
Organisational active learning: implications for innovation adoption and implementation

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Abstract: Drawing on the education and training literature, this paper defines organisational active learning and proposes a conceptual model that specifies organisational-level processes of active learning. In this framework, organisations are presumed to learn through a cyclic process of priming, practising, and reframing. The present theoretical framework articulates the collective processes of active learning in organisations, which enhances our understanding of the process of innovation, adoption and implementation.

Keywords: active learning; organisational learning; innovation adoption; innovation implementation.

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1 Introduction

Organisational learning has enjoyed steady attention from organisational scholars over the last three decades. In this intensive stream of research, organisations have often been conceived of as "the body of thought thought by organisational thinkers" (Weick, 1979). Although researchers have regarded organisational learning as a meaningful construct and applied it to various organisational phenomena, both the use of this construct and references to it have been ambiguous in several ways. First, because the term 'learning' is an achievement verb (Sandelands and Drazin, 1989), it refers to both the process of learning and the outcome achieved through learning. Weick and Westley (1996) pointed out that this double image of the learning concept leads to confusion in theorising. Second, there have been two distinct approaches to conceptualising organisational learning: cognitive and behavioural (Robey et al., 2000). While the cognitive approach to

learning emphasises information processing and knowledge generation/management (Crossan et al., 1999), the behavioural approach attends to changes in the repertoire or pattern of behavioural responses (Huber, 1991). This distinction creates another dual image of organisational learning focusing on different aspects of organisational functioning. Third, the issue of level is a prevalent source of confusion in the organisational learning literature. When scholars use the term organisational learning, often it is not clear whether they are referring to an organisational- or an individual-level phenomenon (Dodgson, 1993).

Drawing on the education and training literature, this paper clarifies some of these conceptual ambiguities and provides prescriptions for effective organisational learning. To this aim, it attends to 'active learning' in organisations and develops a process model of *organisational active learning*. To demonstrate the model's utility, it then applies the proposed framework to the issues of innovation adoption and implementation. Adapting definitions suggested by Huber (1991) and Robey et al. (2000), organisational active learning is defined as "collective processes that enable an organisation to achieve a new course of action through a cyclic process of priming, practising, and reflecting". This definition, in order to avoid ambiguity, presents organisational learning as a process construct rather than a dual concept that implies both process and outcome. Second, to bridge the cognitive and behavioural approaches to organisational learning, the current definition assumes that the two processes operate together either simultaneously or sequentially, resulting in an organisational learning cycle as described below. Finally, although this paper builds on ideas from the education and training literature, which focuses on individual learning, it will extend them to explain collective learning processes that occur in social units such as organisations.

2 Theoretical background

In the organisational learning literature, organisations are conceived of as "the body of thought thought by organisational thinkers" (Weick, 1979). Organisational learning has been defined in a myriad of ways by many scholars. Key characteristics of organisational learning include:

- metacognitive processes of information processing
- an organisation which facilitates learning and development for all of its employees
- empowered employees who generate new knowledge, products, and services (Dodgson, 1993; Marguardt and Reynolds, 1994).

Organisational learning covers diverse topics such as:

- environmental alignment or adaptation of an organisation, or more broadly, organisational change
- product development and management of innovation
- management of culture, values, and vision (Drejer, 2003).

Because these topics are considered critical for organisational performance, organisational learning is also related to organisational outcomes (Dodgson, 1993; Sandelands and Drazin, 1989). Currently, the concepts and frameworks emanating from

the area of organisational learning are ubiquitous and vital elements of the domains of organisational research and practice (Lorens-Montes et al., 2004).

Most theories of organisational learning are oriented toward information-processing and largely rely on the computer metaphor of input-processing-output flows, based on the assumption of organisational rationality. Even action-oriented organisational learning models have emphasised the rational decision-making process (Dixon, 1994; Purser and Pasmore, 1992). However, sometimes action may precede a thorough analysis of problems, or an actionable solution may initiate a search for amenable problems (Cohen et al., 1972). Moreover, if the means–end relationship is ambiguous and the cost of engaging in action is not substantial, it may be more efficient to test the validity of the action by just carrying it out than by calculating the pros and cons of taking the action (cf. analysis paralysis). In the current environment, in which time and speed are crucial sources of competitive advantage, organisational active learning is a vital strategy for organisational adaptation and survival. This paper provides a theory-based explanation of the process and mechanism of active learning in organisations, which is lacking in the current literature of organisational learning.

The notion of active learning is not new in the area of organisational learning and development (Smith and O’Neil, 2003). Scholars of organisational learning have already mentioned such phrases as ‘learning by using’ (Rosenberg, 1976), ‘learning by experience’ (Kolb, 1976), and ‘learning by doing’ (Adler, 1990). Most of these notions of experience-based learning, however, have simply focused on the patterns of learning curves (e.g., inverted *j*-curve, *s*-curve) based on increasing experience. Moreover, the previous research on active learning has rarely theorised the processes of experiential learning, and when it has, it has done so at the individual level. Integrating several disciplines of thought including education, psychology, sociology, and management, the present conceptual development expands the organisational learning literature by theoretically articulating organisational processes and mechanisms of active learning. This approach will complement the individual-level orientation of the existing active learning theories. This paper also contributes to the innovation literature by offering sophisticated explanations of innovation adoption and implementation based on the process of organisational active learning. The conceptual links between organisational learning and innovation utilisation in organisations that are identified in this paper provide a new perspective on organisational innovation, which may lead to further conceptual and empirical efforts in this domain.

3 Process and mechanism of organisational active learning

According to the education and training literature, four elements characterise active learning. First, self-involvement of learners makes active learning distinct from traditional approaches such as didactic or lecture-style instructional modes (McKeachie, 1999; Thomas, 2002). Second, active learning provides opportunities for learners to engage in tasks relevant to the topic (Bonwell and Eison, 1991). The opportunity to actually experience and practice is critical for the development of a profound understanding and in-depth processing of the subject (Smith and O’Neil, 2003). Third, successful active learning stimulates higher-order forms of thinking, such as analysis, synthesis, and evaluation, which go beyond simple comparison and memorisation (Bonwell and Eison, 1991; Meyers and Jones, 1993). Higher-order

thinking allows learners to advance themselves, through a spiral-like development process, to a new cognitive schema that facilitates higher-level learning (McKeachie, 1999). Finally, although it is not explicit in the literature, active learning is goal-directed in nature. Only with a clear image of the desirable end-state of learning can learners define specific and pertinent tasks that help achieve it (Meyers and Jones, 1993). In effect, clearly defined goals are necessary for self-regulation, which guides the learning process and makes it meaningful.

Based on the four operational components of active learning (i.e., self-involvement, engagement in relevant tasks, higher order thinking, and goal-directed process), I propose that active learning takes place in organisations in the form of three sub-processes that create a cycle of continuous, spiral-like learning: priming, practising, and reframing. *Priming* refers to the process in which learners are exposed to specific knowledge. As a result of their exposure to knowledge, learners become aware of new possible courses of action and may be motivated to actually carry out some of them. *Practising* can be regarded as a mini-experiment conducted by learners in which they apply and test the validity of a new course of action in achieving an intended goal. *Reframing* refers to the process in which learners reevaluate their knowledge and redefine it by reflecting on their experience in practising a new course of action and its efficacy in realising the promised goal. In so doing, learners can reframe their perspectives or revise their knowledge basis, and progress to an advanced state of learning.

Most existing studies of active learning have conceptualised it at the individual level (Bonwell and Eison, 1991; Meyers and Jones, 1993; Thomas, 2002). This tendency seems natural given that learners in educational settings are students or trainees. To establish active learning as a collective phenomenon, however, I articulate various *social* mechanisms by which active learning occurs in social units such as teams or organisations. It is therefore assumed that teams or organisations learn through social interactions among members (Brown and Duguid, 1991; Thomas et al., 2001; Robey et al., 2000). This paper thus endorses the social-process account of organisational learning in developing a concrete image of active learning in organisations.

3.1 Priming

Priming is the process by which learners are exposed to a new course of action, become interested in it, and are motivated to try it. At the organisational level, priming may be initiated by information from various internal and external sources. Organisations can collect information via various channels. A major source of information is other organisations in the same organisational field (e.g., same industry, regional adjacency) because organisations continually observe other organisations and adjust their behaviours based on these observations. Therefore, the success or failure of similar organisations forms a valuable source of information for organisational action. For instance, organisational isomorphism (DiMaggio and Powell, 1983) or inter-organisational mimicry (Greve, 1996) reflects the occurrence of vicarious learning (Bandura, 1982) at the organisational level.

In addition, organisations are directly affected by interorganisational communication networks. The effect of directorate interlocking among firms on organisational action is a well-documented example of interorganisational communication (Mizruchi, 1996). Studies have shown that direct and indirect inter-organisational communication ties affect organisational behaviours such as adoption of the multidivisional form

(Palmer et al., 1993) and the use of a takeover defense (poison pill, (Davis, 1991)). Internally-generated information can also prime organisations to engage in a new course of action. Internal information that primes organisations can be obtained from regular checkpoints for self-correction (e.g., performance data), analysis of previous success and failure, intuitions and inventions from internal R&D, and breakdowns of the current system (Dixon, 1994). It should be noted, however, that priming is not a haphazard collection of information. Rather, it is a strategic process that is driven by the goal of the organisation, in which the value of collected information is evaluated against the goal of the organisation or the new course of action (Rogers, 1995).

Whether the source of the information is internal or external, exposure to new information per se is not sufficient to prime an organisation for further learning. Priming an organisation is more complex than priming an individual because organisational-level priming necessitates collective mobilisation of interest or attention toward the action (Smith, 2004). In this sense, social processes comprise a critical component of organisational priming because information must be shared and collectively interpreted in order to affect organisational members' perceptions. Only through interactions and dialogues among organisational members can information be transformed into shared knowledge and become meaningful for members (Brown and Duguid, 1991; Purser and Pasmore, 1992).

Gaining organisational members' attention is still not sufficient to prime an organisation. Priming also includes a motivational component that encourages learners to proceed to the next step of active learning – that is, practising. Successful organisational priming therefore leads to collective commitment that is strong enough to initiate practising. Given the limitations of organisational resources, however, the mobilisation of organisational commitment that provides sufficient momentum for a new course of action is challenging. Because of the difficulty of building commitment around a new idea, it is important to identify the people who may comprise the critical mass necessary to initiate a new course of action (Clayton, 1997; Smith, 2004). The range of organisational members to be primed is determined by the nature of the new course of action to be taken (Frost and Egri, 1991). Some actions require priming of only a small portion of organisational members while others require priming of the entire organisation. Dutton et al.'s (2001) study on issue selling suggests a plausible strategy for priming an organisation: change agents (either middle managers or external consultants) equipped with proper contextual knowledge and interpersonal skills may be able to initiate the interest of top management and organisational members through the use of various tactics (e.g., packaging, involvement, timing).

3.2 Practising

Practising refers to various forms of actual use of an idea or a new course of action. Depending on the level of commitment and the degree of clarity of the means–end relationships, practising can take different forms including exploration, experimentation, practice, or performance (Walter and Marks, 1981). The purpose of practising ranges from testing the feasibility of a new course of action (exploration) to actually enhancing skill levels critical to the successful execution of the action (performance). Rather than being simply a random trial of a new course of action, practising consists of deliberately designed mini-experiments that allow learners to experience and test the validity of the selected set of knowledge and information in the local setting

(Ellerman et al., 2001, p.176): “a number of rapid-results initiatives ... are designed to enhance learning and hypothesis testing up front and to use early feedback and mobilise tacit knowledge”. Taking on the active role of designer, learners are expected to decide parameters such as the format, content, and intensity of practising a new course of action.

A core phenomenon associated with practising is self-involvement of an organisation in a new course of action because practising requires it. On the other hand, practising is a signal that indicates an organisation’s involvement and consequently causes it to increase, which facilitates the continuation of the target behaviour. Practising and organisational involvement thus have a mutually reinforcing relationship. Practising increases organisational involvement through two complementary social psychological mechanisms. First, research has shown that explicit, visible, and public behaviour increases the commitment of those performing the behaviour to the behaviour itself (e.g., cognitive dissonance theory (Elliot and Devine, 1994)). Accordingly, organisational members, who practice a new course of action at workplace, may develop stronger commitment to the action, which in turn collectively increases organisational involvement. Second, practising affects organisational members who observe a new course of action performed by their peers. Practising provides an unambiguous signal to reluctant organisational members that their organisation and colleagues are committed to the action (cf., attribution theory (Haslam, 2001)). Thus, a supportive social environment may increase the intensity of organisational members’ self-involvement in the action. The dual process of actors’ avoidance of cognitive dissonance and observers’ attributions is likely to increase an organisation’s self-involvement in a new course of action.

An organisation’s self-involvement provides opportunities for intensive, in-depth learning because self-involved practising is apt to induce more thorough learning than conceptual and observational learning (Bonwell and Eison, 1991; Thomas, 2002). Through self-involvement in the learning process, learners can obtain a profound understanding of the action to be learned (Meyers and Jones, 1993) as well as ownership of the idea, which is imperative for effective learning (Ellerman et al., 2001). In addition, an organisation’s self-involvement offers a realistic perspective on the logistical aspects of an action, such as the amount of resources, technical proficiency, and commitment needed to implement it.

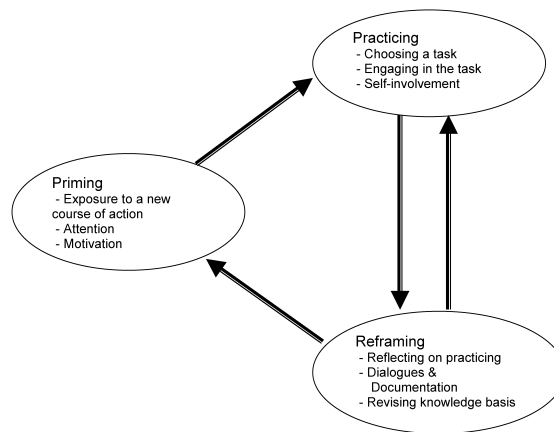
3.3 Reframing

Reframing refers to the process of reflecting on a completed course of action that might lead to new perspectives and/or a revised knowledge basis or organisational memory (Robey et al., 2000). Reflecting on the experience gained from practising is crucial because experience itself does not guarantee learning. Rather, as Swieringa and Wierdsma (1992, p.23) state, “Whether and how much people learn from their experience depends, not so much on what and how much they experience, but on what they do with what they experience”. In a similar vein, Kolb (1976) also insisted that, in order to induce learning in the forms of knowledge and decisions for further re-doing, experiences should be reflected on.

Similar to priming and practising, reframing in organisations occurs through interactive processes that involve organisational members. Through various interactions among organisational members, organisations collectively reflect on a completed action, reinterpret previous knowledge and information, redefine the current situation, consider

possible future obstacles, and develop plans to overcome those obstacles. All these aspects of reframing are conducive to the establishment of a better ground for the next cycle of learning. Of the three processes, reframing is perhaps the most directly related to organisational learning because it involves the creation and revision of organisational knowledge structures and repertoires of behavioural patterns, actualising the benefits of practising and expanding the organisation's capacity for future practising (Gudergan and Gudergan, 2004). In this sense, practising and reframing may consist a feedback loop that operates as a servo-mechanism regulating organisational actions (see Figure 1). In the current business environment, the effective functioning of the real-time feedback loop between practising and reframing should be facilitated because timely feedback and corrective measures are necessary for continuous organisational adaptation.

Figure 1 Cyclic model of organisational active learning



Organisational reframing may take place through several different mechanisms. Frequently, reframing may occur by means of collective dialogues, which occur in contexts such as debriefing meetings, on-site ad hoc meetings, evaluation committees, and most importantly, continuous informal communications among organisational members. The debriefing meeting subsequent to practising (e.g., using new technologies, conducting war games in the military) is a common tool for exchanging reactions to and sharing perceived meaning and inadequacies of a given action (Walter and Marks, 1981). In addition, formal and informal feedback from colleagues, managers, and outside constituents (e.g., suppliers, customers) also facilitates organisational reframing.

Organisational reframing is also facilitated by documentation of the completed action, which may take various forms such as technical reports, policy manuals, and new information system features in the form of a new database or improved subroutines or options (Purser and Pasmore, 1992; Shrivastava, 1983). Although documentation can be performed only for declarative, as opposed to tacit, knowledge (Robey et al., 2000), as a means of formally recording experience, it offers an effective mechanism through which organisations can develop their knowledge bases for future reference. Nevertheless, it should be noted that similar to collective dialogues, the procedures required for documentation constitute a form of dialogue among organisational members. For this reason, various forms of both collective dialogue and documentation procedures help

organisations learn from completed actions and subsequently create and update their knowledge structure, which prepares the organisation for new, advanced cycles of active learning.

The organisational mechanisms articulated thus far explicate potential processes by which active learning may occur in organisations. These mechanisms also indicate ways in which organisations can utilise active learning to expand their behavioural repertoire and capacity. The theoretical significance of the proposed framework will be discussed later. The following section applies this framework to the process of innovation adoption and implementation, and demonstrates how the proposed model can be used to explain these important organisational phenomena better and also provide valuable suggestions for successfully adopting and implementing innovations.

4 Application to innovation adoption and implementation

Organisational active learning may offer a useful heuristic tool for understanding the process of innovation adoption and implementation in organisations. Adoption and implementation of innovations constitutes a form of organisational learning, because learning involves assimilation of something new, such as knowledge, information, or behaviour, into the learner's cognitive and behavioural systems (Heijs, 2004). Numerous studies of the implementation of innovations such as information technologies have adopted organisational learning as their guiding theoretical framework (Crossan et al., 1999; Clayton, 1997). These studies have demonstrated that

- experience is critical for the occurrence of learning
- knowledge barriers can be surmounted by training/practice and learning from other organisations
- the implementation of new technology is a social, context-dependent process (Robey et al., 2000).

By applying the organisational active learning framework to innovation adoption and implementation, this paper theoretically enriches and extends the relationship between organisational learning and innovation. In addition, it offers practical guidelines for change agents and managers who want to improve organisational functioning by introducing innovations and other forms of planned changes.

In a practical sense, the present framework of active organisational learning has a prescriptive value for organisations that attempt to adopt and implement innovations. In the following sections, I explain how the process model of organisational active learning can be used to understand better and manage three innovation-related phenomena that unfold in a roughly sequential order:

- innovation adoption
- fit (or lack of fit) between innovation and organisation at the initial stage of implementation
- continuous mutual adaptation between innovation and organisation during the subsequent implementation.

4.1 Innovation adoption

Innovation adoption refers to a decision to implement an innovation as the best course of action available (Rogers, 1995). Rogers presents three stages of innovation adoption: knowledge, persuasion, and adoption decision. The framework of organisational active learning offers a comparable, but more actor-oriented, explanation of innovation adoption: a potential adopting organisation is exposed to information through multiple channels and its interest in an innovation is activated (priming). Then it actively chooses usable components of the innovation and conducts test trials to achieve its goals (practising). Finally, the organisation evaluates the innovation by reflecting on the information and knowledge gained from priming or its experiences from practising to make an adoption decision (reframing). Organisations, similar to individuals, may want to engage in trial testing before they make adoption decisions.

Innovation adoption decisions are affected by characteristics of both the adopting organisation and features of the innovation (Yao et al., 2004). The organisational active learning framework helps us to identify important characteristics of innovations and organisations that will increase the likelihood of innovation adoption.

4.1.1 Characteristics of innovations

According to the present framework, innovations with the following characteristics may have a better chance of being adopted:

- innovations that have an information value that is sufficiently high (e.g., salient, vivid, relevant) to activate a cognitive response on the part of the organisation such as attention or motivation to explore the new course of action suggested by the given innovation (priming)
- innovations that are capable of being used or experienced at low cost, which may increase self-involvement of the organisation in the innovation (practising)
- innovations that result in experiences that are highly observable and interpretable, thus providing sufficient empirical stimuli for reflection and potential reevaluation of the status quo (reframing).

These characteristics are consistent with existing research findings. In order to successfully prime an adopting organisation, an innovation must have characteristics such as a credible source (Backer et al., 1986), relevance, communicability (Leonard-Barton, 1988), and relative advantage (Rogers, 1995). To facilitate practising by an organisation, an innovation needs to have features such as trialability, divisibility (Leonard-Barton, 1988), reversibility, and observability (Oldenburg et al., 1997). For successful reframing, an innovation must have characteristics such as compatibility with adopters' previous experiences and values or the ability to generate unambiguous results (either positive or negative) that facilitate interpretation of experiences and feedback that result from practising (Rogers, 1995).

4.1.2 Characteristics of organisations

The present model suggests that organisations with the following characteristics are more likely to adopt innovations beneficial to them:

- organisations that are characterised by intense formal and informal networks, both internal and external, which expose the organisation to a wide range of information and knowledge (priming)
- organisations that possess an organisational climate that facilitates experimentation or learning-by-doing, such as a strong orientation toward action and encouragement of risk taking and quick failure (practising)
- organisations that have a strong ability to reflect on their experiences, indicated by factors such as widespread use of communities of practice or formal procedures and policies requiring frequent debriefing in regard to completed actions (reframing).

Empirical findings indicate that organisations with high active learning capacities as described above are more likely to quickly adopt beneficial innovations than are organisations that lack them. For example, research on human service innovations found that factors such as interpersonal contact between potential adopters and innovators, outside consultation on the adoption process, and organisational support for innovation use promote innovation adoption (Backer et al., 1986). In addition, encouragement of experimentation, high tolerance for failure, and risk-taking propensity have been identified as key organisational predictors of the successful introduction of new practices (Klein and Sorra, 1996).

4.2 Fit between innovation and organisation

The degree of fit between critical organisational features and comparable characteristics of a given innovation may predict the effectiveness of its implementation (Reger et al., 1994). In this respect, researchers have typically assumed a positive, linear relationship between degree of fit and successful implementation (Klein and Sorra, 1996; Sproull and Hofmeister, 1986). However, the common assumption of the linearity of this relationship may not be valid. For example, Reger et al. (1994) maintain that extremely low or high fit between TQM and organisational identity leads to less effective implementation when compared to a moderate level of fit, supporting a curvilinear relationship between fit and implementation success. To explain the negative effect of a low fit between innovation and organisation, Reger et al. (1994) relied on the concept of resistance to change; i.e., people usually resist changes that are dramatically different from status quo, which results in a level of tension that exceeds an acceptable level.

The framework of organisational active learning may provide more sophisticated explanations of this curvilinear relationship between fit and implementation outcomes. A low fit between innovation and organisation may cause a negative implementation outcome because it impedes implementation by acting as a barrier to active learning. First, an innovation that contradicts the values or experiences of an organisation may fail to prime an organisation to view it as a valid course of action. Second, in such cases, an organisation is neither willing nor able to identify and practice pertinent tasks for testing the innovation, which keeps it from developing self-involvement in regard to the innovation. Third, a perceived dissimilarity between innovation and organisation that is large enough to forestall priming and practising may also preclude an organisation from properly evaluating the quality of the innovation based on information and experience (if any).

Reger and her colleagues (1994) point out that a very high fit between innovation and organisation can also hinder effective implementation because organisational members perceive no significant difference between the innovation and the current mode of operation, resulting in a lack of commitment. The current active learning framework further elaborates potential processes underlying this phenomenon. First, when innovation-organisation fit is too high, an innovation may fail to prime the organisation to develop interest in the innovation. This is because the innovation may not be differentiable from existing courses of action and thus be regarded as a minor twist within the existing paradigm that can be easily ignored. The lack of distinction between an innovation and existing organisational practices makes implementation of the innovation less challenging (Locke and Latham, 1990), a situation in which organisational members are not motivated to learn simply because the innovation is not perceived as an 'innovation'.

Second, under the condition of a high innovation-organisation fit, an innovation may not provide opportunities to practice and experience a new course of action. When an innovation is very similar to existing organisational routines, organisational members are more likely to regress toward habitual, well-learned routines while implementing the innovation. This is because when organisational members feel that an innovation is very similar to their current mode of operation, they may believe that the innovation can be effectively substituted by their existing routines.

Third, a high innovation-organisation fit may lead to mindless, mechanical implementation of the innovation because the innovation fails to produce stimulating experiences that might engender reflection subsequent to actions (Locke and Latham, 1990). Therefore, when using a very 'familiar' kind of innovation, organisational members may not engage in the higher-order thinking that is necessary to establish the spiral-like, developmental learning process that upgrades their behavioural repertoire and knowledge base (Bonwell and Eison, 1991; Meyers and Jones, 1993). As a result, organisations remain in the mode of single-loop, simple-minded learning and thus fail to fully exploit the potential of an innovation (Paiva, 2003).

4.3 Mutual adaptation between innovation and organisation

Throughout the process of innovation implementation, the fit between innovation and organisation will change continually, and the implementing organisation must resolve the resulting tension between the two systems. This dynamic interaction between innovation and organisation can be best described as mutual adaptation (Price et al., 1998): an organisation can completely restructure or transform itself around the innovation or the innovation can be entirely reinvented by the organisation and lose its original design (Rogers, 1995). In most cases, however, the result will be some form of compromise between innovation and organisation: both the innovation and the organisation will change to a certain degree and create a new equilibrium that resolves the tension between the two systems. In this dynamic process, neither innovation nor organisation is a stable entity. For this reason, the process of mutual adaptation between innovation and organisation defines the implementation process and may play an important role in determining its success (Price et al., 1998).

The present framework of organisational active learning offers valuable insights into the mutual adaptation process, although outcomes are hard to predict due to the complexity of the process involved. At the initial stage (priming), an organisation is

exposed to an innovation and explores the value of the innovation. Through practising, the organisation tests and experiences the innovation. At this stage, the organisation is not a passive recipient of a new course action. Instead, it reinvents the innovation by adding, deleting, and modifying some of its components (Rogers 1995). Subsequent to practising the innovation, organisational members collectively debrief each other about their experiences. Based on their reflections on the use of the innovation, organisational members evaluate and redefine the innovation, plan improved approaches to implementation, and devise plausible strategies to cope with anticipated implementation setbacks. Reframing facilitates the rediscovery of an innovation and initiates the next cycle of organisational active learning, resulting in a more refined and sophisticated use of the innovation to better serve the needs of the local users (Robey et al., 2000).

In the second wave of priming subsequent to the completion of an initial learning cycle, organisational members compare the redefined, modified innovation with its original design, and seek additional feedback, information, and knowledge that are relevant to further customisation of the innovation. Practising the innovation that has been reinvented by the organisation will then take place, which is followed by further debriefing of the experience and subsequent redefinition of the innovation. This cycle of organisational active learning repeats itself until complete routinisation occurs and organisational members practice the innovation without any further thought (the innovation is fully integrated as a routine or standard operation procedure of the organisation). Through this repetitive cycle of organisational active learning, both innovation and organisation adapt to each other, thereby determining the trajectory and the pattern of actual implementation as well as the innovation's eventual success.

5 Conclusion

Drawing on the education and training literature, this paper has isolated four operational characteristics of active learning (self-involvement, practising relevant tasks, higher order thinking, and goal-directed process) and developed a conceptual framework for organisational active learning characterised by three cyclic processes (priming, practising, and reframing). Organisational active learning refers to the process of self-involved learning at the organisational level that connects cognitive and behavioural systems. The proposed framework was further applied to innovation-related organisational phenomena such as adoption and implementation. Although its empirical validity has yet to be tested, the framework proposed here offers potentially unique contributions to the literature of organisational learning and innovation, as well as, in a broader sense, organisational change and development.

The proposed framework is consistent with the existing models of organisational change. For example, the evolutionary perspective describes organisational change as a "recurrent, cumulative, and probabilistic sequence of variation, selection, and retention events" (Van de Ven and Poole, 1995, p.514). Although these three processes are mechanical and based on natural forces guiding the evolution process, the basic idea of the theory is similar to the three active learning processes: introduction of variation into the system (priming); testing of the viability of each variation by the system or environment (practising); and retention of viable alternatives as a future ground for variation (reframing). Similarly, Lewin's (1958) seminal model of change processes (i.e., unfreezing, change, and refreezing) and Berman's (1981) processes of innovation

implementation (i.e., mobilisation, implementation, and institutionalisation) seem consistent with the three processes of organisational active learning proposed here.

Despite its consistency with existing models of organisational change, the present framework has several unique strengths. First, priming is distinct from other pre-change phases (e.g., variation, unfreezing, mobilisation) in its emphasis on the active role played by and motivational involvement of the learners. In the priming process, learners actively seek knowledge and information from various sources, and then motivate themselves toward further involvement in the learning process. Second, practising is not just a series of trial-and-error events leading to a form of environmental selection, nor is it a full-fledged change effort that is already assumed to be beneficial. Rather, practising is an intentional, reality-based learning opportunity designed and conducted by learners, in which they proactively select a set of behavioural options for testing. Third, reframing does not refer to maintenance of change achieved at the previous stage (e.g., selection, changing, implementation) as implied by terms such as retention, refreezing, and institutionalisation. Rather, reframing generates further learning through reflection on the experiences gained from practising. Finally, the components of active learning (self-involvement, practising relevant tasks, higher-order thinking, and goal-directed process) that underpin the organisational active learning processes render the present framework distinct from existing models of learning and change.

Several authors of organisational learning have emphasised the importance of action with respect to the occurrence of learning (Ellerman et al., 2001; Kolb, 1976). For instance, Swieringa and Wierdsma (1992) maintain that learning should be demonstrated by behavioural changes that serve the goals of the learner. Extending this line of thought, the present model of organisational active learning offers a theoretical framework that enhances our understanding of the social processes of organisational learning that involve both the action and the actor or learner. It also provides a more sophisticated explanation of several key phenomena of innovation adoption and implementation. Nevertheless, the empirical validity of this conceptual model has yet to be established by further field investigations, ideally through in-depth, qualitative analyses of actual learning events in a small number of organisations, followed by a large-scale quantitative survey study that would provide findings generalisable across cultures, industries, and organisational forms. With empirical support, the present model could be broadly utilised in theory development and in the improvement of various organisational learning and change efforts.

Although the utilisation of the mutual feedback loop between acting and thinking (or practising and reframing) would appear to be simple and straightforward, the literature shows that this is in fact not the case. Empirical studies show that organisations fall prey to 'competency traps', in which thinking based on past success is wrongfully applied to guide actions in new settings (Miller, 1993), or 'performance paradoxes', in which managers act in a way that ignores or contradicts knowledge gained from their experiences (Cohen, 1998). Smith and O'Neil (2003, p.64) succinctly stated this point: "experience itself is a very slippery teacher; most of the time we have experiences from which we never learn". Future conceptual and empirical endeavours need to be directed towards exploring the reasons for these apparent learning disabilities (Robey et al., 2000). This counter-intuitive pattern indeed presents a need for further research efforts geared toward understanding how and under what circumstances active learning is generated, facilitated, and inhibited. Moreover, it would be intriguing to reveal the ways in which an organisation's active learning influences and is influenced (feedback vs. feedforward

process) by its environment (e.g., other organisations, market) or by its components (e.g., teams, employees).

References

- Adler, P. (1990) 'Shared learning', *Management Science*, Vol. 36, No. 8, pp.938–957.
- Backer, T.E., Liberman, R.P. and Kuehnel, T.G. (1986) 'Dissemination and adoption of innovative psychosocial interventions', *Journal of Consulting and Clinical Psychology*, Vol. 54, No. 1, pp.111–118.
- Bandura, A. (1982) 'Self-efficacy mechanism in human agency', *American Psychologist*, Vol. 37, No. 1, pp.122–147.
- Berman, P. (1981) 'Educational change: an implementation paradigm', in Lehming, R. and Kane, M. (Eds.): *Improving Schools: Using What We Know*, Sage, Beverly Hills, CA, pp.251–286.
- Bonwell, C.C. and Eison, J.A. (1991) 'Active learning: creating excitement in the classroom', *ASHE-ERIC Higher Education Report No. 1*, The George Washington University, School of Education and Human Development, Washington DC.
- Brown, J. and Duguid, P. (1991) 'Organisational learning and communities of practice: toward a unified view of working, learning and innovation', *Organisation Science*, Vol. 2, No. 1, pp.40–57.
- Clayton, P. (1997) *Implementation of Organisational Innovation*, Academic Press, San Diego.
- Cohen, H.B. (1998) 'The performance paradox', *Academy of Management Executive*, Vol. 12, No. 3, pp.30–40.
- Cohen, M.D., March, J.G. and Olsen, J.P. (1972) 'A garbage can model of organisational choice', *Administrative Science Quarterly*, Vol. 17, No. 1, pp.1–25.
- Crossan, M., Lane, H.W. and White, R.E. (1999) 'An organisational learning framework: from intuition to institution', *Academy of Management Review*, Vol. 24, No. 3, pp.522–537.
- Davis, G.F. (1991) 'Agents without principles? The spread of the poison pill through the intercorporate network', *Administrative Science Quarterly*, Vol. 36, No. 4, pp.583–613.
- DiMaggio, P.J. and Powell, W.W. (1983) 'The iron cage revisited: institutional isomorphism and collective rationality in organisational fields', *American Sociological Review*, Vol. 48, No. 2, pp.147–160.
- Dixon, N. (1994) *The Organisational Learning Cycle: How We Can Learn Collectively*, McGraw-Hill, London.
- Dodgson, M. (1993) 'Organisational learning: a review of some literatures', *Organisation Studies*, Vol. 14, No. 3, pp.375–394.
- Drejer, A. (2003) 'Innovation and learning', *International Journal of Innovation and Learning*, Vol. 1, No. 1, pp.9–23.
- Dutton, J.E., Ashford, S.J., O'Neil, R.M. and Lawrence, K.A. (2001) 'Moves that matter: issue selling and organisational change', *Academy of Management Journal*, Vol. 44, No. 4, pp.716–736.
- Ellerman, D., Denning, S.D. and Hanna, N. (2001) 'Active learning and development assistance', *Journal of Knowledge Management*, Vol. 5, No. 2, pp.171–179.
- Elliot, A.J. and Devine, P.G. (1994) 'On the motivational nature of cognitive dissonance', *Journal of Personality and Social Psychology*, Vol. 67, No. 3, pp.382–394.
- Frost, P.J. and Egri, C.P. (1991) 'The political process of innovations', in Staw, B.M. and Cummings, L.L. (Eds.): *Research in Organisational Behavior*, JAI Press, Greenwich, CT, Vol. 13, pp.229–295.

- Greve, H.R. (1996) 'Patterns of competition: the diffusion of a market position in a radio broadcasting', *Administrative Science Quarterly*, Vol. 41, No. 1, pp.29–60.
- Gudergan, G.P. and Gudergan, S.P. (2004) 'Learning to strategise innovative services: the role of system dynamics', *International Journal of Innovation and Learning*, Vol. 1, No. 3, pp.227–239.
- Haslam, S.A. (2001) *Psychology in Organisations*, Sage, London.
- Heijs, J. (2004) 'Innovation capabilities and learning: a vicious circle', *International Journal of Innovation and Learning*, Vol. 1, No. 3, pp.263–278.
- Huber, G.P. (1991) 'Organisational learning: the contributing processes and the literatures', *Organisation Science*, Vol. 2, No. 1, pp.88–115.
- Klein, K.J. and Sorra, J.S. (1996) 'The challenge of innovation implementation', *Academy of Management Review*, Vol. 21, No. 4, pp.1055–1080.
- Kolb, D.A. (1976) 'Management and the learning process', *California Management Review*, Vol. 18, No. 3, pp.21–31.
- Leonard-Barton, D. (1988) 'Implementation characteristics of organisational innovations: limits and opportunities for management strategies', *Communication Research*, Vol. 15, No. 5, pp.603–631.
- Lewin, K. (1958) 'Group decision and social change', in Maccoby, E.E., Newcomb, T.M. and Hartley, E.L. (Eds.): *Readings in Social Psychology*, Holt, New York, pp.197–211.
- Locke, E.A. and Latham, G.P. (1990) *A Theory of Goal Setting and Task Performance*, Prentice-Hall, Englewood-Cliffs, NJ.
- Lorens-Montes, F.J., Garcia-Morales, V.J. and Verdu-Jover, A.J. (2004) 'The influence on personal mastery, organisational learning and performance of the level of innovation: adaptive organisation versus innovator organisation', *International Journal of Innovation and Learning*, Vol. 1, No. 2, pp.101–114.
- Marguardt, M. and Reynolds, A. (1994) *The Global Learning Organisation*, Irwin, New York.
- McKeachie, W. (1999) *Teaching Tips: A Guidebook for the Beginning College Teacher*, DC Health and Company, Lexington, MA.
- Meyers, C. and Jones, T.B. (1993) *Promoting Active Learning: Strategies for the College Classroom*, San Francisco, Jossey-Bass.
- Miller, D. (1993) 'The architecture of simplicity', *Academy of Management Review*, Vol. 18, No. 1, pp.116–138.
- Mizruchi, M.S. (1996) 'What do interlocks do? An analysis, critique, and assessment of research on interlocking directorates', *Annual Review of Sociology*, Vol. 22, pp.271–298.
- Oldenburg, B., Hardcastle, D.M. and Kok, G. (1997) 'Diffusion of innovations', in Glanz, K., Lewis, F.M. and Rimer, B.K. (Eds.): *Health Behavior and Health Education: Theory, Research, and Practice*, Jossey-Bass, San Francisco, pp.270–286.
- Paiva, E.L. (2003) 'Integrating different types of knowledge: an empirical investigation', *International Journal of Innovation and Learning*, Vol. 1, No. 1, pp.45–55.
- Palmer, D.A., Jennings, P.D. and Zhou, X. (1993) 'Late adoption of the multidivisional form by large US corporations: institutional, political, and economic accounts', *Administrative Science Quarterly*, Vol. 38, No. 1, pp.100–131.
- Price, R.H., Friedland, D.S., Choi, J.N. and Caplan, R.D. (1998) 'Job-loss and work transitions in a time of global economic change', in Arriaga, X.B. and Oskamp, S. (Eds.): *Addressing Community Problems: Psychological Research and Interventions*, Sage, Thousand Oaks CA, pp.195–222.
- Purser, R.E. and Pasmore, W.A. (1992) 'Organising for learning', *Research in Organisational Change and Development*, Vol. 6, pp.37–114.
- Reger, R.K., Gustafson, L.T., Demarie, S.M. and Mullane, J.V. (1994) 'Reframing the organisation: why implementing total quality is easier said than done', *Academy of Management Review*, Vol. 19, No. 3, pp.565–584.

- Robey, D., Boudreau, M.C. and Rose, G.M. (2000) 'Information technology and organisational learning: a review and assessment of research', *Accounting, Management, & Information Technology*, Vol. 10, No. 2, pp.125–155.
- Rogers, E.M. (1995) *Diffusion of Innovation*, Free Press, New York.
- Rosenberg, N. (1976) *Perspectives on Technology*, Cambridge University Press, Cambridge.
- Sandelands, L. and Drazin, R. (1989) 'On the language of organisational theory', *Organisation Studies*, Vol. 10, No. 4, pp.457–478.
- Shrivastava, P. (1983) 'A typology of organisational learning systems', *Journal of Management Studies*, Vol. 20, No. 1, pp.7–24.
- Smith, A.D. (2004) 'Manufacturing workers: exploring the ability to change', *International Journal of Management and Enterprise Development*, Vol. 1, No. 3, pp.251–267.
- Smith, P.A.C. and O'Neil, J. (2003) 'A review of action learning literature 1994–2000: Part 1 – bibliography and comments', *Journal of Workplace Learning*, Vol. 15, No. 2, pp.63–69.
- Sproull, L.S. and Hofmeister, K.R. (1986) 'Thinking about implementation', *Journal of Management*, Vol. 12, No. 1, pp.43–60.
- Swieringa, J. and Wierdsma, A. (1992) *Becoming a Learning Organisation: Beyond the Learning Curve*, Addison-Wesley, Workingham, UK.
- Thomas, J.C. (2002) 'Active learning for organisational development students: the masterpiece project', *Organisational Development Journal*, Vol. 20, No. 3, pp.8–16.
- Thomas, J.C., Kellog, W.A. and Erickson, E. (2001) 'The knowledge management puzzle: human and social factors in knowledge management', *IBM Systems Journal*, Vol. 40, No. 4, pp.863–884.
- Van de Ven, A.H. and Poole, M.S. (1995) 'Explaining development and change in organisations', *Academy of Management Review*, Vol. 20, No. 3, pp.510–540.
- Walter, G.A. and Marks, S.E. (1981) *Experiential Learning and Change*, John Wiley & Sons, New York.
- Weick, K.E. (1979) *The Social Psychology of Organising*, Addison-Wesley, Reading, MA.
- Weick, K.E. and Westley, F. (1996) 'Organisational learning: affirming an oxymoron', in Clegg, S.R., Hardy, C. and Nord, W.R. (Eds.): *Handbook of Organisation Studies*, Sage, London, pp.440–458.
- Yao, J.E., Lu, J., Liu, C., Chen, Q. and Xu, X. (2004) 'Significant predictors of information technology innovation adoption', *International Journal of Innovation and Learning*, Vol. 1, No. 2, pp.177–191.