

# Learning Communities

## Designing *for* Learning to cope with Complexity

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**Abstract.** This paper summarizes the dissertation on our research project, which was established as an exploratory endeavour to inquire about the design, support and facilitation of community-centred learning contexts. The underlying motivation was the understanding about what kind of design and interventions can be devised in order to provide 'appropriate' contexts for learning.

Theoretically, the embraced approach was rooted in an epistemology of practice and a situated theory of learning. The methodological approach was underpinned by action-research principles and, as such, the presented research was also supported by two empirical studies occurring in academic and professional contexts.

Our findings were synthesized in two constructs, namely a conceptual framework for Learning Communities and a Learning Architecture for Learning Communities. The former is intended to characterize the attributes and processes of a Learning Community. The latter is a descriptive learning architecture aimed at eliciting what kind of infrastructures and tensions should be considered when addressing the design and support of learning contexts. Together, they serve as a relevant referential by enacting pertinent aspects and tensions which should be considered in the development of such contexts.

Due to the described approach, and its reliance on the concept of practice, the relevance of this work and of the aforementioned constructs has implications which extend to the organizational design itself. As such, we conclude with the presentation of our proposal for future research endeavours by setting four research avenues that further establish the link between the presented work and the theme of Organizational Learning.

**Keywords:** learning communities, communities of practice, learning contexts, organizational learning, practice-based theorizing

## 1. Research Contextualization, Purpose and Relevance

This study began in November 2007, being conducted in the context of a MSc. in Information Systems and Computer Engineering at Instituto Superior Técnico, Portugal.

Its motivation relies on the observation that nowadays' conceptions of learning are (still) predicated in the orthodox perspectives on learning as a simplistic process of content delivery or transmission. They ignore the role of context in learning and separate what is learned from the way it is learned and used. Hence, the current practices of academic and professional institutions are still based on formal models of instruction that equate teaching or training with learning. Our point is that such perspectives are limited and cannot cope with the challenges posited by a world where the keywords are *volatility* and *interconnectivity*. As such and to avoid such myopic perspectives, we intended to devise an approach to learning that acknowledges nowadays' challenges of learning faster and often and dealing with an ever-changing environment. To do so, we are aimed at exploring the design, support and facilitation of learning contexts predicated on situated learning theories, which provides us with the comprehension of learning which is compatible with novelty and dynamism.

This research project was framed by ever-changing questions through time. What has been stable through the whole process was the intention of further understanding **what kind of design and interventions can we devise that can provide a 'proper' context for learning?**

Aligned with our intentions of producing actionable knowledge, this research project's methodological approach was an Action Research approach, and the research project was supported by two empirical studies, one an academic the other in a professional environment where researcher participated and intervened. Both cases were approached by the following question which serves as the foundation for such inquiry: **How may we design the context and facilitate the evolvement of a group of learners towards a learning community?**

This is deliberately an open-ended question that has no definitive answer whatsoever. Our approach to this concern is therefore supported by the intent **to further understand how to design learning contexts that support and facilitate such evolvement, by stimulating the collaborative dynamics identified in Learning Communities.**

In line with our research background in Information Systems and Computer Engineering, we were also interested in exploring the contribution of information technologies to the development of learning contexts. More specifically, **to further understand the role of information technologies in the process of that facilitation.**

Regarding the relevance of this research, the "products" of this work are a *conceptual framework for learning communities* and a *learning architecture for learning communities*. However, the relevance of this work and of such constructs is not limited to the

design and support of contexts for intentional and sporadic learning, having implications which extend to the organizational design itself.

## 2. Learning, Practice and Practice-Based Theorizing

Learning and Practice are two concepts characterized by a multitude of meanings in different areas. To minimize the risk of being misinterpreted we provide our understanding of both terms. We intend to make the assumptions and premises that guide our research approach clear. Secondly, we intend to illustrate that following an *epistemology of practice*—that is to say, using practice as an analytical theoretical lens—provides us the means to conceptualize learning beyond the conventional individualistic perspectives and support our objective of further understanding of how we might devise interventions aimed at creating Learning Contexts that honour the complex, situated and social nature of such process.

Our approach to learning and to this research project draws heavily on what has been designated by *Practice-Based Theorizing* (Corradi, Gherardi, & Verzelloni, 2008; Gherardi, 2006; Nicolini, Guerardi, & Yanow, 2003). The term is used to group a set of research streams that has its origins in different intellectual backgrounds, being connected by, as the name implies, a focus on practice. The focus on practice connects these research streams in a similar object of inquiry, "the capacity of humans to perform actions competently, the temporal organization of such actions, and the resources that make them possible" (Nicolini, et al., 2003) – a fundamental problem in our interest in Information System and Organizational Engineering.

Our understanding of *practice* encompasses it "as a learning method" (i.e., learn by doing), "as an occupation or field of activity" (e.g., medical or legal practice), and "as the way something is done", since "'practising yields important insights into how practitioners recognize, produce, and formulate the scenes and regulations of everyday affairs" (Corradi, et al., 2008) and should not be misconceived as mere action or repetition.

Learning and knowing are not understood as mere individual and cognitive achievements, but as situated ones. Such *situatedness* means that learning should be "understood as produced together within a temporally, geographically or relationally situated practice" (Nicolini, et al., 2003). Our approach is based mainly on Lave and Wenger's (1991) *Situated Learning Theory* and its further exploration by Wenger (1998). Nevertheless, the other research streams are not ignored, and instead influenced our work.

## 3. From Communities of Practice to Learning Communities

The concept of *Communities of Practice* was coined by Jean Lave and Etienne Wenger. As it was referred by the authors, CoPs were then an intuitive notion that suited their purpose, but were left to be thoroughly analyzed. CoPs were defined as:

"A community of practice is a set of relations among persons, activity, and world, over time and in relation with other tangential and overlapping communities of practice. A community of practice is an intrinsic condition for the existence of knowledge, not least because it provides the interpretive support necessary for making sense of its heritage. Thus, participation in the cultural practice in which any knowledge exists is an epistemological principle of learning. The social structure of this practice, its power relations, and its conditions for legitimacy define possibilities for learning (i.e., for legitimate peripheral participation)" (Lave & Wenger, 1991, p. 98)

At that time the concept "emerged as an informal label for a knot of ideas developed in the process" (Lave, 2008). The freshness of their proposal was that learning is a ubiquitous social process that is an integral part of our lives as we participate in social practices. :

"Learning is situated activity, indeed, legitimate peripheral participation (lpp). All learning and everyday life have some aspects of apprenticeship about them. This is a social phenomenon – newcomers can only become old-timers by participating in communities of practitioners. Legitimate peripheral participation is a way to speak about relations between newcomers and old-timers, activities, identities, artefacts, and communities of practice." (Lave, 2008)

As mentioned in the above citation, all practices involve learning as a social phenomenon. The point is that more than acquiring knowledge, learning is a process that takes place by changing participation and transforming identities in CoPs. Participation, in this case, should be understood beyond mere action. Participation "could be read twice – both as 'a person participating' and as a 'practice participated in'" and therefore "lpp described the practice of persons with respect to communities of practice" (Lave, 2008).

Learning Communities' theory is based on social constructivism. Nevertheless, we asserted that they are not the same in an argument that we have reviewed (Mendes, Silva, & Tribolet, 2008).

At the centre of their relationship we found the collaborative nature of the learning process through which the development of shared understandings occurs. However, and recognizing that this is an aspirational intention, in a Learning Community members have goals involving learning about a specific domain. On the contrary, in a Community of Practice, learning itself is not an objective. Learning in a Community of Practice is a by-product of the engagement in a shared social practice; their "objective" is not to learn but instead to get things done.

The basis of our argument is that Learning Communities are created intentionally to address specific learning endeavours, while Communities of Practice, at least in their original formulation, exist informally through and due to the organization of their members around a shared practice. To be fair, we cannot create Learning Communities (at least solely by a process of labelling or proclamation). They may emerge in a context where we can have some design and intervention. As we previously discussed, Wenger himself suggested that a Community of Practice can indeed be a Learning Community if it makes learning a shared enterprise of their practices. As Lave explained, nowadays' usage of the term CoPs seems to be "ignorant of the original intent (and its limitations); the dominant approach to CoPs has become what it was specifically not intended to be—a normative or prescriptive model." As Lave (2008) elucidated us, CoPs aren't something to look for but instead a "way of looking." We aren't against the reconstruction of the concept taken by what we described as the normative approach. Nonetheless, and with the

benefit of hindsight, we don't consider that such a path will suit our purposes or lead us to a fundamentally different direction. As such, our approach will maintain its focus on using Situated Learning's analytical perspective. Since the whole idea of Situated Learning is about understanding how learning occurs every day, we will try to use these insights to inform and support our inquiry while framing the question: **What kind of design interventions can we devise that can provide a "proper" context for learning?**

More often than not, the literature became centred solely on the concept of community (Brown & Duguid, 2002; Gherardi, 2006), with the widely known result being that CoPs have become progressively portrayed as an "outcome of management fiat, and not of practice" (Duguid, 2008).

#### 4. A framework for Learning Communities

Kilpatrick (2003) characterized a Learning Community as a group of people, where a common *learning purpose* is shared by a group of individuals that collaborate to draw on individual strengths while actively promoting learning opportunities. The proposed outcomes are the creation of a synergistic environment where the potential of the members is enhanced through the creation of new knowledge.

Learning Communities are portrayed as offering rich possibilities for dealing with the education requirements within the knowledge economy, where preparing knowledge workers, more than anything, is to equip them with the proper skills to become lifelong learners.

Our motivation for further understanding Learning Communities relies on the idea that they can aid in the design and support of learning contexts. However, despite their prevalence throughout the literature, they are used in so many different ways that the concept of Learning Community has become slippery and difficult to grasp. In this chapter we aim to further characterize them by defining their major *attributes* and *processes*.

To describe **Learning Communities' attributes** we refer to Watkins (2005), who derived from the general hallmarks of communities and emphasized some of the attributes and processes to be expected in a Learning Community. In his proposal, a community's attributes are *agency, belonging, cohesion* and *diversity*, and the processes are *joint action, dialogue, collaboration* and *bridging*. While we have adopted his model, we believe *joint action* and *dialogue* are better considered as attributes rather than processes. This is based on our opinion that they are both characteristic of collaborative activities in which there is inevitable joint action and dialogue. As the mentioned attributes are largely self-explanatory concepts, we do not feel that it is relevant to endure here in a more profound analysis of each one of them. Nevertheless, it is relevant to bear in mind that these attributes should not be considered as preconditions for the existence of communities. They should be regarded as expected elements or patterns in a communal environment.

Our description of **Learning Communities' processes** is also based on Watkins' (2005) proposal. In the author's perspective there are eight fundamental processes in a Learning Community, from which we consider only six<sup>1</sup>: the processes contemplated by Watkins original proposal - **collaboration, bridging, inquiry, knowledge generation, reflection** and **meta-learning**. To these we are proposing the following additional Learning Communities' process – **community self-awareness development**. Even though we base our conception of Learning Communities on Watkins' work (2005), our understanding of such processes is influenced by the reviewed *Situated Learning* theory, Dewey's formulation of the concept of *inquiry*, and Schön's concept of *reflective practice*. In what follows, we provide a brief description of each one of these processes.

**Collaboration** (members work together in common tasks towards a common outcome) and **Bridging** (connections made to other parts or other communities) are two fundamental processes that we can expect to encounter in any communal setting. Whilst cooperation and *collaboration* are usually used without distinction (Henri & Lundgren-Cayrol, 1998), to our understanding and purposes they represent different concepts. In a cooperative environment each one is responsible for his portion of work while working together with others to accomplish shared goals. The subtle but relevant distinction that we are arguing for is that through collaboration, a mutual engagement of participants is expected as a coordinated and integrated effort to achieve a common outcome that would be otherwise impossible to achieve.

The relevance of *bridging* is due to the observation that communities are not self-standing, isolated identities that exist in a self-contained world. A critique to the theory behind CoPs is that it doesn't acknowledge the relationship between a CoP and its outside boundaries, being limited to intra-communal analysis. They have (fuzzy) boundaries as they interact with other communities and this is a fundamental process for productive learning.

While the former processes can virtually exist in any type of community, a Learning Community has a shared learning purpose and thus two further processes are expected (Watkins, 2005): **Inquiry** (which captures key human processes, such as interest and questioning) and **Knowledge generation** (where new meanings and understandings are developed through the process of inquiry and through interactions and participation).

The process of knowledge generation shouldn't be solely understood as linked to cognitive aspects of knowledge. The understanding of inquiry that we assume is grounded on Dewey's notion of inquiry, which is "triggered by difficult situations" and "the means through which it is possible to transform these situations through the mediation of thinking and action" (Elkjaer, 2008). Supporting collective *inquiry* implies the creation of participatory spaces that support a "what-if" mode of inquiry rather than the traditional "if-then" models of instruction.

These two processes are intertwined, since learning takes place through collective *inquiry*, which leads but is not limited to *knowledge generation*. If learning is portrayed as an active process resultant from the inquiry that takes part through continued participation in relation to social practices, as proposed by the Situated Learning theory, it is not only knowledge that is being developed but the learners' *knowledgeability*:

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<sup>1</sup> As we explained in the previous section we consider acting together and dialogue as attributes.

"To speak of 'knowledgeability' rather than 'knowledge' implies that whatever it is, knowledge is always knowledge in persons in practice. Thus, 'knowledge' is not reducible to something distinct from other aspects of practice which would include its locations and its situated production. It is not knowledge that produces social life or is social life but rather, it is praxis, the making and doing of social life that produces changing knowledgeabilities as part of ongoing practice." (Lave, 2008)

The final Learning Community processes which we include in our framework, which were also proposed by Watkins (2005), are **Collective reflection** (to be able to learn from experience, reflection is essential; in this case the reflection is collective, not to substitute individual reflection but to grow and enhance it) and **Meta-learning** (in the sense of learning about learning, where the collective learns not only about the issues related to its goals but in respect to its strategies, feelings, effects and contexts of learning).

Again, as is the case with *inquiry* and *knowledge generation*, these are intertwined and interdependent processes. *Meta learning*, at a group level, can only occur if there is *collective reflection*. A learning context for community-centred models must strive to support and enact not only individual reflection — *in* and *on* action (Schön, 1983) — but further, if such process is an enabler of *meta-learning*, it must create the spaces and mechanisms to support and sustain *collective reflection* activities that are vital to the development of the individual and the community competences and skills.

As a consequence of such, and as a means to build it up, we consider that there is another relevant process to be considered and addressed in Learning Communities: **community self-awareness development**. Our understanding of *community self-awareness* derives from the work of Tribolet (2005), in which the author proposes the process of *organizational self awareness*<sup>2</sup>. In the words of (Zacarias, et al., 2008):

"Self-aware beings know who they are, how they do things and what they (and others) are doing at any particular moment. Whereas this capacity is innate in individuals, organizational self-awareness must be built and maintained by continuous interactions among their members."

Our proposal for *community self-awareness development* as a relevant process to Learning Communities is due to the fact that our understanding of learning implies that learning is as much about *doing* as about *being*. Moreover, to our purposes regarding the creation of learning contexts, it is relevant for a Learning Community to continually evaluate, as a group, "who they are, how they do things and what they (and others) are doing at any particular moment" (Zacarias, et al., 2008). Maintaining such questions in the presence of the community is what may very well permit the development of a community's identity that can only be sustained by a shared descriptive self-awareness. A Learning Community's focus should not be limited to the learning products (outcomes), but must be directed to addressing the learning processes being undertaken. Learning Communities can only exist and evolve as such when they are strengthened from the collaborative activities and interaction that occurs within them. During these activities, communication produces—and is based on—awareness, interaction, engagement and alignment between the members of the community.



Figure 1 - Our Learning Communities' Framework proposal based on (Watkins, 2005)

## 5. A Learning Architecture for Learning Communities

Our motivation for the development of a Learning Architecture for Learning Communities relies on the observation that, although the vantage point of situated and social learning approaches is widely stated, we still don't know that much about translating their insights into our interventions in academic and professional institutions. Our objective is to move further toward the production of actionable knowledge for the development of Learning Contexts.

We derived from Wenger's (1998) proposed Learning Architecture that includes three components: **engagement, imagination** and **alignment**, and four dimensions: **participation/reification, local/global, designed/emergent** and **identification/negotiability**.

The learning architecture *dimensions* represent some of the tradeoffs to be addressed. Each one of them is not a dichotomy but rather a duality; they're not polarities and therefore have to be balanced.

<sup>2</sup> The concept is used in the domain of Organizational Engineering and has been further discussed and developed since then in (Magalhães, Sousa, & Tribolet, 2007; Magalhães & Tribolet, 2006; Zacarias, Magalhães, Caetano, Pinto, & Tribolet, 2008).

The learning architecture *components* represent infrastructural facilities that support the “development” and sustainment of Learning Communities. Wenger’s (1998) proposed components are based on the different modes of participating or belonging to a community. Although the components are described separately, they are by no means independent and therefore must be considered together in a learning design. Furthermore, the *dimensions* and *components* are not orthogonal.

Our proposal includes the addition of five extra dimensions that we identified to be relevant through the conduction of the present research project: **content/context**, **coherence/diversity**, **individual/collective**, **exploitation/exploration** and **face-to-face/online**.

The Learning Architecture’s components and dimensions are depicted in figure 2 and 3, respectively. Each one of these was thoroughly described in our dissertation and is summarized below.

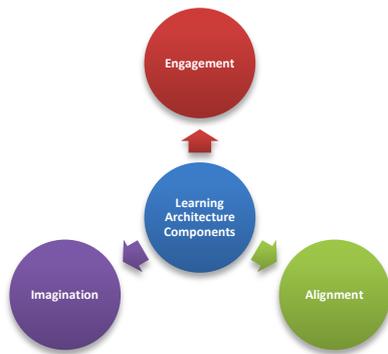


Figure 2 - Learning Architecture Components  
Based on (Wenger, 1998)

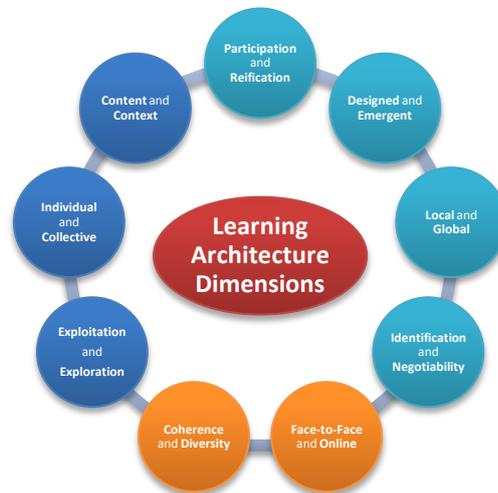


Figure 3 - Learning Architecture Dimensions  
Our model based on Wenger’s (1998)

## 5.1 Learning Architecture Components

**Engagement** is related to the "active involvement in mutual processes of negotiation of meaning" (Wenger, 1998). Being that learning is considered an integral and inseparable aspect of participation in social practices, creating learning contexts aimed at nurturing the development of learning communities must address the creation of facilities of engagement as a central concern. It is through such engagement in shared and sustained activities that communities may emerge.

The term **imagination** may be misleading (Wenger, 1998). It is not used, nor should it be interpreted, as a synonym for fantasy. To support the facilities of imagination is to support the creation of "an image of ourselves, of our communities and of the world " (Wenger, 2000). In a learning community there must be opportunities for orientation in which one can explore the relation and location of the self in relation to the community (Wenger, 1998).

**Alignment** implies the coordination of "activities in order to fit within broader structures and contribute to broader enterprises" (Wenger, 1998). Yet, alignment is not a unidirectional process of submission to an external entity; it consists and includes the coordination of interpretations, perspectives and actions.

## 5.2 Learning Architecture Dimensions

### Participation and Reification

The processes of participation and reification are closely connected. The concept of *participation* includes taking part in something with others. It points to action as well as connection being simultaneously individual and social. The concept of *reification* is the process through which experience that results from participation takes form. Participation, *per se*, cannot guarantee the appropriation of meanings. Therefore participation has to be balanced and intertwined with activities of reification through which shared artefacts are produced. In terms of design it must be considered which forms of participation can give meaning to the subject matter. Defining the artefacts to be produced is relevant not only because their creation provides the opportunity for negotiation but because by becoming reified the community gets organized around them as well and further, as they become public they serve as boundary objects that may be used to trespass the community boundaries.

### Designed and emergent

Another fundamental aspect in understanding the creation of learning contexts is that the context itself is not something that is simply defined upfront. The learning context is built and rebuilt through interaction. Context cannot be merely foreseen or specified. Therefore, design shouldn’t be understood as a product, but as a process that takes place continually. As Wenger (1998) posited, a practice is not a *result* of a design but instead a *response* to a design, thus there’s always an uncertainty between a design and its realization. Hence it is fundamental to understand this tension and recognize that the design of learning contexts is not a matter of establishing a blueprint upfront. We may create the conditions to nurture, support and sustain learning and the emergence of communities, but we cannot design them. Furthermore there isn’t a linear causality between teaching or training and the learning that actually takes place. A learning context will always be dependent on the participants. It is through their actions and interactions that the context itself is created and recreated.

### **Identification and Negotiability**

Learning as a transformative process that changes the way we perceive and act in the world, is interlocked with the concept of identity (Lave & Wenger, 1991; Wenger, 1998). Identity is developed through *negotiation* and *identification*. Identification is only possible at the level of a community if members have an identity with which they can identify. The development of such identity takes place through negotiability. Negotiability implies that there must be a perceived sense of agency in which individuals feel that they influence and shape the communities' shared enterprises through time.

### **Local and Global**

It is relevant in the discussion of learning contexts to consider this duality as a means of establishing relations between the locality of what is to be learned and its relation with the broader world. From a situated perspective, learning cannot be disconnected from the real world, since learning is in fact a way of being in the world. One of the main objectives for the design of learning contexts should be the achievement of a relationship between what is to be learned and the outside world. Learning, as a process of transformation that changes the way one perceives and is able to act in the world, must aim to develop competencies and skills that can be directly applied outside the learning context.

### **Content and Context**

We identified a central duality to be addressed regarding the design of learning contexts in the work of Figueiredo and Afonso (2005). The authors proposed a philosophic framework that is relevant for addressing the duality of content and context. When addressing Learning from an *epistemology of practice* standpoint, the context is a fundamental element. Focusing solely on content leads to a simplistic, myopic view of learning as a simple delivery of substance. If the way to learn is not limited to *instruction*, then the context is key to learning. The focus should therefore be in the creation of a context which supports the content. Context is vital to enabling learning but as it has been explained by the authors content is not to be ignored. The context in which learning happens is key. Further, as the authors suggested, the context is not something that can be constructed up front and instantiated in practice. The underlying question to posit while creating learning contexts is therefore: what learning context can support the appropriation of the contents to be learned?

### **Online and Face to Face**

The Barab, Mackinster and Scheckler's (2004) proposal, in blended learning contexts, was to consider the relation and tension between online and face-to-face interaction. In the design of learning contexts in which interaction would be limited to online spaces this wouldn't be a duality. But in our case and, as we suppose, in the majority of current learning contexts, it is relevant to understand how the use of information and communication technologies supports the learning context. In fact, the technology is itself part of the context (Figueiredo & Afonso, 2005). Technology cannot be addressed independently from the contexts that are to be created.

### **Diversity and Coherence**

In a learning context where the learning goals are defined *a priori* it is necessary to continuously ensure coherence with the defined goals, maintaining alignment within and between groups. Nevertheless, to stimulate learning it is essential to stimulate diversity, which enriches negotiation and (therefore) learning itself. Furthermore, learning should not be regarded as a mere result of teaching. This is not to say that there isn't learning where there isn't teaching. The point to be taken is that designing for learning should not be limited to the content that is part of the "teaching" curriculum. To honour the emergent and dynamic nature of learning it must be considered that as a response to any teaching curriculum there is a learning curriculum that emerges.

### **Exploitation and Exploration**

While studying Organizational Learning, James March (1991) identified the relation and issues regarding the difficulty that organizations face in maintaining a balance between enduring in exploitative modes where previous knowledge is exploited, and engaging in explorative modes seeking for new knowledge. Learning is a relational process. Our point here is that when designing for learning, this duality has to be addressed by considering the relation with the previous knowledge the participants have. To develop expertise one needs to be in contact with the same subjects repeatedly.

### **Individual and Collective**

To address complex topics and themes such as learning, where there's no definitive answer, it might worth the effort to provide attention to different learning theories and perspectives otherwise seen as incompatible. Therefore, instead of addressing individual and collective learning as a polarity, in our understanding the challenge is to put emphasis on the relationship between both. Pursuing a community-centred model for learning contexts does not imply that we forget the individual processes and characteristics of individual learning.

## **6. Empirical Research**

Both empirical studies are detailed and analyzed in an argument which is not possible to reproduce in the context of this paper. Furthermore, as we have used an Action-Research approach, both cases' designs were compared with each other and helped us to devise the artefacts produced in this research. This was done with two underlying objectives. Firstly, to create and assess in practice how the proposed artefacts (a *Learning Communities Framework* and a *Learning Architecture for Learning Communities*) can be relevant, are connected, and indeed provide support for the creation of learning contexts. Secondly, and as a consequence, we aim to analyze how both the studies' designs are oriented towards the creation of Learning Communities and to describe the main difficulties which were faced during that process. Following, we summarize some of the elements which are relevant and common to both designs.

In both cases the objective was to support the development of actionable knowledge, that is, knowledge that could be instantiated in practice.

“Workplace learning is best understood, then, in terms of the communities being formed or joined and personal identities being changed. **The central issue in learning is becoming a practitioner not learning about practice.**” (Brown & Duguid, 1991)

Both the cases' learning designs are in accordance and, to the extent that is possible in such a limited period, are aimed at transforming the participants into practitioners. Furthermore, and as we will discuss below, they are not only intended in doing so as the objective is to learn how to be a better practitioner.

In both studies, there is an aim to create learning contexts which focus on the creation of learning communities. Having similar designs, both studies are founded on identical assumptions, applied to different environments – academic and professional.

The participation structures are analogous. In both cases there were several groups working on different themes/problems during the two first phases, which were later merged into a single, integrated group in the third phase. However, the diverse groups themselves had shared responsibilities right from the beginning, having a common objective which had to be attained through collaborative work, first in several groups and later as a whole. In other words, the groups' work in phases 1 and 2 was not detached from the global objective of the Integration Group

To a very high extent, our comparative analysis of the studies' designs was grounded on what the groups really did. Why are these activities so relevant to this analysis? The point here is that the competencies and skills to be developed cannot be transferred or transmitted, but in fact have to be acquired through the engagement and participation in authentic practices, performed in alignment with the courses' themes. Knowledge cannot be reduced to content, which is then delivered. The process of acquiring knowledge is (at least) as relevant as the content being acquired *in and through* practice, which is why in both cases there is a clear concern for the development of a learning context that acknowledges the situated and social dimensions of learning.

There are two main aspects which differentiate the courses from other similar activities in academic and professional learning environments. The first is the creation of a context which is a “practicum” (Schön, 1987), “a setting designed for the task of learning in practice”, where participants must become “competent” practitioners in the addressed subjects. The second aspect is the fact that both courses are based on a Learning Community model, with a clear aim to support the creation of such context. The value of a community based model is that it approaches formal and planned learning initiatives (such as the presented courses) to the way people learn in natural environments. Hence, through their participation, members are actually improving their ability to learn in their daily life. The courses were designed to develop the participants' meta-learning skills. They were encouraged to reflect on *how* they were learning, rather than solely concentrating on *what* was being learned. The process is (at least) as relevant as the product of learning.

## 7. Conclusions

In this section we summarize our findings regarding the design and support of learning contexts and their support with information and communication technologies.

### 7.1 Designing for Learning

The creation of learning contexts predicated in situated learning theory must enact purposeful learning experiences as they happen naturally. Purposeful learning experiences cannot be supported whatsoever by the conventional perspective that portrays learning as mere instruction and a question of knowledge transfer. Hence, and as it was presented in both learning designs, the participants had to cope with 'genuine' research problems. In the design of learning contexts, what should be considered first is how what is to “be learned” can be a product of participation through the development of activities and practices that support and sustain what is to be learned. Furthermore, learning cannot be designed. Learning can only 'designed for', that is, facilitated (Wenger, 1998).

The underlying learning designs of both cases acknowledge this difference and are aimed at creating, sustaining and facilitating a context where learning is firstly and fundamentally a process of engagement and results from a synergetic approach to deal with the “problems” (or subject-matters). Therefore, they illustrate the creation of learning environments in which participants construct an understanding of the underlying subject-matters by engaging in activities that require and are related with the application of those subject-matters in practice. In both cases the participants were immersed in meaningful activities where the product of learning was inseparable from the process, and where competencies in the subject-matter we acquired through their participation in the courses' activities.

Thus, we argue that to translate the insights provided by Situated Learning, we should move toward a community-centred model of learning contexts. The difference is that learning is not solely a constructive process of the learner in some social setting that “influences” it, and the learning subject is not solely the individual but rather a broader social entity, which, in our case, is the Learning Community. Our point, here, is not to reject constructivist theories of learning nor individual learning processes. Instead, we note that even in those theories considered as social theories of learning, the social dimension (and to some extent the understanding of *situatedness*) of learning is limited to a spatial and temporal understanding of the environment where it takes place. To our understanding such resembles an understanding of *practice* as mere action and as it was depicted through our work such understanding is limitative.

### 7.2 Designing for Learning Communities

Designing *for* learning predicated in social and situated theories of learning is simultaneously the case of designing *for* communities. It is relevant to bear in mind that what was discussed above, regarding the impossibility of designing learning, is applied *ipsis verbis* to learning communities. They may be nurtured and facilitated, but not designed. They may only emerge as the

result of the engagement in shared enterprises. What may be designed are the conditions and activities that may sustain such engagement - the communities may or may not emerge.

The value proposal for the application of Learning Communities in learning contexts relies on the interdependence between the members to address complex problems or subject-matters. As such, this model has as its main virtue the fact of replicating the real-life messy, ambiguous and extremely challenging nature of work. The question that served as the basis of our inquiry is in fact an open question without a definitive answer. Our final purpose through this research was not set to justify the successful creation of learning communities but to learn about the creation and facilitation of learning contexts **by doing so**. We subsequently illustrate the major difficulties encountered in such a process. From the results reported in the dissertation, we consider the major difficulties and/or inhibitors for learning in both cases to be related to the process of *bridging* and the processes of *collective reflection* and *meta-learning*.

The *bridging* between groups was difficult to facilitate and sustain. In both cases the groups weren't engaged in sustained inter-group communication and collaboration. The practices they were developing, while intrinsically local to their work, were not different from the practices being developed by the other groups. Each group addressed their work as independent from the others. Even though they were in touch and maintained communication inter-group collaboration on their work was marginal. In fact, the manifestation of this problem has its counterpart in contemporary academic and professional institutions in what has been designated by 'organizational silos'.

"Creating" a Learning Community is fundamentally different from creating a group of people that learns together, since *learning as a community* is not only dependent on individual inquiry but also on the engagement in collective inquiry. Learning is not necessarily equalitarian, since members take on different tasks and roles and learn different things. Further, learning as a community is not limited to the development of knowledge but includes the development of skills and competences. In fact, what is aimed is the development of the participants' *knowledgeability*. *Collective reflection* is not a substitute for individual reflection but rather a complement. It is through collective reflection that the community may evolve, learning not only about issues related to their goals, but simultaneously about their joint capacity for action and their strategies. If these collective reflections are used in and affect their practices and change the way people act and interact, the community can be capable of *meta-learning*. Such meta-learning is relevant regarding the community's processes. Through the engagement in collective reflection and meta-learning a community may accomplish a shared understanding of its biases and potentials and those are important inputs for the process of *community self awareness development* that is not limited to maintaining a shared understanding of what the community does but also regarding to what the community is. In both cases, collective reflection, as a group explicit process, was only observed through the periods allocated to do so, rather than proactively. Yet, one must consider that two of four months aren't enough to create a mature community of any kind. By approximating formal learning events to the ways learning happens naturally and informally in peoples' lives, and by investing in their self development in doing so we aren't exclusively addressing formal learning but hopefully contributing for the participants to become better practitioners (or learners).

### 7.3 ICT Support for Learning Communities

Regarding technology for supporting Learning Contexts, or more specifically, Learning Communities, the main purpose should be aimed at providing a collaborative space that can support the continuity between face-to-face and online interactions. To our understanding, it is now clear that there is no difference between technology for communities and technology for collaboration. Although we recognize that different communities may have different requirements due to their individual purposes and preferred models of interaction.

Regarding technology adoption and usage, our initial expectations of both empirical cases were not met. An identified pattern in both cases was that the participants preferred to use email (or mailing lists) to organize their ongoing work. To our understanding, the major difficulty to be addressed was not a technological one. Even though nowadays technology availability is not an issue, working practices are still based on an individualistic cooperative understanding of working. Changing practices is therefore a major challenge. However, as we reported in the first empirical case, when participants were able to engage in some collaborative endeavours, we observed a shift regarding technology understanding and usage. The focus, as we know, more often than not seem to forget, should be placed on technology in use, honouring the complex nature of socio-technical systems. As reported by Kloos (2006) the technologies supporting collaborative work, including Enterprise 2.0 tools, can provide the necessary features to support a community and are relevant for models based on Situated Learning. Despite the existence of a tendency to over-estimate the value of such technology, with the argument that its adoption cost is low or even non-existent due to the fact that they are used by virtually anyone, such perceived value was not observed. What this argument fails to grasp is that, beyond the technological barriers which are now smaller (and increasingly so), there are also social or cultural barriers, of which the larger is the perpetuation of individualist work practices. In our opinion, for the value of such tools to be realized, those are the main barriers to be addressed.

### 7.4 Thesis Statement

Recognizing the multidimensional nature of *learning* entails comprehending it beyond a simplistic (if not myopic) standpoint where it is seen as a mere individual process of transmitting and acquiring content. Learning is simultaneously a product and a relational process, through which we make sense of the world and act in it, through participation in social practices that are supported *by* and *in* action; it is not (nor should be) assumed as being distinct in academic/professional or formal/informal contexts. As a corollary, the design, the development and the facilitation of learning contexts determined to support practical and actionable learning, whether in academic or professional contexts, can be governed by the same principles.

Learning Communities, informed by Communities of Practice theoretical underpinnings, are an important model, in practice, for the creation of learning contexts, and its applicability is not limited to academic environments, but can (and should) also be applied

in organizational contexts. Moreover, the creation of such contexts, even in formal training activities, allows for the development of the skills that we use while learning informally. The underlying value proposition is the continuous development of the competencies and meta-competencies, both individual and collective, which are vital to address the challenges inherent to the uncertainty and complexity with which we are required to deal with.

As reported, our results do not disconfirm the results of other works related to the use of Enterprise 2.0 technologies to support collaborative work within communities. The connectivity made possible by such platforms is in fact relevant and may have a significant impact in institutional environments. However, the mere deployment of such tools is not, in itself, sufficient for the establishment of a *collaborative environment*, since the creation of such environment is, and will always be, dependent on the participants and their use of such technologies.

## 7.5 Major Contributions

As previously mentioned, our objectives were pointed at the production of actionable knowledge. However, we do not intend to state that the generated knowledge is directly *transferable*. By crossing different *practices* and *contexts*, such knowledge may never be directly *transferred* to action, but is instead *translated* into action.

Our first contribution is related to Learning Communities. Our revision of the literature about Learning Communities was synthesized in a conceptual framework that may assist in the development of learning contexts or systems predicated on such theoretical concepts by indicating the major **attributes** and **processes** that should be in place. Further, through this study we illustrated how the concept of Learning Communities can be applied to both academic and professional institutions. This contrasts the results from the literature review, where Learning Communities are usually referred to and applied only to academic settings.

The second contribution is related to Learning Architectures for Learning Communities. In this study we extended Wenger's (1998) proposal for a Learning Architecture by complementing it with five extra dimensions that should be considered when designing learning contexts. This construct can be used in conjunction with the above-mentioned framework as an aid for the design and nurturing of learning contexts. Together, they can be a preliminary support in the design of community-centred learning contexts either in academic or professional settings. The developed models, illustrated and used in the analysis of both empirical cases which support this research, serve as a referential which we consider to be relevant for the design of learning contexts.

The third contribution was the use of the aforementioned constructs to support the analysis of two empirical cases' learning designs and contexts. This may serve as an illustration of their applications and provide the means for further reflection about designing *for* learning and *for* communities.

The fourth contribution is the approach between learning in academic settings and learning in professional settings. This may help in connecting and questioning conventional perspectives that divide learning at academic and professional levels, education versus training. By exploring the analogues between both learning designs, we expect to establish both a reflection and a bridge between learning-for-work and learning-in-work.

## 8. Proposed Future Work

We are aware that Organizational Learning is far beyond the scope of the present investigation and the apparently simple juxtaposition of both terms. As history highlights, the challenges posed by Organizational Learning weren't nor can be solved by linear or deterministic processes. On the contrary, as it has been argued, we may need a frame-breaking perspective shift, a *metanoia* (Silva, 2008) and as such this is a theme for future inquiry. The major challenge is to capitalize upon the vast and fragmented body of literature as Organizational Learning, and to complement it by translating the insights and analytical power of Practice-Based Theorizing into interventions that could assist organizations in addressing Organizational Learning. In what follows, we propose some interdependent research avenues to be taken in relation to Organizational Learning informed by the perspective of learning developed through the presented work and our interest in such theme.

### 8.1 Organizations and Learning: Refuting the Oxymoron

Organizational Learning has been depicted by Weick and Westley (1996) as an oxymoron. The authors' proposition is that learning actually occurs through this tension which presents itself as an oxymoron and that, instead of being focused on the concept of Organization, should be centred on the processes of organizing. Such focus, through the "practice turn" offered by the studies based in Practice-based Theorizing "propounds a vision of organizing as knowledgable collective action" (Gherardi, 2009). Even so, and despite the fact that such approaches provide us with powerful lenses to address learning in a much organic and practice-centred manner, the approach to issues related to cross-community learning continues to be limited to an elusive form (Østerlund & Carlile, 2003) and it is still necessary to further inquiry about how connections (and learning) can happen between different practices. If the goal is to address Organizational Learning holistically, we need a concept of Organization which can refute the oxymoron, maintaining the relevance of the concept of learning without having to abandon the concept of Organization. When we are referring to Organization, in this case and because we believe it a holistic approach is necessary to be able to relate to learning organizationally, we are referring to a concept or organization as an entity – created intentionally by a human endeavour with a distinct purpose. We posit that the difficulties in dealing with the concept of Organizational Learning, and devising interventions that could lead to labelling learning as truly organizational, have their root in the way we perceive and consider organizations. We need to devise a compatible understanding of both concepts: Organization and Learning. A relevant approach to consider is available on (Tsoukas, 2008) in which the author depicts Organization as constituted by three ontologic components: representations, actions and practices.

## 8.2 Toward a Learning-Based View of the Firm

As Schön (1973) challenged us stating, "we need to invent and develop institutions that are 'learning systems,' that is to say, systems capable of bringing about their own continuing transformation". Analogous with Schön's challenge, we consider that a fruitful endeavour would be the development of a learning based view of organizations. As highlighted by (Kaplan, Schenkel, Von Krogh, & Weber, 2001), there has been an evolution of different views of organizations from a transaction-, to a resource-, to a knowledge-based perspective. We need a more organic perspective on organizations that points to flux rather than stasis and the existent proposals seem to be rooted elsewhere. As such it becomes mandatory to devise a learning-based view of the firm. To be addressed holistically learning has to become part of the organizations' language.

## 8.3 Toward Organizational Learning Systems

As previously discussed, learning itself cannot be designed. At best, it can be designed *for*. It is therefore relevant to comprehend the learning systems that an organization may already have, in both its formal and informal ways of existence. This step is mandatory if one is interested in equipping Organizations with the competency of bringing about their own continuing transformation. Furthermore we need to develop complementary learning systems that can add the existent ones. We define Organizational Learning Systems as the processes, systems, and technologies that can be used to actively and intentionally support and enhance Organizational Learning. In our understanding, a relevant research path to pursue is devising a framework that can be used to assist organizations in the development of their Organizational Learning Systems. Individuals and groups are the agencies of Organizational Learning. Learning in organizations occurs on a permanent basis through action of such agencies, but there are learning processes, which have facilitators and inhibitors that influence them. Understanding such processes, their facilitators and inhibitors is a precondition for interventions intending to address the ongoing support and facilitation of Organizational Learning.

## 8.4 Toward Organizational Learning Architectures

If learning is a vital concept for the performance and resilience of organizations, it must be recognized and addressed holistically in its complex and paradoxical nature. To make this approach possible, and to incorporate a learning based view of organizations, learning must be part of the organizational design. To achieve a holistic approach, learning can't be solely a topic from a specific domain of an Enterprise Architecture, nor a mere new and orthogonal domain.

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