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## Structuring the project environment for learning

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### Abstract

This paper argues that project learning and the learning competency development of project practitioners are most appropriately pursued through the creation and maintenance of supportive situated learning environments within projects. Drawing on participative action research into learning practices within a case study project involving organizational change, this paper introduces a model of project situated learning behaviour and identifies and explains five sociological elements (barriers or enablers) that are primal in shaping the learning behaviours of project team participants. This framework facilitates practitioners' systematic and communal reflection on their learning practices and helps develop their skills in 'learning how to learn'.

### Keywords

Structuring, project, environment, for, learning

### Disciplines

Business | Social and Behavioral Sciences

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**STRUCTURING THE PROJECT ENVIRONMENT FOR  
LEARNING**

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## STRUCTURING THE PROJECT ENVIRONMENT FOR LEARNING

### ABSTRACT

This paper argues that project learning and the learning competency development of project practitioners are most appropriately pursued through the creation and maintenance of supportive situated learning environments within projects. Drawing on participative action research into learning practices within a case study project environment, this paper proposes a model of project situated learning behaviour and identifies and explains five sociological elements (barriers or enablers) that are primal in shaping the learning behaviours of project team participants. These elements are: *cognitive style; learning relationships; pyramid of authority; knowledge management, and; the situational context*. It is further argued that within each project setting, these elements be publicly exposed and that project practitioners undertake systematic and communal reflection upon them. Such actions by project participants positively contribute to situated learning within projects and help develop practitioners' skills in 'learning how to learn'. These five sociological elements therefore provide a framework to aid project practitioners' systematic reflection on their learning practices or to find ways to initiate and pursue their own project learning endeavours.

**Keywords:** Project situated learning, Sociological elements

## I. INTRODUCTION

With an increasing focus on the learning development of individuals and organizations to enable them to successfully compete in dynamic operating environments, coupled to the use and further development of project teams and project structures to achieve organizational goals, it is important to develop a better understanding of the learning phenomenon within projects. From a project management perspective, a better understanding of, and systematically enacting learning processes within project team settings would be an important aid in the development of projects and their outcomes, as well as the development of the learning and project skills capability of individuals within projects. Indeed, as Ayas [1996] suggests, learning is a key strategic variable for project management. However, a dearth of empirical research into the complexities of the learning phenomenon in a project team context prevails i.e. learning in relation to the goals of the project and the professional development of the team members. Literature on this specific cross-disciplinary topic is also limited. For example, in the project management literature that embraces the sociological aspects of project management, there is a very limited and generally rather shallow coverage of learning and its challenges within project team environments (usually limited to expounding the virtues of learning in the project and promoting normative post project review processes).

In seeking to develop a better understanding of learning in projects, a number of questions about facilitating it in project teams emerge. For example, 'What social mechanisms shape one's individual approach to learning in this particular context? What local factors influence or constrain project team efforts to learn? These questions and others emerge, I suggest, within a commonly held practitioner perception within the project management community that some focus on learning is valuable and yet confusing, and learning (within a project) is mostly accepted as a random, opportunistic and coincidental act grounded in experience. This view of the complexity of learning is also reflected in the following comment from a project team participant involved in the project case study from which the content of this

paper is developed, *“So learning has to be key to what we do. We have to change ... we have to learn to change our behaviours, change our thinking, change our recognition, and change what is normal. Normal should be robust argument rather than polite acceptance. So how do we actually make that happen? I’m not sure many of us are doing too much thinking along how can we make that change.”* This quotation also highlights the dilemma faced by many project team members when confronted with the learning challenge i.e. they usually recognize the potential value but it isn’t a focal point of the project and they are unsure about how to proceed to harness the opportunity.

In pursuing any attempt to develop a better understanding of the learning phenomenon within projects, one of the primary challenges for project teams is also in conceiving projects as ‘vehicles for learning’ [Smith and Dodds 1997: 8] and in conceiving themselves as learners as well as traditional project task achievers. One project team member from the research case echoed this challenge by commenting that, *“The value in teaching and learning is still a pretty tough dimension – the alligators are biting at our heels wanting all sorts of rational things done ... but yet, we still need to move on from that. We need to convey to people the value in learning and understanding what is going on in the business.”* Wenger [1998: 95] suggests that one of the reasons people do not think of their job as learning is that what they learn is their practice and that learning is not reified as an extraneous goal or as a special activity. Similarly, Raelin [2001: 20] suggests that whilst we learn in everyday work activity, we are not subjecting that learning to conscious activity as doing so might impede our performance. Yet projects are rich with significant personal learning opportunities [Smith and Dodds, 1997; Arthur, DeFillippi and Jones, 2001: 99], and therefore project team members may need to redress this perception of their learning just being their ‘practice’ (i.e. going about the tasks of their project) to enable them to develop a systematic ‘learning practice’ conjoined to their project management practice – what Björkegren [1999: 138] defines as ‘a dual approach to project management’. This potential duality of the project role is not something easily embraced from within traditional project management practice/cultural perspectives. However, to conceive project teams also as rich learning

entities, is a large step towards 'opening a door' into understanding learning within project team environments.

Whilst opening that 'conceptual door' is the first step, possessing this conception and a desire to learn within the project team practice is not enough to simply make it happen. A vital next step, and the trajectory of this paper, is to gain an insight into the project environmental influences or conditions that impact how project team participants construct their learning processes or activities. By implication, this insight is particularly concerned with the practical and social aspects of learning in a project context. Actions in this regard will identify and help address a range of sociological elements within a project team environment that may constrain or conversely support the learning of participants and the development of a systematic localized project learning practice. Identifying such elements would seem to present opportunities for personal and project team 'capability development' [Senge 1990; Kim 1993; Dunphy et al., 1997; Frame, 1999; Saint-Onge and Wallace, 2002: 12] as well as greater intellectual, creative and practical contribution towards immediate project outcomes. Regardless of the focus of the learning activity, if these project environment influences on learning aren't known, then intra-project learning will remain obscure and opportunistic.

Drawing on the key findings from a case study exploration of project based learning, this paper provides crucial insights into structuring a project environment that facilitates and promotes the situated learning of project practitioners within their project settings. The following section of this paper discusses this situated dimension of learning and also explains its relationship to the cognitive dimension of learning. Thereafter, the next section outlines the project case study and the methodological approach pursued in undertaking this research - which brings important, but limited attention to the empirically grounded genesis and evolution of the model of project situated learning behaviour which is presented in this paper. The genesis and subsequent development of the model from this case study data is however, not intended to be the focus of this paper. Instead, it is the intention of this paper to introduce and provide explanations of the model and its components. Nonetheless, by citing appropriate references and highlighting the

components of the model with limited illustrations from the case study data, the reader may gain some appreciation of how the case study evaluated underpinned the development of the model itself. Expectantly then, the final discussion section in this paper introduces and explains this model of project situated learning behaviour and its constituent elements, and argues that these elements require more deliberate and communal practitioner attention.

## II. THE SITUATED DIMENSION OF LEARNING

Human learning and behaviour is an outcome of the meanings constructed by humans through their continuous reciprocal interactions between people and the environmental influences of their contexts [Bandura, 1977: vii and 12; Lave and Wenger, 1991: 35; Dodgson, 1993: 383]. Learning can therefore be considered to be profoundly linked to people and their actions and the conditions in which it is generated [Brown and Duguid, 1991: 69 and 77; Billett, 2000: 280]. This social constructivist perspective on learning implies that all knowledge and all meaningful reality is contingent upon human practices within their worlds, and on being developed and transmitted within an essentially social context [Crotty, 1998: 42]. Therefore, social constructivist theories of learning emphasize social relations, sensemaking [Weick, 1990], informality, collective action and conversations within the workplace, and learning is also considered an integral part of generative social practice within the context [Lave and Wenger, 1991; Richter, 1998: 303]. This perspective encourages us to understand project learning through the experiences and interactions of project participants, in which individuals make sense of project activities and develop their own learning activities in interaction with their specific (and changing) project environments [Burrell and Morgan, 1979: 227; Schwandt, 1994: 118; Thomas, 2000: 25 and 42]. This perspective also suggests a need to develop 'localized' or 'situated' views of learning, as the nature and process of learning activity may be different in different contexts and cultures [Dodgson, 1993: 382; Easterby-Smith, 1997: 1106].

Conventional views on learning primarily reflect the cognitive dimension of learning [Lave and Wenger, 1991] where learning is seen as mainly cerebral, unproblematic, and as a matter of transmission and assimilation. This view tends to ignore or leave unexplored the nature of the learner and their world and their relationships and interactions within that context [Lave and Wenger, 1991: 47]. However, the cognitive dimension of learning is not, and cannot be divorced from situated or social practice within the context in which the cognitive learning process of an individual is enacted. Therefore, it can be concluded that cognitive learning theory spotlights the cognitive aspect of a situated learning process and thus, the context and its myriad sociological aspects mediate the cognitive learning activities of an individual and are an integral part of the learning and knowledge creation process [Antonacopoulou, 1997: 6; Coombs and Smith, 1998: 18; Gherardi and Nicolini, 2000]. This primal influence of the 'situational relationships' suggests that the situated or social dimension of learning always frames the cognitive dimension, or as Gherardi, Nicolini and Odella [1998: 274] state, "cognitive and practical activity can thus be pursued only within this world, and through this social and cultural network." Thus, learning can always be considered a practical accomplishment that takes place amongst and through other people (where learners construct their meanings and understandings and learn through their social interactions within a practice context) and is not simply and only, an individual cognitive activity (where learners as individual actors possess and process information and modify their mental models) [Gherardi et al., 1998: 274; Richter, 1998: 302; Gherardi and Nicolini, 2000: 331]. Hence, if one seeks to better understand and improve the complete learning activity within any context, then paying attention to the situated dimension of learning is of primary value.

The situated dimension of learning is clearly concerned with the practical and social aspects of learning within a context. These aspects are reflected in situated learning theory which presumes that most learning occurs on the job in culturally embedded ways, and it evolves through the participation and interaction of people and their collective sense-making activities as they develop their competencies and construct their identities to function effectively within a community or domain of practice [Brown and

Duguid, 1991; Lave and Wenger, 1991; Cook and Yanow, 1993; Wenger, 1998; Dixon, 1999: 43-62; Gherardi, 1999: 112; Gherardi and Nicolini, 2000; Wenger, McDermott and Snyder, 2002]. Situated learning theory therefore draws our attention to learning that takes place in everyday life, and within those contexts, the learning process is part of the activities and practices and therefore social interactions of people within communities of people [Fox, 2000: 854; Raelin, 1998: 280]. Thus, the 'reality of learning' in a project environment can be considered constructed, maintained and reproduced through human practices within the project social context [Greenwood, 1994: 85]. Consequently, the project practice becomes the unit of learning analysis, which then places an emphasis on supporting dialogue, conversations and storytelling between participants as key mechanisms to cultivate learning within a project. Knowledge resides within those social relations of the practice [Gherardi, 2001: 133] and, as Brown and Duguid [1991: 59] argue, learning, working and innovating are interrelated and complementary, and are neither conflicting or problematic forces – hence, practice is essential to understanding work, knowledge is conjoined to practice, and learning is the connection between work and innovation. Therefore, learning as a practical activity [in any setting], is always a socially structured activity where the conditions and forms for learning are established unintentionally and tacitly by the community that shapes the practice – which also makes learning evasive to many forms of planning [Gherardi et al., 1998: 288].

### **III. RESEARCH METHODOLOGY AND STUDY CONTEXT**

Whilst the discussion presented in this paper is primarily at a theoretical level, the model supporting situated learning in projects was developed from a qualitative and longitudinal participative action research case study of the dynamics of project based learning. This case study involved an active project team pursuing a major organizational change project. Empirical data was accumulated over 18 months through undertaking multiple observations of project participants, and through participation in project team meetings and reflection sessions; serial semi-structured

interviews and feedback sessions with the project team members; serial 'learning workshops' facilitation, and; documentation reviews.

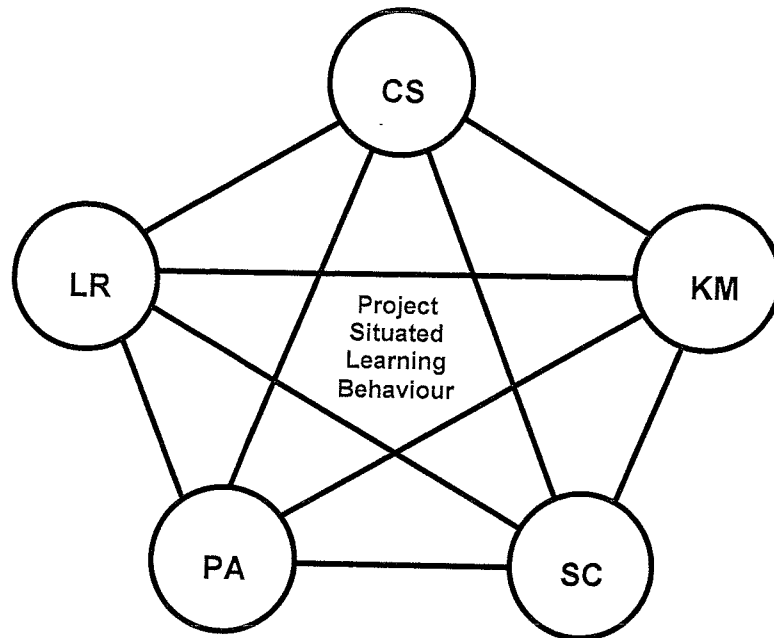
The study was conducted in a heavy industrial engineering operation in Australia that processes coal into coke for use in the local blast furnace or for export. The continuous operation involves approximately 400 employees and is a relatively large capital intensive and people intensive operation within the integrated steelmaking operations on the site. In June 1998, a new plant manager transferred to the plant with strong workplace culture change credentials from his work at two other plants within the same company. With the recognition that there was a charter for change developed within the broader organization, the new manager set about to initiate processes to re-design the organization of the plant. That goal was pursued in a context of competition from cheap overseas producers and alternative technologies, pressures from the community and the government to dramatically reduce environmental emissions, and a need to involve a workforce that had traditionally held a low self-image and a low trust in management.

Within the operation, the primary method engaged by the plant manager to establish sustainable change throughout the plant had been the creation of a number of 'learning forums' operating at senior management, middle management and shop-floor levels, as well as cutting across those levels. These forums had been developed to work within the vision, mission and values that had been more or less imposed by the new plant manager and senior management in the company. However, the forums had a purposeful and strong emphasis on ongoing individual and organizational learning as a means to promote, consolidate and sustain change. One of these forums or project teams, which became the project case study, was the 'Cokemaking Leadership Team' within the plant. This team had a brief to redesign and integrate their roles in alignment with the new organizational vision and values. Their explicit aims for this complex organizational change project were to: redefine their roles and relationships; practice new leadership skills, and; learn and to 'learn how to learn' throughout the project process. This project team initially consisted of three core senior manufacturing management personnel (later expanding to 15 members). The observed learning behaviours of these participants and their learning activities or

experiences within their project setting, form the rich empirical data that underpins the development of the model for structuring a situated learning environment within a project. For a more detailed discussion on the methodological approach engaged in this study and the project context conditions, see Badham and Sense [2001] and Sense [2005].

#### **IV. STRUCTURING A SITUATED LEARNING ENVIRONMENT WITHIN PROJECTS**

Drawing upon the findings of a study into project based learning, project management practitioners can purposefully nurture or structure a situated learning environment within their projects through communally analysing, critically reflecting upon and developing learning actions relating to a number of key sociological elements in a project milieu. These elements constitute a 'conceptual architecture' [Wenger, 1998: 230] or model to support and guide project situated learning activity. The purpose of a conceptual architecture is to lay down the general elements of design, thereby indicating what needs to be in place to perform a design activity [Wenger, 1998: 230-231]. Since 'learning' itself cannot be designed and ultimately belongs to the realm of experience and practice, a 'conceptual architecture' for learning provides the critical elements for learners to design social infrastructures that foster their learning [Wenger, 1998: 225 and 229]. Therefore, the model presented in this paper is not intended to represent a prescription for facilitating situated learning within projects. Rather, it forms a framework of concepts which project participants can use to aid their reflection on project learning practices, and can use as 'guides' or 'heuristics' in developing their own localized learning practice that is relevant and responsive to their specific project conditions. Through pursuing such actions, project participants further stimulate and promote their situated learning activity – an approach entirely consistent with the contextual and social emphasis of situated learning theory. In that way, this model also serves as a catalyst in a 'self-design' process [Mohrman and Cummings, 1989: 13] for project learning development.



**Figure 1. Project Situated Learning Behaviour**

As depicted in Figure 1, these sociological elements are interrelated and not mutually exclusive. For example, the learning relationships that a participant has, can be influenced by the pyramids of authority of individuals and their cognitive styles, or, the specific situational context conditions of a project can impede or enhance the knowledge management processes and the learning relationships. Individually and collectively then, these elements impact the situated learning behaviour of project team participants. These elements are individually expanded upon in the discussion that follows.

### **COGNITIVE STYLES**

The first of these five sociological elements and the essence of the intra-personal influence on situated learning activity in any situation is the relatively stable psychological construct of cognitive style. This involves a participant's predisposition towards, or preferred way to gather, process, and interpret information [Hayes and Allinson, 1998: 849]. For example, a comment from one of the participants in the project case study illustrates a particular cognitive style type and the impact their 'style' had on situated

A situated learning perspective informed the development of the five sociological elements of the model, which involve a combination of inputs from specific literatures and from fieldwork data. These five sociological elements either constrain or enable situated learning activity across the boundaries or intersection points between project individuals' multiple communities of practice. These boundary interfaces represent important learning opportunities since they connect multiple communities of practice in which critical competencies are nurtured, and offer divergent learning opportunities by exposing participants to new perspectives and challenges [Wenger, 2003: 84-85]. Understanding and attending to these boundary interface learning issues, helps unlock the learning potential within a project team environment.

These sociological elements of the model include: the intra-personal element of *cognitive style* (CS) – which involves a participant's predisposition towards or preferred way to gather, process, and interpret information; the interpersonal element of *learning relationships* (LR) – which is concerned with how the relationships that exist between participants affect their mutual creation and sharing of knowledge; the interpersonal element of *pyramid of authority* (PA) – which is concerned with how participants' project learning behaviours are impacted by the authorities they bring into and apply in a project setting, and how those authorities 'to learn' can be further conditioned by factors within and surrounding a project; the infrastructural element of *knowledge management* (KM) – which is concerned with the way a project team actually goes about handling the flow of project knowledge in and around a project setting, and; the infrastructural element of *situational context* (SC) – which is concerned with how a project setting is organized to help establish and facilitate a project learning environment. Figure 1 diagrammatically depicts the interrelationship between these five sociological constraint/enabler elements and embodies the dynamics involved in learning across communities of practice boundary interfaces.

learning activity within the project, *"My way of learning is to get involved and to challenge and to triple challenge and to pinch and to manipulate. I need to understand things and I know talking to myself ain't going to help. So, I need to talk to other people. It is a spurious way of doing it [learning] ... otherwise it's no good for me."* When participants' cognitive styles are publicly exposed and communally reflected upon, they can be considered a socially oriented learning issue. Jointly developing this better understanding of participants' cognitive styles enables a project team to appreciate, to analyse and to then compensate for the impacts of their style types on knowledge creation and sharing and reflection within a project setting. For example, some individuals in a project team may be more tolerant of project ambiguity, uncertainty or emergence and the need to 'construct solutions as one goes along', whilst others may prefer a more orderly, rational and precise approach to the management of a project and be more inclined to support existing frames of reference and concentrate on doing things better rather than markedly altering established processes or systems. Kirton [1989] refers to these two different cognitive style types as either, 'innovators' or 'adaptors'. While it may initially appear that it is the 'innovators' who are more capable of improvisation and learning, both style types are capable and necessary contributors to a project process. For example, the 'adaptor' attempts to incorporate and adapt new ideas and approaches to problems (perhaps in a limited way) into their established or historical frames of reference, whilst the 'innovator' invigorates new approaches or ideas to issues associated with a project whilst being less concerned with how they are successfully incorporated into, or integrated with the established setting. The 'adaptor' may, therefore, encourage a more conservative yet workable form of project management and learning activity – not moving far outside immediate and established frames, and concentrating on making feasible and practically achievable compromises. For example, in the project case study, one 'adaptor' participant reflectively noted, *"I like to look at how things are being done. I've still got a notion of challenging things when someone starts to say that's the way I've always done it – I then think there's a good reason to change, if that's the only reason they offer. So challenging completely the existing paradigm I do find difficult. I find it difficult to visualize something that's totally divorced from the existing."* The

'innovator', in contrast, may be more open to exploring and integrating novel and radically different operational frameworks or ideas in a manner that may be demanded in more complex, turbulent and fast moving settings, and yet may be less concerned or able to rapidly and effectively make such amalgamations work in practical project environments. One participant in the case study project acknowledged one of his colleagues as an 'innovator' in the team and stated, "*X gets right under people's ribs and asks why things can't be different and for them to be more capable, which is one of his great strengths, as he is capable of seeing things quite differently from the way we do things now.*" Separately, X reflectively commented, "*I think people see me as somebody who will push the paradigms and stir things up and I'm happy to do that. I like thinking of different ways of doing things.*"

Whilst expectantly there are learning tensions between these style types, both are complementary to the project learning processes and, as Sadler-Smith [1999: 37] notes, balancing such differential style types is crucial to improving an individual's learning performance. This diversity also being recognized as important by the case study project team participants who acknowledged that a blend of both style types as being advantageous for their project process to work and for their learning development.

The reflection and analysis process on cognitive styles also involves assessing three cognitive style conditioners of participants' learning behaviours. These include: the matching or mismatching of project information processing demands with the cognitive styles of participants; participants individually or collectively selecting situations that aligned with their cognitive style types and avoiding situations which pose alternative demands; the predominance of a particular cognitive style type across a team. The first of those conditioners considers the short-term value or benefits for participant learning of having cognitive styles align with the information processing demands of a project. Conversely, the second of those conditioners stresses the longer term negative learning outcomes to be realized through regularly matching cognitive styles with the information processing demands of a situation. For the learning development of individuals in the longer-term, it is argued that through some mismatching of the cognitive styles of participants to the information processing demands of

their situation (as was observed in the case study examined), participants are exposed to a greater range of learning opportunities and are tacitly encouraged to develop their skills in 'learning how to learn'. The third conditioner highlights the negative impacts on learning behaviours that a general conformity in cognitive style types across a project team might present. Over the longer-term then, having both a mismatch of cognitive styles in a team and a mismatch of cognitive styles to the information processing demands of a project situation, can be considered quite necessary for enhancing participant learning development. Such a conclusion may be in contradiction with contemporary project management practice perspectives, since 'mismatching' implies and likely involves conflict, risk and additional managerial effort, and therefore something one should normally seek to avoid.

### **LEARNING RELATIONSHIPS**

The second sociological element is the interpersonal constraint/enabler element of learning relationships. The learning relationships element concerns the relationships that exist between participants and how those affect the creation and sharing of knowledge within a project setting. Communally and reflectively addressing this element is crucial for promoting situated learning activity since the implicit and explicit social relationships between people form the conduits upon which the learning processes of sensemaking, observations, conversations and dialogue are enabled, and therefore, also moderate how tacit knowledge is socialized and articulated. Such deliberate participant attention to this element involves the exposition and critical assessment of the conditioners of participants' learning relationships. These conditioners include participants' defensive behaviours (as presented in the work of Argyris [1990, 1999]) and their collective preparedness to explore new alternative relationships - which mirrors the double loop learning approach to organizational learning posited by Argyris and Schön [1978]. For example, in the project case study, participants appeared positively and constantly engaged in exploring alternative relationship possibilities, but conversely, regularly demonstrated defensive behaviours by seeking to avoid public discussion and scrutiny on perceived personal matters such as their fears, attitudes, weaknesses and performances. Such exposure may have left them

vulnerable and exposed and open to further scrutiny by their peer group and others. However, through their persistence in seeking to learn throughout the project process, such defensive patterns were eventually recognized and openly evaluated by the case study participants – which consequently helped alter their perspectives and actions as to how they interacted and learnt together. Illustrating this point, at the start of a series of learning workshops, one participant freely acknowledged that, *“Defensive deflection is probably one of the strategies we will all use. As you have discovered, purposeful deflection is one of our strong points.”* Expectantly then, attention to what may be considered quite ‘delicate’ project relationship issues can be challenging, but nonetheless essential for the unencumbered exposure and sharing of knowledge within projects.

### **PYRAMID OF AUTHORITY**

The third sociological element is the interpersonal constraint/enabler element of ‘pyramid of authority’. This involves a participant’s exercise of power or authority to support or constrain situated learning activity within a project setting and also emphasizes the importance of managing politics for learning in projects. Participants may play more ‘influencing’ or more ‘accommodating’ roles in political exchanges concerning their learning within a project [Frame, 1994: 127; Sense, 2005: 273-274] and thereby affect their learning and the learning of others within the project context. Purposeful attention to this element involves exposing and critically analysing the authority that different participants bring into a project, their authority and political roles within the project setting, and how these impact upon and are used in their attempts to action learning activities during the project. It also involves a critical analysis of how participants’ perceptions of their authority to lead a project and their learning activity can be further conditioned by factors within and surrounding a project. Therein, three conditioners of participants’ ‘pyramids of authority’ within a project setting are necessarily explored. These consist of: participant ambiguity within a project revolving around the subject of learning, their roles and the process to achieve project goals; the latent or discernable authority of the project sponsor and; the relationship of a project to other projects in an organization, which are perceived to be more politically

important. Such communal analysis covers aspects of utilizing authority as something positive to accelerate project situated learning activity, and perceptions of authority as a restraint on communal debate and reflection and knowledge exchange about project issues - which can lead to hierarchical dependence for learning.

Illustrating such a hierarchical dependence condition for learning as being culturally embedded in an organization, is the following reflective comment from a member of the case study project team, "*Dependency on the leader is built into our psychological contract.*" Initially in the project case it was also generally considered unacceptable to challenge 'perceived authority'. As noted by another team member, "*We only listen to authority - is the culture in here! The authority saying you can't challenge me and when someone has an issue with a topic/situation no-one listens to him unless he is the authority.*" Consequently, in the project case study, the participants pursuit of learning (concerning the volume, the scope and the pace of learning) was constrained, since they would generally not progress on major project issues until the project sponsor (or other key authority figures) directly or indirectly provided permission, guidance or advice to do so.

Communal analysis, debate and critical reflection on these issues can also contribute to the development of more politically attuned and more contextually appropriate learning strategies. Such actions also provide a means to better understand and integrate the various political interests and perspectives of core stakeholders in projects. Clegg and Walsh [2004: 229-230] and Badham [2000] for example, have argued for more effective participation by users in projects, and even for the control of projects by end-user line managers. These important political issues, if left under-exposed and under explored, may significantly impede project situated learning activities and stifle the learning development of project participants.

## **KNOWLEDGE MANAGEMENT**

The fourth sociological element is the infrastructural constraint/enabler element of knowledge management. This element is concerned with the way a project team actually goes about handling the flow of project knowledge in and around a project setting. This is considered an infrastructural element for

situated learning because of its conspicuous and comprehensive influence on knowledge sharing within a setting and on creating and facilitating a project learning environment.

The flow of knowledge takes two different, but general forms - codification and personalization [Hansen, Nohria and Tierney, 1999: 1-9]. The codification approach involves the codification of explicit knowledge, its storage and re-use independently of its source and context (e.g. intranets, databases, manuals, reports). The personalization approach focuses on the social learning processes of dialogue, conversations and observations between individuals and is dependent on the individual as the means of transferring contextualized experiences to others. Thus, the personalization approach is particularly important in situated learning since it is the agency through which tacit knowledge is exposed and shared. This personalization approach also provides multi-layered opportunities to increase the quantum and quality of explicit knowledge exchanges between participants and aids the development of participants' learning relationships. The personalization approach to managing project knowledge is clearly essential in supporting communal and critical reflection in projects and promotes collective confrontation with assumptions as to what is possible in a project setting e.g. it raises awareness of the distribution of expertise knowledge in a team, it facilitates an analysis of the impact of variable team size and personnel changes on situated learning activity and it facilitates a team assessment of their propensity to share only 'commonly held' information which tends to restrict the opportunities for generative tacit knowledge flow. The codification approach, whilst supportive, is fundamentally inadequate in exposing, capturing, and aiding any exchange of tacit knowledge.

In the case study project team for example, the awareness of prior established expertise knowledge or authority within the team, at times, narrowed the participants knowledge capture and enquiry activities to that which they felt were (the more important) priority sources (e.g. notably the project sponsor). Such actions helped limit the full learning potential to be realized from more fully interacting and exchanging with others within the project process. However, those participants eventually recognized this barrier to project knowledge flow posed by sources of 'privileged information'

and then enacted processes to better include 'others' from the team - which constituted positive steps in broadening their knowledge capture and creation possibilities within their project setting. The dominant personalization approach pursued to manage knowledge flow in the case study project appeared to very positively impact the quantum and quality of knowledge exchanges between participants, and provided opportunities for participants' valuable tacit knowledge to be articulated [even passionately at times] within the team.

## **SITUATIONAL CONTEXT**

The fifth sociological element is the infrastructural constraint/enabler element of situational context. This element is concerned with how a project setting is organized to help establish and facilitate a project learning environment and it involves two intimately connected workplace domains i.e. the workplace of a project team and the organizational workplace immediately surrounding a project team. This combination forms the situational context of a project, since any attempt to organize the project setting to affect learning activity can be initiated or influenced or halted by either, the actions of project stakeholders in the organizational workplace surrounding a project team, or by the actions of participants within a project team.

Creating a situational context supporting situated learning activity involves attending to issues of: the organizational and participant commitment or intention to learn (i.e. establishing the strategic momentum supporting and energizing the learning activities); the provision or construction and operation of physical and social infrastructures to learn (e.g. establishing the time and learning spaces for conversation and reflection between participants), and; the ongoing environmental stimulus encouraging learning throughout the project life cycle (e.g. a project sponsor's interventions in the project 'learning spaces' to stimulate learning activity, or the organizational context necessitating participants to pursue learning activity). For example, after participating in a learning workshop one of the case study participants exclaimed, "*We need to value learning and take the time from the day-to-day to recognize the value. Following through on commitments and reflecting on actions is a novel focus in this forum.*" This participant's comments reflected

his genuinely positive commitment to learning within the project and also conveyed his perceptions of the uniqueness of having a workshop 'learning space' that supported reflection on individual and team actions. These views and activities tended to be in stark contradiction with the normal organizational culture where, as another participant noted, *"Our culture is about 'doing' and not about 'reflecting', and there is not always time to reflect and to share."*

Positively pursuing actions concerning this infrastructural element can establish conditions that invite, encourage and support individuals in a project team to come together to dialogue, to critically reflect and to expose and share tacit knowledge – which clearly also represents a bias towards a personalization approach to managing knowledge flow.

For the project practitioner audience, all these sociological elements (barriers or enablers) may initially be personally and professionally difficult to confront and engage with. This is particularly prominent if, as is argued desirable, project participants are invited to publicly, systematically and potentially deeply, explore this complex web of sociological issues impacting their learning within their project environments. Such an exploration may also have unexpected or problematic ramifications for the individuals within a setting. Their political or personal relationships may change dramatically, credibility might be affected, identities altered and information shared quite differently. Such outcomes are only to be expected, given that learning inevitably transforms identities and creates emergent structures [Wenger, 1998: 227]. Participants may therefore place themselves at some risk by pursuing a communal and critically reflective assessment of these identified elements within their projects - which essentially equates to a very public learning strategy. However, such may be the costs, but also the potential opportunities, for those project participants prepared to 'practice learning' within a project.

## V. CONCLUSION

To varying degrees, situated learning will undoubtedly and opportunistically occur in any setting and across different socio-cultural conditions. However, one key issue raised in this paper is whether such an opportunistic approach to learning may indeed limit the quality and the quantity of learning activity situated in the context of projects. Indeed, Wenger [1998: 225] for example, notes that it is vital to design social infrastructures to foster learning. It would seem that the formative conditions of project teams present very difficult circumstances for situated learning between participants to germinate, since the membership of the 'embryonic form of a new community of practice' [Sense, 2003: 9] may not have previously interacted and formed any direct working and social relationships. Hence, in such a condition it would seem that deliberate actions and activities directed towards enabling and promoting situated learning activity would be considered rather essential – and certainly not considered 'optional' or simply as something 'nice to do'. Nevertheless, in the traditional project management model, learning (other than formal external training and professional certification, or, post project completion reviews) is not normally represented as a deliberate or organized action within the project management process. One core argument of this paper however, is clearly that it should be a more prominent and more deliberate project action.

In undertaking such deliberate project learning activity, the emphasis should also be directed towards the sociological (or social and practical) dimension of learning within each project context, rather than be confined to the narrow consideration of learning as only a cognitive process. Furthermore, as introduced in this paper, there are five sociological elements within a project setting that can either constrain or assist situated learning activity. The public exposition and communal reflection on these elements by practitioners provides a practical, locally relevant and participant oriented approach towards designing the social infrastructures that support participants' in practicing learning whilst they are 'on the job'. Ignorance of these elements powerful influence on situated learning activity, or, applied preferences

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seeking to avoid this additional management complexity within a project setting, in effect, only continues to consign intra-project learning and individual learning competency development to a peripheral and opportunistic project activity.

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