Organizing professional communities of practice

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2 Designing effective CoPs

This chapter is an introduction into the concept of CoPs and develops the theoretical framework that guided the design of the system and its implementation. First the concept of what CoPs are and an explanation of how they work is introduced. Then a review of the literature is done to look for variables that effect leaning processes in CoPs. This was done in order to come to the design of the system used for organizing CoPs effectively. I called this system CoPOS, which is an acronym for Community of Practice Organizing System. An evaluative framework for theoretically gauging effectiveness of the system is presented at the end of the chapter.

2.1 Understanding CoPs

Originally developed as a new perspective on how people learn through participation in social collectives, the concept of CoPs has undergone several major developments since Lave and Wenger (1991) first used the term in their study of five learning groups. The most recent development points towards the role CoPs can play in organizational development (Muthusamy & Palanisamy, 2004; Wenger et al., 2002). The emphasis in the literature changes from describing a process - how an individual learns in a CoP - to prescription; how CoPs can be organized and facilitated in order to stimulate organizational learning (Schwen & Hara, 2003). However, the basic concept remains unchanged: CoPs are self-directed, social

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3 This chapter is based on:
collaborative learning environments focusing on situated practice within a specific domain and as such are powerful environments for participant learning.

CoPs are self-directed in that governance is internal and members, not outside forces such as management, regulate learning needs. These two aspects make up the greatest difference between CoPs and self-directed work teams. As far as learning is concerned, in a CoP it is a social collaborative process, not an individual one. What Wenger (1998) found was that learning is the collaborative negotiation of new concepts or artifacts introduced into the CoP by either the individual or the external environment in which the CoP operates. Learning is stimulated because the equilibrium in the group’s social and social-cognitive structure is disturbed by the introduction of these new concepts, and new learning is needed to bring the group back in balance (Hakkarainen, Palonen, Paavlova, & Lehtinen, 2004). Through an iterative process of reflection and negotiation with new ideas and concepts, learning takes place within the social connections of the group. This relational-based perspective on learning differs from other individual cognitive based learning theories because it considers that the group forms the actual basis for individual member learning. This social dimension of learning combined with the idea that learning in CoPs is about practice linked to the environment in which it exists is what Lave and Wenger (1991) referred to as situated learning.

The different definitions of CoPs all reflect the concept of people learning together, solving problems and improving their daily practice through social interaction. People join CoPs in order to become better practitioners, not just learn about practice. Through ongoing participation and sustained interaction with others involved in the same domain, members undergo changes in their personal identity by becoming more competent in their field (Wenger, 1998). CoPs are based on long-term working relationships in a specific domain and similar practices. They foster group identity, social interdependence, shared understandings and strong connections – persistent and sustained institutionalized networks.

CoPs can vary in their degree of locality. Some are situated within a single business unit of an organization, some cross intra-organizational borders, and others are inter-organizational and industry wide. One of the case studies presented later is an example of this latter type of CoP.
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A key concept for this research is the idea that CoPs can also be classified as either organic or sponsored. An organic CoP is emergent and usually informal in nature - informal in the respect that there is no official recognition of the CoP by the organization - thus there are no real expected results. These types of CoPs can be very innovative but on the other hand are quite fragile and depend on the enthusiasm and dedication of a few core members for their momentum and continued existence. Organic CoPs are very flexible, changing and evolving as the needs of the members change. But, because of their informal status within the organization, they may not reach their full potential because they receive no facilitation in the way of time, money or recognition from management (Wenger et al., 2002).

This research focuses on what are called sponsored communities. Sponsored CoPs have full recognition from management and are allotted time, money and other facilities. They are considered as an investment and so there are expectations from management. If management does not feel that there is sufficient return on the investment, frictions can arise and possibly even lead to the demise of the CoP (Thompson, 2005).

Differences between CoPs and other organizational groups

Knowing the differences between CoPs and other organizational groups can be important for their success (Smith & McKeen, 2003). In one longitudinal study Thompson (2005) showed that the fine balance between the formal organization - as represented by management and policy makers – and CoPs can be very easily disturbed by what the members of the CoP experienced as ‘meddling’. This means that they need to be supported differently than other traditional organizational collectives such as teams. In Table 2.1 differences between traditional groups and CoPs are given (Bood & Coenders, 2004; Ropes, 2008).
At first CoPs may appear to be like other organizational groups such as project teams, but this is misleading. The major differences between traditional groups in organizations and communities lie in the concepts of self-organization and end-results (Dekkers et al., 2005). For example, management constructs teams in order to achieve specific goals formulated in respect to deliverables. Members of a project team are thus expected to take an active role in the team so that the team as a whole can produce a pre-specified end result. CoPs on the other hand, are made up of voluntary actors who decide their own learning agenda, and determine what course the CoP takes. Members of a CoP come together because they want to learn and share knowledge in order to improve their practice, not because of a task assigned by management. Another difference between project groups and CoPs lies in the organizational structure. In contrast to a project group, the structure of a CoP is not formalized by management, but by the CoP itself – it is in fact self-organizing in regards to inter-group hierarchy. In a CoP membership is legitimized and hierarchies established through participation and expert knowledge, not by an outside force such as management.

Networks may have similarities to CoPs, but are fundamentally different in the sense that they are usually looser in social structure and have different goals. People join networks in order to meet new people in their field, exchange ideas and help one another. Also, learning in networks is typically individual in nature.
because each participant decides how and what to share with other members. CoPs go beyond a set of relationships: they are about the domain itself and through collective learning members develop a shared practice together. This link to the domain and practice is why people become members of CoPs.

Networks are a rich environment for cultivating what is called ‘bridging social capital’ which is associated with vertical ties among members of the network (Lee & Jones, 2008). These types of ‘weak ties’ (Granovetter, 1973) facilitate things such as new alliance formations and information sharing and help build reputations by developing interpersonal relationships. On the other hand, CoPs build ‘bonding social capital’. Bonding social capital considers close horizontal ties among actors with similar backgrounds and principles (Lee & Jones, 2008) and facilitates the development of a shared practice. Core members of a CoP build bonding capital, while members on the periphery benefit from the bridging capital within CoPs (Lave & Wenger, 1991).

Learning communities are about just that: learning. The goal of a learning community is to produce, validate and disseminate knowledge within a particular field. Learning communities are organized around intellectual work and building theoretical constructs and this is how learning occurs. CoPs are organized around practical work focused on improving practice and during the course of this, learning possibilities occur (Riel & Polin, 2004).

How CoPs work

While the specific term ‘community of practice’ is relatively new, the concept is not. Wenger, et al. (2002) point out social learning and collaboration have always played a role in humankind’s development – from groups of cavemen learning from each other how to kindle a fire, to the guilds of Europe, which functioned as both a social arena and a training ground for new apprentices. CoPs are all around and most of us are members of (at least) one. Most people would, on reflection, realize that sometimes they learned during informal discussions with a group of peers; people they were friendly with, who worked in the same field and had similar tasks and problems. These three aspects of learning form the basis for a CoP and are referred to respectively as community, domain and practice. Community is the social fabric needed for collaborative learning and knowledge sharing; domain is the common ground bringing people together, and practice refers
to the tools, body of knowledge and lexicon specific to the group. The elements community, domain and practice are what a CoP is based on and how it defines itself. Each point is elaborated further below, starting with the idea of domain.

Domain is what brings the group together; it is what the CoP is about and why it exists. Domain “...reflects the context and focus of the joint enterprise that is continuously negotiated, and concerns the topics of interest, ideas and perspectives that a group shares” (Akkerman, Petter, & de Laat, 2008, p.385).

Practice is the basic body of knowledge that is used by members in order to build new knowledge and learn. Practice “...denotes a set of socially defined ways of doing things in a specific domain: a set of common approaches and shared standards that create a basis for action, communication, problem solving, performance and accountability” (Wenger et al., 2002, p.38). Practice has aspects of both tacit and explicit knowledge and can be found in the shared resources such as theories, rules, conceptual tools and best practices.

Community is really about how the CoP works; it considers sustained interactions focused on a specific domain and a common practice. Through mutual engagement, interpersonal relations and social capital are developed, making collaborative learning and knowledge exchange possible. Community can be considered as what is known as social capital. Social capital theory focuses on how networks of relationships can serve as a resource for social action (Nahapiet & Ghoshal, 1998) and considers such things as trust, norms, reputations and networks. Also, social capital is understood to make collective action easier by facilitating information exchange and learning.

Social capital has both individual and aggregate components (Walter, Lechner, & Kellermanns, 2007). According to Coleman (1988):

Social capital is defined by its function. It is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors – whether persons or corporate actors – within the structure. Like other forms of capital, social capital is productive, making possible the achievement of certain ends that in its absence would not be possible. (p. 98)
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Nahapiet and Ghoshal (1998) propose that social capital can be divided into three dimensions: structural capital, relational capital and cognitive capital.

Structural capital considers the systems of networks in which an organization operates and refers to the frequency of contact and connectivity among actors in a particular network. This implies that structural capital has dimensions of network membership or ties (who you know) as well as patterns of configurations (how you are connected). Structural capital is important because it facilitates access to knowledge, tools and other important resources to members in the network, regardless of whether or not they participated in the creation. Ratten and Susano (2006) suggest that structural social capital can be a result of a built environment. While some CoPs may form spontaneously, many are designed especially as forums for knowledge exchange and development, thus form the network configuration itself.

Relational social capital compliments structural social capital by providing the necessary capability for network members to access group information, knowledge and resources (Lee & Jones, 2008). Much of the literature seems to point to trust as the underlying mechanism of relational capital. I follow Nahapiet and Ghoshal (1998) by understanding relational capital to have the following four overlapping constructs:

**Trust.** Trust is perhaps the most important enabler of relational capital (Collins & Hitt, 2006). Trust is important for facilitating cooperation and collaboration; high levels of trust make for freer and more effective exchange of knowledge and enables creativity (Nahapiet & Ghoshal, 1998). Some level of trust is essential for collaboration to start (Vangen & Huxham, 2003).

**Obligations.** Obligations are the commitments, rights, and duties of the collective. An obligation is the act or course of action to which a person is morally or legally bound and thus relate to ideas of reciprocity (Borgatti & Cross, 2003). The adages “there is no such thing as a free lunch” or “one hand washes the other” illustrate the idea of obligations.

**Norms.** Norms are standards of acceptable conduct that guide and regulate the life within a collective. Norms are socially – not individually – defined and held, and are crucial for a group to function. For example social norms such as openness to
criticism and tolerance of failure are essential for innovative groups (Van den Bossche, Gijselaers, & Kirschner, 2006).

Identification. Identification considers social cohesion – it is the fit between individual identity and the larger collective. Social cohesion motivates individuals to act out of concern for the group’s well-being, rather than expected rewards (Olivera & Straus, 2004). People who identify strongly with the network are also more likely to ask for help as well as help others.

Relational capital is often conceptualized at the level of the individual (Collins & Hitt, 2006; Gulati, 1998). Regular interaction between individuals over time can form close personal relations. Trust and cooperation between individuals have a two-way interaction. In other words, trust facilitates cooperation and continued cooperation breeds trust (Nahapiet & Ghoshal, 1998; Vangen & Huxham, 2003). CoPs are based on long-term collaborative relationships that lead to close personal ties (Wenger et al., 2002) and identification of individuals with the group (Wenger, 1998). This also leads to the development of group norms. While norms can be implicitly understood, sometimes they are explicitly discussed by members of the community (Saint-Onge & Wallace, 2003) and form actual boundary objects that help define the community itself.

A CoP has its own system of informal currency, which governs commitment and obligations (Akdere & Roberts, 2008). Community members feel morally obligated to both the collective and other individuals. Obligations and reciprocity are usually inherent in a CoP (Laathlean & Lemay, 2002).

Cognitive social capital is found in shared understandings and meanings, and is vital to inter-organizational knowledge exchange and learning (Inkpen & Tsang, 2005; Ratten & Susano, 2006). Knowledge often has a tacit aspect and can be difficult to transfer. Cognitive social capital gives CoP members more capacity to absorb new knowledge from other members. Borgatti and Cross (2003) found that strong ties in closed networks are needed for cognitive social capital to form.

CoPs inherently build cognitive social capital in several ways. Firstly, they are theme-based groups that focus on a specific domain and bring together actors who may already have a shared practice as well as a shared language. However, shared understanding may not already exist. Coming to a shared understanding means first an individual must externalize his thinking by objectifying it into tools.
that others can appropriate, adjust and refine (Baker, Hansen, Joiner, & Traum, 1999; Nonaka & Takeuchi, 1995). However, different discourses or thought patterns might impede these processes. In this sense, language forms the basis for interaction and learning in all cooperative environments (Palinscar, 1998). Through repeated interaction, a shared discourse is built up, allowing for shared meanings to be easier discovered and explored: once again, there seems to be a two-way relationship between shared language and shared meaning. Furthermore, there is a two-way relationship between CoPs and social capital; on the one hand social capital is a result of the CoP, but on the other hand CoPs purposefully work on building it. In fact, without a certain level of social capital, a CoP cannot function. Table 2.2 below illustrates how CoPs intentionally develop social capital.

<table>
<thead>
<tr>
<th>Dimension of Social Capital</th>
<th>Examples of Practices within CoPs</th>
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<tbody>
<tr>
<td>Structural</td>
<td>Coordinated meetings</td>
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<td></td>
<td>Process facilitation</td>
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<tr>
<td>Relational</td>
<td>Regular (informal) contact</td>
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<td></td>
<td>Explicit avoidance of inter-group hierarchies</td>
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<tr>
<td>Cognitive</td>
<td>Different ways of working together on developing new ideas</td>
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<tr>
<td></td>
<td>Openly sharing experiences in the group</td>
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<tr>
<td></td>
<td>Focusing on issues from a common learning agenda</td>
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</tbody>
</table>

The next section discusses literature that is used to inform the actual design of the CoPOS.

### 2.2 Designing CoPs and their implementation

This section describes the process of designing CoPs as human resource development (HRD) trajectories, which is the perspective of this study as discussed in the introduction. While much of the literature points out that CoPs emerge organically, I followed a different approach – more similar to Wenger, et al (2002) - maintaining that they can be purposefully organized as learning environments developed for organizational development trajectories. In this sense, the CoPs I designed are much like human resource development trajectories based on learning (de Caluwe & Vermaak, 2002). Wenger (1998) proposes the following paradox;
No community can fully design the learning of another, but at the same time, no community can fully design its own learning” (p. 234). My interpretation of this is that learning environments such as CoPs need to be facilitated in their learning processes, but not their specific design, as would be the case in a more behavior-type learning environment (Blokhuis, 2006).

According to the theory discussed above, the factors that influence learning processes in a CoP -and so should be considered when designing for effectiveness - are strong community, situated learning, a focus on practice, clear links to the organization, self-direction, clear links to organizational learning, varying forms of interaction and reflection, and coordination (Akkerman et al., 2008; Thompson, 2005; Wenger, 1998, 2000; Wenger et al., 2002). These variables are pictured in Table 2.3 below.

Table 2.3. Factors influencing learning processes in CoPs

| Strong community | Self direction |
| Situated learning | Lead to organizational learning |
| Focus on practice | Varying forms of interaction |
| Clear links to organization | Individual and group reflection |
| Coordinated efforts |

One problem with relying solely on CoP theory for design is that it is underdeveloped. Another problem is that there is little empirical work on CoPs (Schwen & Hara, 2003). Most evidence of how they actually work, or what factors need to be considered when designing them (or even what they actually do) is anecdotal in nature. Because of this, other perspectives are needed to ground CoP theory as well as enhance the design process. I used the following three perspectives that have close similarities to CoP theory for informing the design; 1) human resource development theory 2) workplace learning theory and 3) social constructivist learning theory. I start the discussion by looking at literature on human resource development.

2.2.1 Human resource development (HRD)

Human resource development (HRD) literature points out that while there are many different interpretations of the concept HRD (Gibb, 2004; Walton, 2003), recent literature points towards a trend of moving away from a training based
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conceptualization of HRD to a learning based one (Doornbos, Bolhuis, & Simons, 2004; Zahn, 2001). This aspect of learning is closely related to CoPs, in the sense that they are learning environments, not training grounds.

Kuchinke (1999) defined three paradigms that modern HRD utilizes in the design of interventions; 1) person-centered, which is aimed at self-realization of the individual; 2) production-centered, which focuses on attaining organizational goals, and lastly; 3) ‘principled problem-solving’ which considers individuals need to develop, but in social contexts within larger collectives. Principled problem-solving, Kuchinke argues, is based on the concept of good work, which is oriented to democratic self-direction and responsibility to self and others, and does not focus solely on economic returns (1999, p.156). According to Kuchinke, this view is closely tied to the concept of a learning organization in the sense that “…good work will benefit not only the individual, it can also result in smart workers who have the intellectual, moral, and social fortitude and vigor to confront the social and technical problems of the workplace and arrive at innovative solutions that cannot be found in the current system. Employees in this post-formal workplace are learners and researchers, as well as producers and co-workers” (1999, p.156). From a principled problem-solving view, competences are developed through experimentation and contextual learning in social settings, and work becomes more stimulating, meaningful and productive. This is exactly what Wenger (1998) found was happening in the CoPs he at studied at the insurance firm.

Gibb (2004) considers there to be both realist and constructivist conceptions of HRD. A realist conception is based on a social-positivist paradigm and is strictly concerned with using HRD in order to achieve definable goals. From a social-positivist viewpoint, HRD is purely utilitarian, and attention to commonsense functionality assumes good HRD programs. A constructivist paradigm on the other hand does not discard functionality, but supplements it by adding an aspect of imagination and creativity – what Gibb refers to as aesthetics - to the HRD process. Although good HRD can be directly linked to functionality, there are other factors such as creativity and imagination that also play a role. Gibb (2004) argues that a design approach to HRD program development – based on regular, cyclical iterations between research, application and assessment - is needed due to the high levels of complexity and change in the work environment. A constructivist approach, in which one facilitates the processes of HRD rather than defines the
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outcomes, fits with this concept of design quite well. Furthermore, a constructivist approach to HRD is important for understanding how to support the individual in the pursuit of continuous learning, which is an important issue facing modern organizations. Gibb (2004) sees a constructivist HRD conception, and the ensuing HRD program designs rooted in such a paradigm, as a rising challenge to the dominant social positive based conceptions apparent in many current HRD programs. According to Gibb (2004):

Accounts of HRD more clearly and strongly emphasize the practical, social, and affective contexts of HRD, requiring an understanding of people that is grounded not in the lives of solitary individuals but in communities of practice. This reflects an understanding of a changed work and employment environment with different material and psychological demands. People seek collectively, and value, participation in various kinds of activity in work organizations and in life that involve continuous development, rather than trading stocks of knowledge acquired independently during formal discrete learning events. They see themselves as members of and contributing to the existence and functioning of communities of practice, rather than being individuals and accumulating private possessions. (p.67)

Similar to Kuchinke’s idea of principled problem-solving, Harrison and Kessels (2004) maintain a view of HRD as “... an organizational process (that) comprises the skilful planning and facilitation of a variety of formal and informal learning and knowledge processes and experiences...in order that organizational and individual progress can be enhanced...” (pp. 4-5). Effective corporate education is based on situated learning, which is the key to assuring that knowledge workers are capable of prospering in a work environment that demands continual improvements and innovations (Kessels, 2001). This means that for HRD programs to be effective they need to be supported by the learning processes inherent in the daily course of operations (Kessels, 2001, p. 501).

Thus, the literature points out that in changing organizational environments, learning-based HRD trajectories are more effective than training-based ones. But what are characteristics of HRD programs based on learning, and how and why are they effective? These questions are discussed below.
Dimensions of effective HRD programs

Here four aspects of effective HRD programs uncovered in the literature are expanded upon; 1) ‘Androgagy’, or adult learning pedagogy 2) the idea that HRD programs need to be based on ongoing processes 3) that a clear link to organizational goals must be made and 4) that without management support, most HRD initiatives fail. I then map out CoP theory onto HRD theory.

Adult pedagogy

I understand CoPs to be groups of professionals that come together in order to learn and innovate from and with each other in a specific, work related context. Approaching community participants’ learning from a pedagogical viewpoint based on childhood learners may not be effective because adults learn in different ways than children (Bransford, Brown, & Cocking, 2002). Knowles (1978) argues that adult education should be a field in itself because pedagogy can not explain the way adults learn, nor the motivation that plays a role in adult learning. Knowles’ theory, which he calls ‘Androgagy’ has been a guiding factor in both the HRD field and the adult education sector for many years (Terehoff, 2002) and can help inform this research as well.

Andragogy is based on four assumptions that differ from pedagogical assumptions; 1) changes in self-concept 2) the role of experience 3) readiness to learn and 4) orientation to learning. Knowles (1962, 1978) proposes the following key characteristics of adult education that reflect the assumptions mentioned above:

- Adults are capable of self-directed learning and should be guided in this process.
- Adults have an ever-increasing reservoir of experience that is a rich resource of learning.
- People are ready to learn something when it will help them to cope with real-life tasks or problems.
- Learners see education as a means to develop increased competence.
- Adults need to know the reason to learn something.
- The most potent motivators for adult learning are internal, such as self-esteem.

The guiding notions of Andragogy are closely related to a social-constructivist perspective on learning in the sense that both perspectives see it as a process in
which the individual learns together with others in a self-directed way, developing the learning environment as they go (Mergel, 1998; Terehoff, 2002).

Ongoing processes
In his work on teacher development trajectories, Guskey (2000) comments that HRD in education is often seen as a few days of (ineffective) training on a specific topic that happens off-site. Such a view of HRD, which is common to many organizations in varying sectors (Zahn, 2001), does not fit with the concept of continuous learning (or life-long learning) which is seen as a crucial factor for developing effective organizations (Kessels, 2001). A one-off training seminar has merit in situations where a specific skill needs to be learned (such as learning how to use a new spreadsheet program) but little impact on the organization as a whole because it may not be linked to the daily practice of the participants. According to Guskey (2000) successful professional development “... is not an event that is separate from one’s day-to-day professional responsibilities. Rather, professional development is an ongoing activity woven into the fabric of every educator’s professional life. Professional development is an indispensable part of all forms of leadership and collegial sharing” (p.14).

Linked to organizational goals
In order for management to support HRD programs – a critical success factor for any HRD program (and CoPs as well) - there needs to be a clear link to the goals of the organization (Guskey, 2000). And while life-long learning is important for personal empowerment and affectual development (Commision, 2000), learning and innovating in the workplace is typically in the service of the organization as a whole (van Woerkom, 2003). Furthermore, from the perspective of Androgagy, learners are motivated by the need to solve problems occurring in their daily practice (Knowles, 1978).

Supported by management
Management support is crucial to the success of any HRD initiative, but is not the determining factor (Kuchinke, 1999). HRD that employs a learning perspective is a holistic and collective process in which every stakeholder plays a role. However, without management support, there can be practical problems such as lack of funding or other operational support. There can also be problems at a higher order. For example without a belief in the value of the program as an investment in the intellectual capital of the organization, true support cannot happen
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(Coleman & Earley, 2005) which negatively affects the program. True support means that the program is embedded in the organizational system. CoPs must be similarly embedded in the organization (Wenger et al., 2002).

How HRD theory can inform the design of CoPs

The prescriptive nature of this research, and the specific conceptualization of CoPs as being intentionally organized used, is closely related to the HRD perspective sketched out above. Following this, effective HRD program design needs to consider the seven factors shown in Table 2.4.

<table>
<thead>
<tr>
<th>Table 2.4. Important factors for effective HRD trajectories</th>
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<tbody>
<tr>
<td>Rely on previous knowledge</td>
</tr>
<tr>
<td>Based on ongoing processes</td>
</tr>
<tr>
<td>Situated in nature</td>
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<tr>
<td>Process orientated</td>
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</table>

There are clear links between what both the HRD and CoP literatures discuss as effective design. I discuss a few of the more salient points below.

Firstly, CoPs are based on long term, social-constructivist learning situated in professional situations. Secondly, from an Androgagy perspective, participation in a CoP is implicitly motivated partially by a desire to learn in order to become more competent in one’s field and partially by extrinsic rewards such as status given by the CoP itself (Gibb, 2004). The design of CoPs must take self-direction into consideration. In CoPs it is the members themselves, not others such as managers, who are responsible for their learning and the direction it takes. Finally, the CoP is links to organizational goals through a process that Wenger (1998) calls “alignment”. Alignment is about checking to see if the ‘local’ activities of the CoP are aligned enough with other organizational processes in order for them to be effective outside of local engagement. Members of the CoP reflect on their situation and what their role is in the organization; what the links are, what the meaning to the greater collective is or could be, and how to translate knowledge between levels.

2.2.2 Effective workplace learning (WPL)

Communities of practice function in a professional environment and are as such linked to professional practice. A CoP is situated within a larger collective that
can be understood as a work-based activity system (Hung & Chen, 2002). One example of such a work-based activity system is the workplace. The workplace is often presumed to be an inherently powerful environment for learning (Nieuwenhuis & van Woerkom, 2007), but some current studies are questioning this. For example, studies have shown that WPL is problematic because the workplace is based on performance, not learning, and thus has different goals (Nijhof, Nieuwenhuis, & Terwei, 2006; Portman, Nijhof, & Nieuwenhuis, 2006). In fact, workplace learning may sometimes be seen as a threat to the organization and thus not at all desirable (Marsick & Watkins, 1999). However, some organizations understand the need to respond quickly to environmental changes and see possibilities in stimulating employee learning, especially for those whose tasks change regularly and the problem solving associated with these tasks is non-routine (Billet, 1999). Vaas (1996, in Onstenk, 1997) developed a model showing that when task requirements are high, learning in the workplace is essential. But however essential it may be, WPL does not necessarily happen spontaneously. According to Reenalda, et al (2006), interventions in the form of new work organization and processes are needed to enhance WPL because of pressures to perform. In this sense studies about WPL can inform CoP design in regards to understanding how learning can be facilitated in performance - based environments.

Blokhuis (2006), reviewed more than 40 empirical studies on WPL and found eight important factors for workplace learning environments that facilitate learning. Three of these are emphasized in CoP theory: participation, support, and communication.

Participation refers to the ability to take part in the organization’s activities; the only variable that is linked to both individual and organizational development (van Woerkom 2003). Participation also enhances individual motivation, and working together is a dimension of participation.

Support considers help and encouragement and the ability to learn from mistakes in a trustful environment. Coaching and recognition also fall in this category.

Communication refers to access and availability of information that facilitates and forms the interaction of the individual with the environment. Explanations of or-
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Organizational processes, feedback, exchanging experiences and questions about the processes are important examples of communication (Blokhuis, 2006, pp.30-33).

While most theory on WPL looks to the development of competences as the outcome of the learning process (Blokhuis, 2006; Onstenk, 1997), Nieuwenhuis en van Woerkom (2007) argue that the goals of learning in the workplace are two-fold; productivity, which is focused on efficiency, and innovation. One aspect of participation in a CoP is solving daily problems associated with work, e.g. becoming more efficient in one’s work processes or doing one’s work better. Innovation, because it operates in a field of tension between the long and short term, is problematic for WPL. However, in one study, Nieuwenhuis en Woerkom (2007) found that independence, empowerment, feedback and recognition were four factors that lead to innovative behavior. Innovative behavior is conceptually related to double loop learning (Argyris & Schön, 1996), and from a WPL perspective, depends on the individual’s ability to define and diagnose work related problems him or herself (Onstenk, 1997, p.188).

Regarding competence development at the workplace, Nijhof et al, (2006) found access and accessibility of information, opportunity to learn and availability of support and feedback to be three important factors.

How Workplace Learning theory can inform the design of CoPs

Communities of practice are activity-based collectives (Hung & Nichani, 2002) typically situated in a larger, work-based organizations. Approaching CoPs in this way opens up the possibility to use WPL theory to help inform the design of effective CoPs. Table 2.5 below gives the seven factors found in the literature that influence learning at the workplace.

<table>
<thead>
<tr>
<th>Empowerment</th>
<th>Recognition</th>
</tr>
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<tbody>
<tr>
<td>Feedback</td>
<td>Independence</td>
</tr>
<tr>
<td>Communication</td>
<td>Support</td>
</tr>
<tr>
<td>Participation</td>
<td></td>
</tr>
</tbody>
</table>

Some factors such as participation, task autonomy and variation and the possibility to learn from mistakes are inherent in well-functioning CoPs. Giving feedback
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and support are also part of participating in a CoP, but the quality of these also depends on participant’s interpersonal and group skills.

The availability of information within the group depends on the willingness of participants to share information among each other. However, this can be problematic due to cognitive and or motivational barriers (Camerer, Loewenstein, & Weber, 1988). Cognitive barriers are, among other things, linked to difficulties in explicating tacit knowledge (Nonaka & Takeuchi, 1995), while motivational barriers are associated with such things as the effort it takes to share knowledge and perceived threats to personal advance. However, high levels of social capital within CoPs can help overcome these barriers (Brown & Duguid, 2001) by establishing trust and common understandings. Finally, information from outside the CoP is important for its functioning because links to the greater collective are crucial for new learning (Wenger, 1998).

2.2.3 **Effective social constructivist learning environments**

The original works on CoPs by Lave and Wenger (1991) and Wenger (1998) as well as other, later work (Argyris & Schön, 1996; Breu & Hemingway, 2002; Schwen & Hara, 2003; Swan, Scarbrough, & Robertson, 2002) clearly establish CoPs as social constructivist learning environments (SCLE). This means that an understanding of how effective social cognitive learning environments are constructed are important for designing CoP’s.

According to social constructivist theory, knowledge does not reside in individuals, but in the community itself (Hakkarainen, Palonen et al., 2004). In fact, from a social learning perspective, a CoP is “an intrinsic condition for the existence of knowledge” (Lave & Wenger, 1991). Knowledge is thus built through the interactions of individuals in a social environment. Social constructivism is similar to cognitive constructivism in that both theoretical perspectives consider knowledge to be actively constructed during a process of discovery, and is understood in light of the existing knowledge in a learner’s mind. The main differences between social and cognitive constructivism lie in the motivational and collaborative aspects of learning. In contrast to individual learning, motivation in a SCLE is both intrinsic and extrinsic in nature. Intrinsic rewards are linked to better understanding- for example of a problem or situation - and personal development. Extrinsic rewards such as recognition of expertise, praise and authority afforded by the
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learning community are important to SCLEs because they assure strong links between individual and group learning, as well as motivate participation.

Sfard (1998) discusses that two metaphors can be used for understanding learning. An acquisition metaphor considers that the brain is a sort container the learner fills with new knowledge. A participation metaphor can be used to understand learning as an ongoing process occurring during interaction in CoPs. Interaction also plays a role in the acquisition metaphor, but only in a limited sense; for example the interaction occurring between a teacher and the student. Participation, on the other hand, means learning by and through becoming a member of the community of practice (Portman et al., 2006). However, Sfard (1998) warns of dogmatically choosing for one metaphor or the other, because understanding learning means using a combination of the two. Illeris (2002) combines the participation and acquisition metaphors in a theory of social learning in which knowledge is built during processes of interaction and understanding - an internal process. Learning is thus a result of both cognitive (internal) and social activities surrounding interaction. Illeris (2002, pp.120-121) defined six different dimensions of interaction.

- Perception is where interaction begins. Perception occurs when the individual receives an “unmediated sense impression.”
- Transmission occurs when another interested person passes on something, or influences someone.
- Experience includes both perception and transmission as well as presupposes an activity on the individual learner’s part when he or she acts on the sense impression in order to benefit from it.
- Imitation means a learner tries to do something or act in a similar way as another person, for example an instructor.
- Activity is goal-directed behavior within a certain context.
- Participation is the most wide-ranging and broad type of interaction (and is linked directly to a CoP in the sense that the individual is functioning in a common goal-directed activity and has a specific status).

Illeris (2002) argues that only through different types of interaction can there be what he calls ‘accommodative learning,’ a concept similar to Argyris and Schön’s (1996) ‘double-loop learning’. Double-loop learning is about changing the way
one actually thinks. One extreme form of accommodative learning, termed ‘trans-
formative learning’ by Illeris, actually changes the learner’s self. Wenger (1998)
refers to this as ‘re-negotiation of identity’ which is an important aspect of par-
ticipation in a CoP. Transformative learning is demanding on the individual be-
cause it requires a complete restructuring of one’s cognitive and emotional
streams (Portman et al., 2006). Because of high demands on psychological re-
sources, safe, motivating and trustful learning environments are needed for ac-
 commodative learning to occur (Blokhuis 2006).

The strength of learning environments based on social constructivist theory lies in
their ability to foster adaptation and flexibility (see Blokhuis, 2006, p.36). This
can be explained by the fact that in an SCLE there are no predetermined learning
outcomes. Jonassen (on-line, undated) argues that constructivist-based learning
environments are less controlled than say, behavioral-based ones, because the
outcomes of knowledge building are not always predictable. This means that a
learning environment must foster the learning process, rather than (as in a beha-
vioral approach) control it.

According to Jonassen, constructivist- based instructional design needs to focus
on supporting the construction of knowledge. In order to do this, Jonassen ex-
plains that powerful learning environments need to:

- foster reflective practice;
- enable context- and content-dependent knowledge construction;
- support collaborative construction of knowledge through social negotiation,
  not competition among learners for recognition;
- be based on internal negotiation - a process of articulating mental models, us-
ing those models to explain, predict, and infer, and reflecting on their utility;
- be based on social negotiation - a process of sharing a reality with others us-
ing the same or similar processes to those used in internal negotiation;
- be facilitated in the exploration of real world environments and intervention
  of new environments - processes that are regulated by each individual's inten-
tions, needs, and/or expectations;
- result in mental models and provides meaningful, authentic contexts for
  learning and using the constructed knowledge;
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- be supported by case-based problems that have been derived from and situated in the real world, with all of its uncertainty and complexity and based on authentic real-life practice;
- have an understanding of its own thinking process and problem solving methods - problems in one context are different from problems in other contexts;
- provide an intellectual toolkit to facilitate an internal negotiation necessary for building mental models.

Johnson and Johnson (1975) - perhaps the best-known authors on the topic of collaborative learning - describe five important characteristics of a learning environment that fosters both cognitive and social competences. These are:

- positive interdependence – group members need to feel linked to one another and give commitment;
- interaction - preferably face-to-face, and shared activities;
- individual and group accountability – feeling responsible for the group and oneself;
- interpersonal and group skills - leadership, decision-making, trust-building, communication, and conflict-management skills;
- favorable group processing – reflecting on the processes going on within the group.

How Social-Constructivist learning theory can inform the design of interventions for CoPs

The original work on CoPs was based on social constructivism. The five communities of practice Lave and Wenger (1991) observed were effective learning environments that illustrated the factors influencing the SCLE. These factors are shown below in Table 2.6.

<table>
<thead>
<tr>
<th>Table 2.6. Factors influencing learning in SCLE's</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared understandings</td>
</tr>
<tr>
<td>Common goal orientation</td>
</tr>
<tr>
<td>Varying types of interaction</td>
</tr>
<tr>
<td>Individual and group accountability</td>
</tr>
</tbody>
</table>
In his second work, Wenger (1998) expanded the concept of CoPs as a social learning environment by defining three aspects belonging to a social learning system such as a community of practice entail; engagement, imagination and alignment. These notions are linked to what Wenger refers to as “modes of belonging” and form the basis for learning. Wenger (1998) uses the three modes of belonging as a specific guide to the design of CoPs by explaining that engagement is an outcome of doing things together such as solving problems, participating in a meeting, or producing new artifacts (different types of interaction); imagination means constructing an image of ourselves, of our communities and of our world, in order to reflect on our situation and explore our possibilities (reflection on group and beyond). Finally, alignment is about checking to see if our local activities are aligned enough with other organizational processes in order for them to be effective outside of our local engagement (Wenger, 2000: pp. 227-228). These modes of belonging described by Wenger are very close to the factors important for designing SCLE’s.

2.2.4 Synthesizing the theories for informing the system design

At this point characteristics of effective learning environments from three different theoretical perspectives have been fleshed out of the literature and mapped on to CoP theory. Four major factors seem to be emerging from the theories discussed above are; those influencing cognitive processes; factors influencing social processes; factors affecting motivation and finally factors relating to coordination. Cognitive factors such as shared understanding and reflective practice influence processes directly associated with learning. Social factors such as interaction and common goal orientation are those that influence the collaborative processes. Motivational factors are linked to coping with real-life tasks or problems, developing competence and self-esteem. Coordinative factors are those that relate to the external processes that may affect a CoP, such as management support, ability for self-direction, communication, and external coordination (Akkerman et al., 2008). The model shown in Figure 2.1 illustrates the relationships between factors and learning processes in a CoP and is used to guide the design of the CoP.
Understanding what factors influence learning in a CoP are important because now interventions can be either developed or found that will stimulate the mechanisms leading to effective learning in the CoP.

### 2.3 Organizing CoPs: developing the system

In this section I develop the actual system for organizing effective CoPs. This system is made up of different types of interventions that are linked directly to the factors shown in Figure 2.1 pictured above. In order to guide the design process Andriessen’s (2004) design cycle model, pictured below in Figure 2.2, is used. According to Andriessen, the importance of the design cycle lies in its ability to give insight into the complexity of designing and performing organizational interventions in the real world, where both context and process play crucial roles. Using Andriessen’s (2004) model also helps to guard the rigor of the final system (MacLean, MacIntosh, & Grant, 2002). The final system, in my case the CoPOS, is what Andriessen (2004) calls the ‘Design’ and is picture on the right side of the model. An explanation of the model and application to this research follows.
2.3.1 Domain
The domain section of the design cycle considers two aspects; the class, or type of problems that the intervention must solve, as well as the context(s) in which it takes place. In this case, the class of problem considers multidimensional change that demands constant learning by faculty in polytechnics. The class of contexts lies in knowledge-intensive, service-based organizations, of which polytechnics institutions are one example.

2.3.2 Requirements
The four types of requirements needed to design effective interventions pictured in the design cycle model are in increasing order of importance, starting with the functional requirements. The limiting conditions, which reflect the specific context in which the intervention takes place, must be taken as immutable and determinant.
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Functional Requirements

Functional Requirements are the desired end results and are linked to the problem definition, but are flexible and can be adjusted by the designer. In this case, the requirement is that the system must generate effective CoPs in which four different processes must be stimulated and facilitated, namely cognitive, social, motivational and coordinative.

1) Cognitive processes. Learning in collaborative environments depends on a certain degree of shared understanding between the participants. Coming to a shared understanding means first an individual must externalize his thinking by objectifying it into tools that others can appropriate, adjust and refine (Baker et al., 1999; Nonaka & Takeuchi, 1995). However, barriers such as different discourses or thought patterns might impede the processes. Palinscar (1998) discusses the impact divergent participant backgrounds can have on the functioning of a collaborative environment, arguing that language forms the basis for interaction and thus learning. Coming first to a shared language, and then to a shared understanding, is both part of the learning process and a result of it. Baker, et al (1999) refer to this process as ‘grounding’.

Furthermore, shared understanding is not just about the specific meaning of words. It also implies an understanding of the context in which the words are uttered (Clark and Schefer, in Baker et al, 1999) as well as some sort of diagnosis and feedback. While interventions that lead to mutual understanding need to consider these points, the situated nature of the CoP also must be considered, as well as assuring links to previously gained knowledge.

Another aspect of cognition considers reflection. Reflection is a metacognitive concept seen repeatedly in the literature on learning (Boud & Middleton, 2003; Hatton & Smith, 1994; Kwakman, 1999) and is considered crucial for (transformative) learning (Lin, 2001; Lin, Hmelo, Kinzer, & Secules, 1999). Reflection is important as it facilitates both alignment and imagination (Wenger, 1998). Interventions that promote regular intervals of group reflection should contribute positively to both the learning and creative process (Nonaka & Takeuchi, 1995), as multiple perspectives and feedback promote both collective and individual understanding (Lin et al., 1999).
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2) Social processes. Concerning social processes, group and interpersonal skills play an important role in collaborative learning environments (Kwok & Khalifa, 1998; Pritchard, Stratford, & Bizo, 2006) and can be developed separately or included as one dimension of other interventions. Enhanced group processes can help lead to strong community, as can a common goal orientation (Bunderson & Sutcliffe, 2003; Button, Mathieu, & Zajac, 1996). Strong community is also related to psychological safety (Edmondson, 1999), which means members of the CoP must experience it as a safe place for experimentation where there is room to learn from mistakes. Finally, different types of interaction are important for social process as well and so variation of work forms should be built-in to the system.

3) Motivation. Motivation can be either intrinsic or extrinsic. The requirements for this system are that it focuses only on intrinsic motivation for its functioning. This means that interventions must be able to convince members of the added value of participation; improved competence, new knowledge for solving problems, raised self-esteem and new contacts.

4) Coordination. Coordinative processes are about garnering support from management, assuring self-direction and experimentation and practical coordination. In this sense it is linked to structural social capital as discussed above. Meetings must be planned and communicated; both management and participants need to be convinced of the possibilities of the CoP (communicating the answer to ‘what is in it for me?’ is an important coordinative aspect for the realization of the CoP that is directly linked to motivation). Through regular meetings relational and cognitive social capital is enhanced allowing for easier experimentation within the group. Finally, promoting self-direction through specific work forms during the meetings is important.

Limitations

Limitations are the boundaries set by the designer and consider practical issues such as time for design of the intervention and its implementation. The limitations for this research consider that practical knowledge developed about organizing CoPs in a previous Digital University project must be used as much as possible due to the limited time factor of this study.
Operational requirements
Operational requirements consider the ‘ease of use’ by the end user. For this research, there will be several end users. One is the manager who will need to understand how CoPs can help with organizational development in order to support the initiative for organizing CoPs. Another end user is the change-agent, who will need to understand what mechanisms within the intervention are triggering the desired (or undesired) result, which is an effective CoP. Furthermore, the actual trajectory will need to be explicit and uncomplicated (Romme & Damen, 2007). One problem with any organizational development initiative lies in the fact that “…without a set of (relatively simple) principles and rules to communicate state-of-the-art knowledge relating to these processes, practitioners and consultants may easily take off in the wrong direction. It is the explicit nature of such-in themselves obvious-rules that makes them effective and compelling” (Romme & Damen, 2007, p.118).

Limiting conditions
Limiting Conditions are the environmental demands upon the method and must absolutely be met. In other words the context in which the system will be implemented is of major importance. The CoPs will be organized in knowledge-intensive, service-based organizations that are under continual pressure to innovate. Employees in these organizations are typically faced with complex, non-routine problems that stimulate the need for continual learning. However, the workplace is not necessarily conducive to learning because of the pressures to perform. Performance, which is related to short-term goal orientation, is often more emphasized than learning, which is a long-term orientation. A short-term orientation is reflected in the training-based type of HRD normally done by organizations (Adey, 2004). Management typically looks towards short-term based training because it is unsure of the benefits of long-term trajectories. Trainings are also seen as comparatively less expensive than long-term trajectories in terms of man-hours invested in them. Because of this, the system must be low-cost in terms of time dedicate by participants. Second, a certain amount of flexibility must be inherent in the system, due to pressures of the workplace that can sometimes dominate. Finally, appeal to intrinsic motivation must be strong due to the limited instruments available to stimulate extrinsic motivation. This is also done through the individual parts of the system, which are the interventions. The limi-
tations associated with each intervention, if any, are discussed in a section that follows.

2.3.3 Design of the system
In this section the actual design of the system is given. There are two aspects that need to be considered; the object design, which is the individual intervention performed as part of the CoP system and the process design, which refers to how it is executed.

Object design (CoPOS)
In the Digital University project called ProCoP, thirteen interventions were developed as tools for the specific purpose of organizing CoPs in HBO’s (Dekkers et al., 2005). Some interventions were developed during the ProCoP project, while other, existing ones were found in literature reviews done during the project. Both types were put into what was called the ‘Toolbox’. Each of the thirteen interventions was tested in the field at least once, and was consequently adjusted if needed. While these interventions suited the purpose of the project adequately, the theoretical grounding of them was weak, and the testing not especially systematic or rigorous. I used the framework developed in the previous section to find the underlying mechanisms in each of the ProCoP interventions, and to see how each the interventions theoretically work. Then I choose five interventions that would lead to effective CoPs based on the premise that the four factors or processes of the model shown in Figure 2.1 must be considered. One intervention, the first about motivating management and participants, was not part of the ProCoP intervention toolbox so needed to be developed. In the following text below, the interventions are introduced that formed the original system for organizing CoPs, in the order that they took place in the first iteration.

Intervention one: presenting the business case to the management and participants
This intervention is about convincing management and potential CoP members of the added value of CoP because both must see the relevance of a CoP for their specific situation. According to the model, if management does not see the benefits of CoPs, then no matter what the costs are, they will probably not support the effort (Blunt, 2003; Wenger et al., 2002). The same holds true for participants.
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This intervention, which was not part of the Toolbox, is made up of two separate PowerPoint presentations, one for management and one for potential members. The two presentations are nearly identical and include explanations of:

- how a community of practice works.
- the costs of participating in a CoP.
- the benefits of participating in a CoP, both to the individual and the organization.
- examples of interventions that could take place during the meetings.

Along with a PowerPoint presentation, participants receive a short written explanation of CoPs in an invitation letter or email.

**Intervention two: CoP Kick-off meeting**

The purpose of this intervention is to influence social and cognitive processes in the group, as well as to stress that the CoP is a place where the members decide for themselves what they want to learn within the domain. The intervention can be broken down into smaller parts, based on activities. The meeting starts by a general explanation of why everyone was invited and the domain of the possible CoP, followed by individual introductions and a group discussion about what it means to be a part of a CoP. The second part of the intervention starts the development of a common learning agenda for the community.

Developing the learning agenda is probably the most crucial of the interventions in that it serves as it serves as a basis for the whole learning and collaborative process within the CoP. The learning agenda focuses and defines the domain of the group as well as make the goals of the group more concrete and operational. It helps to create a shared understanding about what the group wants to learn in regards to the domain. According to Bood and Coenders (2004), both individuals and groups that have a learning agenda are much more aware and focused on their personal development. They comment that a learning agenda “...stimulates an active learning orientation and serves to focus attention to long-term personal development” (p. 95).

Another crucial aspect of the learning agenda is linked to the important factor of self-direction because it represents what is important to the members of the CoP.
first and the greater organization second. Other mechanisms triggered during this intervention are coming to a shared understanding and developing a common goal orientation, which are also crucial to CoPs’ functioning.

The intervention proceeds as follows: first, participants are asked to speak to another about what problems or concerns they have in their daily practice and what they would like to improve or change. These are written down and then taxonomized with the entire group. During this activity, two processes important for knowledge building are set in motion, namely explication of implicit knowledge (Nonaka & Takeuchi, 1995; Stahl, 2000) and grounding, which refers to how through language, shared meaning is gained (Baker et al., 1999). Next, the group decides upon what items take priority and ultimately form the CoP’s learning agenda. The first item on the agenda serves as the basis for the following meetings.

**Intervention three; storytelling**
This workshop focuses on creating a shared understanding as well as reflection. Storytelling in organizations has been shown to be an effective way for individuals to reflect on their own practice while at the same time giving insight into that practice so that others can understand it better (Swap, Leonard, Shields, & Abrams, 2001). Boyce (1996) argues that storytelling is an important tool for organizational renewal and participation, while Boje (2001) sees storytelling as a way to construct organizational reality. In her critical review of storytelling literature, Boyce (1996) found research indicating that storytelling is a valuable instrument for; expressing the organizational experience of members; problem-solving and action research; confirming shared experiences and meanings; orienting and socializing new organizational members and co-creating vision and strategy. Abma (2003) found that an important aspect of a storytelling intervention is that a problem common to the group is presented in a different context, enabling others to reflect on their own practice.

**Intervention four; workshop on using deBono’s Six Thinking Hats**
The Six Thinking Hats system has been used in organizations for improving group process (Belfer, 2001), promoting creativity (Foulds, 1997), defining group roles (Jensen, Feland, Bowe, & Self, 2000; Wang, 1999) and helping individuals to find a role in the group suitable to both the individual himself group, which is a major problem for new entrants (Schein, 1988 in Wang, 1999). Ego defense, a
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problem common to group discussions, is also lessened due to the role-playing aspect of the system (de Bono, 1985). The artificial and “…deliberate action of wearing the six hats creates useful contexts to be free to think in the mode of feelings and emotions (red hat), critical thinking (black and yellow hat), creative thinking (green hat), objective thinking (white hat), thinking about the process itself and to coordinate the other modes (blue hat)” (Carl, 1996, p. 7).

The Six Thinking Hats are used here specifically as an instrument for improving group process by artificially determining and regulating the dynamics of the group conversation in a way that allows a topic to be discussed in a broad, deliberate manner rather than by traditional argumentation styles, which typically have a narrow focus (de Bono, 1999). After a short introduction to the different hats, and an explanation of how they are used, a problem from the learning agenda is discussed using the Hats.

*Intervention five: presenting a case from the praxis (of either an outside expert, or from a participant)*

This intervention focuses on linking the local practice of the CoP participants to broader (global) practices (Wenger, 1998). A CoP is a forum where practitioners can overcome the gap between research and practice by understanding the links between their everyday work and new developments in the field (Wesley & Buysse, 2001). Furthermore, reflection on the implications of social, political and cultural forces on one’s actions – and vice-versa - is one of three types of ‘reflection-on-action’ (Schön, 1983) that should take place as part of professional development (Hatton & Smith, 1994).

*Intervention six: evaluating the CoP*

This intervention developed during the DU ProCoP (but largely based on Bood and Coenders, 2004) project employs a tool that has two purposes. One is to help members reflect on different aspects of a CoP; its right to exist and the place it has in the practice of the members and the organization; the social capital that binds the community; the identity of the community in the larger, global sphere; operational considerations such as basic facilitation (time, space, etc.); the results of the community – seen in new knowledge for the practice and the field in general and finally the currency of the learning agenda. Members are stimulated to consider all of these aspects from both a single-loop perspective; are we doing
things right? and a double-loop one; are we doing the right things? (Argyris & Schön, 1996). This is also an evaluation of the processes involved as the questions are directly linked to implementation of the CoPOS.

The intervention also serves to give me insight into the implementation of the CoPOS so I can improve it or gain information on it for later evaluation and the cross case analysis.

The following table based on Bood and Coenders (2004) shows an outline of the points of evaluation.

Table 2.7. Evaluation framework for the CoP

<table>
<thead>
<tr>
<th>Point of evaluation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Embeddedness of the CoP in the organization</td>
<td>A CoP is part of a larger collective and should contribute to this.</td>
</tr>
<tr>
<td>2. Social Capital</td>
<td>People and relationships are the crucial to effective learning processes.</td>
</tr>
<tr>
<td>3. Identity</td>
<td>The degree to which the CoP is seen by outsiders as a whole.</td>
</tr>
<tr>
<td>4. Management support and facilitation</td>
<td>Basic facilitation such as time and space, but also in process.</td>
</tr>
<tr>
<td>5. Domain</td>
<td>The theme that the CoP has.</td>
</tr>
<tr>
<td>6. Learning agenda</td>
<td>The currency of the questions arising.</td>
</tr>
</tbody>
</table>

Process design

The system is based on an implementation period of about one year, although the actual length is determined by the participants themselves. Meetings should take place every other month and last about three hours, but specific details are discussed with each group.

Previous to the first meeting, participants receive an explanation of the concept of CoPs, including an explanation of the benefits and costs of participating in one. For those groups participating in my research, an explanation of the implications of this was also given. Specific coordination considers arranging meeting times and places, taking notes during the meeting, communicating with management and CoP members and possible development of a website. These are discussed with the management. Below are other process considerations linked to each of
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the meetings. The most important limitation is time; the interventions may need to be adjusted accordingly.

Meeting One (Intervention: CoP Kickoff)
The first meeting is about getting to know one another (if this is not already the case) and what it means to take part in a CoP. A short discussion about whether or not everyone is willing to invest in the CoP can be started, but the material sent out before this meeting should have been the first ‘filter’. Getting acquainted is also about finding common learning goals. This is done using a simple intervention. Participants are asked to write down three questions they would like to discuss in the CoP. Then each participant discusses these with the person sitting next to him or her. Then he or she rewrites the questions on a post-it note. These are placed on a flip-over and then taxonomized by the whole group. A discussion is then started to see which ones will be worked on first and if there is any further input needed. This list is called the learning agenda. The facilitator, or someone appointed by him/her, makes sure the learning agenda is transcribed and sent to all participants immediately following the meeting and again as part of the announcement for the next one.

Meeting Two (Intervention: storytelling)
Before this meeting starts, participants have received the notes from the last one. Also included in the invitation to this meeting is an introduction to the intervention that will take place. This meeting uses storytelling, especially Socratic Questioning (Carey & Mullen, 1994) as the way of working. (See the ProCoP guide – available on request by author - for details of the actual intervention.) Notes on the meeting are sent to the participants immediately following the meeting as well as in the invitation for the next one.

Meeting Three (Intervention: Six Thinking Hats)
Meeting three is a continuation of the last one. Using the common learning agenda as their guide, participants write down the important points from their story and tell this to the others, pointing out several specific problems that he/she is having. At the end, the facilitator sums up what has been learned and discusses this with the group. Several problems are chosen to be discussed in the workshop that immediately follows, which is the intervention using de Bono’s Six Thinking Hats.
In preparation for the next meeting, participants are asked whom they could invite to talk to the CoP in relation to the group’s learning agenda, or volunteer themselves.

Notes on the meeting are sent to the participants immediately following the meeting as well as in the invitation for the next one.

**Meeting Four (Intervention: praxis)**
At this meeting one or more experts present a case from their praxis. Experts can be from within or without the CoP. Each participant is asked to consider how the case could be applicable (or not) to their own praxis. Notes on the meeting are sent to the participants immediately following the meeting as well as in the invitation for the next one.

**Meeting Five (Intervention: group reflection)**
This meeting focuses on group reflection guided by the intervention on evaluation of CoPs. This is the last meeting and the question of continuation also should be discussed using the evaluation as a guide.

### 2.4 Evaluation

The next step after developing the object and realization designs is a theoretical evaluation. The guiding question is ‘have all the important factors been accounted for?’ In order to facilitate the evaluation process, the matrix shown below in Table 2.8 was used. This evaluation is based on the model informing the design; the desired outcomes of the interventions are the factors that influence learning in a CoP.
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Table 2.8. Interventions and their outcomes

<table>
<thead>
<tr>
<th>Desired outcomes/Intervention</th>
<th>Presenting the business case</th>
<th>CoP Kick-off</th>
<th>Storytelling</th>
<th>SK Thinking hats</th>
<th>Link to Praxis</th>
<th>Group reflection</th>
<th>Inherent in CoP</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reflection</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared understandings</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of prior knowledge</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Situated in nature</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>x</td>
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Organizing Professional Communities of Practice

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What can be concluded from the above matrix is that the interventions theoretically address most aspects of the design requirements. In fact, most interventions should result in a broad range of overlapping outcomes. Some factors are not specifically addressed, but are inherent in a CoP as part of a two-way relationship. For example strong community is built by sustained engagement. Raising self-esteem is a theoretical result of being part a CoP member. The same is true for improved competence and coping with real-life problems.

In the next chapter the research methodology and instrumentation for testing the system is presented.