, “explicit inventions”, and “practical solutions” (p. 147), and on the other hand an OS focus on the abstract generation of theories and insights that generalise across situations, prompted the authors to call for a merged perspective for research on information technology within organisations.

Therefore, while stage models offer important contributions for both researchers and practitioners focussed on achieving successful implementation outcomes, there appears to be a need to broaden the scope of the models to explicitly acknowledge the complexities associated with the processes of change as well as the processes of organising that go on within enterprises. Inherent in this would be a systems-view of organisation, wherein the structure of a given system is understood as the interlocking, potentially time-delayed relationships amongst its component parts. In this view, emergent outcomes cannot necessarily be understood by looking at the organisation’s individual parts in isolation. A further underlying assumption is that organisations have permeable, fluid boundaries and are both changed by their interactions with the environment, while also changing the environment through those interactions.

The configuration theory of IT implementation was discussed as one among several potential lenses that could be used to enhance the explanatory power of process research. While the theory as outlined does not depend on a stage model, it could be used to complement the insights derived from this stream of research, particularly in terms of the “other facilitating conditions” construct. Alternatively, this theory also suggests researchers approach the study of implementation from a slightly different viewpoint, as it takes as its unit of interest the organisation as a whole, rather than the IT project within the organisation.

The application of this model as a theoretical lens has a number of key implications for implementation research. First, it demands more attention to be paid to the organisation as a whole, including to areas that may seem only peripherally related to the technology implementation in question. For instance, a researcher examining an IT innovation project would not look simply at the technology, the project team directly responsible for managing its implementation, and the intended user group, but would also consider the organisation’s overall business strategy, structure, and so on. In the model presented by Sauer et al. (1997, p. 361), there is little focus given to the “minutiae of individual behaviour”, rather, analysis centres on group-level behaviours in terms of the risks they pose to implementation success.

One of the departures offered by this model over the traditional approaches to implementation planning is that, rather than tailoring project management tactics to better address manageable risks, some of these risks are rede-
fined as above and beyond the reach of IT project managers. Instead, these risks are located under the control of senior management (hypothetically at least), which has implications for the way implementation projects are run, and the extent to which they are viewed and treated strategically at the organisation level.

This broad-level, holistic viewpoint may be of particular value to e-learning researchers, as it encompasses a number of basic assumptions that have already received support in the e-learning literature. To the extent that configuration theory highlights the value of achieving synchronicity between the various subsystems and parts of organisational life, it bears similarities with the literature on workplace training initiatives (such as e-learning), wherein it is observed that training initiatives achieve functional and strategic importance when they are closely aligned with business strategy. Schofield (2003, p. 163), who conducted a series of case studies of e-learning initiatives in large Australian organisations, highlighted the importance of integrating e-learning into a “high-performance corporate strategy”. This, she found, was more important in “leveraging workforce development up the corporate agenda” than a focus on the management and delivery of e-learning itself.

A limitation of the configuration approach to IT implementation that may bear some revision, however, is the way it treats the notion of strategic intent. A core assumption of the theory is that weak fit induces risk-related behaviours through the mechanism of imperfectly defined or poorly understood organisational goals. The risk-related behaviours (manifest as individual and group actions that are inconsistent or in conflict with the organisation as a whole or other of its constituent parts) are therefore understood as a product of the mixed messages resulting from weak fit, rather than a product of other forces, such as organisational politics. The theory therefore places a strong reliance on the assumption that, if the organisation’s strategic goals were well understood throughout the ranks, and the fit between the organisation’s component parts supported the operationalisation of this understanding, individuals in the organisation would act to support this strategy through their day-to-day tasks. For example: “In a tight fit the coherence of the configuration is clear to all organisational members so that they can readily see what needs to be done with less attention being required to manage and control day to day operations and organisational change” (Southon et al., 1997).

This is an assumption that is debatable in light of other research about the (varying) effectiveness of strategic planning (Gaddis, 1997; Eaton Baier, March, & Saetren, 1986). Although Southon et al. argued that “strategic alignment” is a more powerful tool for achieving good organisational outcomes than “strategic planning” (the former suggests modifications to organisation design while the latter emphasises planning processes), perspectives that
acknowledge the role of power and politics within organisational life would strengthen the analytical insight configuration theory can produce. To incorporate the important work of a number of authors (e.g., Levine & Rossmoore, 1993, 1994/1995; Scarbrough & Corbett, 1992) along this dimension would not be to deny the role of mixed messages in producing risk-behaviours, but would enable a more robust understanding of their origins in the organisation.

A further limitation of this theory is related to the limitations of many OS-oriented theories, as discussed by Orlikowski and Barley (2001). In their review of the relative strengths and weaknesses of OS- and IT-based research, the authors observed that many OS researchers achieve institution-level insights at the cost of under-representing the material and technical affordances of technological artefacts. As such, the cross-case generalisability that many OS theories achieve may circumvent a focus on the role of “human agency” (p. 147) in directing the design and use of technology.

Additional considerations for e-learning research. This article has proceeded on the assumption that there are certain similarities between the implementation of an e-learning initiative and other technological innovations, making an examination of the IT and OS literatures on implementation a worthwhile endeavour for e-learning researchers and practitioners. There are, however, important differences between e-learning innovations and other technological systems that will be important for e-learning researchers to take into account. One of these differences presumably lies in the types of outcomes that will determine whether or not an implementation was successful. While it may seem intuitive to state that improved learning outcomes would constitute such a metric for e-learning implementation, there are other purposes for which organisations deliver workplace training that may render additional measures appropriate for use, such as reduced training costs, improved consistency of training messages, and so on.

Further, in the extent to which implementation outcomes are partially influenced by innovation characteristics, there are additional variables for e-learning researchers to address, including the instructional design characteristics, as well as (more laterally) facilitator support and the extent to which an interactive learning community is constructed.

At an organisation level, studies demonstrating that the implementation of an e-learning system can have effects for the functional significance of training and human resource departments have already been discussed. This suggests that the repositioning of the training function and the role of learning within the organisation may be fruitful areas of investigation for e-learning researchers as they continue to strengthen the knowledge base about the implementation of these new systems for learning delivery.

To this end, e-learning researchers may find the techniques utilised by Gallivan (2001) a useful case study of the applications of the modelling and the-
oretical work borrowed from IT and OS research. For instance, Gallivan used qualitative techniques to gather data surrounding a particular implementation project, then adopted the framework suggested by his proposed stage model as a “high-level lens” to structure the data analysis. A specific aim was to derive concrete, situated examples of the overly broad and abstract constructs located at stage two of the model. Drawing on this work, Gallivan used analytical induction methods (p. 65) to identify emergent themes in the data, which enabled him to propose concrete examples of the various constructs employed in the model including, importantly, the “facilitating conditions” construct, which had been identified as lacking in research attention.

Such an inductive research approach would be a useful one for e-learning researchers interested in implementation processes to adopt, given the under-representation of dedicated research interest in this area.

**Conclusion**

This article has identified a set of literature from other disciplines that e-learning researchers may find beneficial as the study of the implementation processes associated with e-learning introduction matures. It has proceeded on the assumption that there are several important ways in which e-learning systems bear similarities with other types of technological innovations, which have long been subject to persistent failure rates during organizational implementation.

This article has tried to address some of the complexities of implementation research by identifying some dominant streams in the literature and discussing them in relation to e-learning research. In particular, approaches that provide a focus at the organisation level of analysis have been favoured. These approaches include, but are not limited to, the process and stage-based research that has been widely utilised in the IT research stream. Institution-level theories influenced by the field of OS have also been discussed.

Given the relative strengths and weaknesses of these individual approaches, it seems likely that e-learning researchers may want to borrow from multiple streams in shaping their own particular strategies for implementation research. In addition, there are important ways in which e-learning systems are different from other types of management information systems that will need to be fleshed out. This, and the development and refinement of advanced models for e-learning implementation remains the goal of future and ongoing research.

**References**


Implementing E-Learning in Organisations


