Communities of Inquiry in crisis management exercises

Chapter 4

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Abstract Employees working in diverse settings such as schools, shops and government organisations have to be prepared for crisis situations, for example a school shooting, extreme weather flooding, a health pandemic and so on. In these situations they have to deal with the unexpected which makes it difficult to anticipate what they need to learn and how. This chapter examines how employees learn to deal with crisis situations, specifically focusing on whether a crisis management exercise could contribute to the development of a community of inquiry (CoI). The CoI model is chosen as the underpinning theory because it is assumed that learning communities create awareness, trust, and support knowledge sharing, which are necessary pre-conditions for collaboration in crisis management situations. The study uses a combination of quantitative and qualitative data to analyse a simulated crisis exercise. The first round of analysis evidences that the exercise does not contribute to the development of a learning community. Digging deeper into the data in a second round, the results show that the CoI model does not reflect the various types of learning communities that develop within a crisis management exercise, such as home communities, cohort communities, specialist communities and local working groups. A key recommendation is that the CoI model should be expanded to include these four community types. Four additional key concepts appear important for community development in crisis management exercises: adoption of the various group, considering important partnerships, value creation and visibility. The extended CoI model could help to plan, monitor and evaluate professional learning of learning communities in future crisis management exercises.

Keywords communities of inquiry, crisis management, professional learning

Introduction

Contingency planning for "worst case scenarios", such as pandemics or terrorist attacks, has become a feature of modernity (Aradau & van Munster, 2012). People expect that countries and organisations have crisis management plans in place to help them deal with unexpected and disruptive events that harm nations, organisations or people. Policymakers in Sweden have developed a national crisis management system that supports people working in different organisations, such as private industry or public offices, in managing and containing a crisis within single organisations or across different sites. This system is based on the principle that employees working in diverse work settings such as schools, shops and government organisations must be prepared for the unexpected and the "unthinkable", such as a school shooting, extreme weather flooding, a health pandemic and so on. Dealing with a crisis may require employees in diverse roles spread across different organisations to work together to

mitigate the crisis. Employees with different levels of education, work experience, communication approaches, tools, values, cultures and routines must be able to work together to find ways to share information and reach decisions. They are expected not only to communicate with others in their own workplace, but, potentially, with people in other organisations as well. To achieve these goals, employees in a range of different disciplines and workplaces need to develop competencies in crisis management. Under these circumstances, it is difficult to appreciate what must be learned and how, because it is impossible to know beforehand which groups of employees might get involved in specific situations. This makes the conditions for learning how to handle an unexpected situation more complex than conventional workplace learning situations.

The conventional way to prepare employees for crisis management is to enable them to engage in various types of learning exercises. There are many different types of exercises, varying from discussions of what to do if a crisis situation occurs (often termed 'tabletop' exercises), to a range of practice and operative exercises (often called field exercises) and various types of simulations (Aradau & van Munster, 2012; Boin, Kofman-Bos, & Overdijk, 2004). However, few of these learning exercises are designed and evaluated using pedagogical theories and models (Magnusson & Öberg, 2015). This means that organizations are planning, performing and evaluating learning exercises without knowing whether these activities are supporting professionals in developing the wide range of competencies needed to resolve a crisis situation (Andersson, Carlström, Ahgren, & Berlin, 2014; Berlin & Carlström, 2015; Borell & Eriksson, 2013; Perry, 2014).

In the second and third chapters of this book, professional networked learning is considered as a form of online learning. However, learning at work often is blended, integrating online activity with face-to-face interaction. In this chapter, professional networked learning is examined both within organisations (at an intra-organisational level) and across organisations (at an inter-organisational level). One key issue is to identify what kind of models or theories of learning could be applicable and useful in designing learning exercises that support professional networked learning, specifically aimed at building capacity in crisis management competencies.

This chapter outlines an evaluation of a crisis management learning exercise. This exercise aimed to enable employees to work together during a flood crisis. To respond to a flooding incident, employees learned how to collaborate with other people in their own organization as well as groups in other organizations. The Community of Inquiry (CoI) model (Garrison, Anderson, & Archer, 2000) was selected as an underpinning theory, because it is assumes that learning communities create awareness, trust, and support knowledge sharing, and these are necessary pre-conditions for collaboration in crisis management situations. These assumptions align with the presuppositions of networked learning. Therefore, the use of the CoI model can align with and add value to the networked leaning area.

The aim of the research project as presented in this chapter was to ascertain whether specific forms of learning exercises contribute to the development of a CoI. The learning exercise evaluated in this study was designed as a set of 'tabletop' activities - meetings, discussions, shared experiences – based on cases found in local crisis management plans. The research aimed to understand whether engaging in these kinds of activities would support the participants in building a learning community. Because the groups of employees were not co-located, the project also paid attention to the group's use of various types of information

technology, questioning whether those tools would support community shaping. In the following section, the CoI model and its theoretical background are explained in more detail.

The 'Community of Inquiry' model

The roots of Vygotsky's (1978) sociocultural theories are based on the idea that learning and development are interactive processes. Wenger (1998, p. 4) presents a related social theory based on the idea of "learning as social participation" in which he describes "informal learning, mediated through communities of practitioners" as an effective form of learning. Both theories are relevant to learning situations that emphasize collaboration, which is important in crisis management situations. Therefore, communities are a theoretical concept that could be used to understand and describe learning among people in groups (see also, chapter 12, Vrieling-Teunter, Wopereis, Van den Beemt, De Laat, & Brand-Gruwel, this volume; De Laat, 2005). According to Shea (2006), there is consensus that online learning communities can be established to support the creation and sharing of knowledge within groups. Shea (2006) argues for the examination of the foundation and assumptions behind this community concept from theoretical, philosophical and pedagogical perspectives. From a theoretical perspective, there has been a shift from behaviourism towards adoption of socio-culture theories. In parallel there has been a philosophical shift from objectivism towards constructivism (ibid., 2006). These transformations have also been observed in changes in pedagogical approaches that have transformed from a perspective of teaching as instruction towards the idea of facilitating learning. To analyse these various transformations, a CoI model was developed to analyse constructivist interaction in online blended and face-to-face courses (Garrison et al., 2000).

The concept of the CoI model is grounded in John Dewey's progressive understanding of education (Garrison 2016; Garrison, Anderson, & Archer, 2000). Dewey was an American philosopher and reformer whose ideas influenced education and society in general. His model was further developed and applied to online education by Garrison et al. (2000). The CoI model is based around "three elements essential to an educational transaction: cognitive presence, social presence, and teaching presence" (Garrison et al., 2000. p. 87). To elicit an effective educational experience, all three elements must exist and balance each other. Garrison et al. (2000) posited that the cognitive element is fundamental for student success in higher education. Cognitive presence is "the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication" (ibid., p. 89). Furthermore, cognitive presence is essential for critical thinking. Social presence is defined as "the ability of participants in the community of inquiry to project their personal characteristics into the community, thereby presenting themselves to the other participants as 'real people'" (ibid., p. 89). Teaching presence consists of two general functions, which are the teacher's primary responsibilities: 1) design of educational experience (for example choice of learning materials, organization and presentation of course material and activities) and 2) facilitation (such as ways to provide (peer) feedback to students). The latter function might be shared by educators. The teaching presence supports and underpins social and cognitive presence to scaffold students in realizing their educational outcomes. Garrison (2016, p. 62) describes that the "focus on the presences as a whole will shift as the learning experience evolves". One example is the need for attention to social presence in the beginning of a learning activity to be able to gain trust among the participants of the community. The following sections describe the testing of the CoI framework in a multi-institutional crisis management sample called Hubbe1, followed by a description of the data collection and analysis. Finally, the results are elaborated and discussed.

The study object – Hubbe1

This study is based on an analysis of one case example of a crisis management exercise: Hubbe1 (Hubbe is a male Swedish name and was selected to give the project a name). This exercise aimed to support employees located across a number of Swedish regional organizations to develop critical crisis management skills. These skills include communication, sharing information and collaboration across groups of professionals located in different sites. The crisis exercise was designed to support participants in identifying weaknesses and areas for improvement around four themes: crisis plans, situational awareness and technology, management and coordination, and evacuation and receiving people who have been evacuated (see Table 4.1). A Swedish 'county administration board' oversaw the planning and performance of the exercise. This agency is responsible for civil protection, public safety, emergency management and civil defense and is obligated to run these types of exercises, based on a plan set up by the national agency in Sweden. The administration board appointed an exercise leader, because the national agency guidelines requires that all exercises should be managed by a lead.

Table 4.1 Weekly themes and indicative questions

Week	Theme and aim	Example of triggering tasks/questions
1	Crisis plans (Implementation of local crisis plans and identification of weaknesses in plans)	How does your organization act according to the situation? Are your plans complete, or are they in need of revision? Which resources are available?
2	Situational awareness and technology (Creation and development of routines to facilitate information sharing between the participants)	How do you create a common operational picture? What information do you need from other participants to create this common operational picture?
3	Management and coordination (Identification of the participants' ability concerning management and collaboration in the actual events and daily concerns)	What legal decisions do you face? How do you ensure sustainability if the process extends over a long period of time?
4	Evacuation and receiving vacated people (Investigation of and plan for evacuation possibilities for people and animals)	How is your business affected by a decision on evacuation? What ability do you have to carry out an evacuation of people and pets?

The HUBBE1 learning exercise was based on a flood scenario that was based around the effects of high levels of rainfall on hydroelectric dams. The exercise took place over four weeks in the early part of 2016. HUBBE1 was designed as a table-top exercise: based around a number of seminars during which participants discussed a series of questions. During these seminars participants agreed decisions and actions based on local crisis plans, taking into consideration how the flood scenario changed over time. This work during the seminar was guided by the exercise leader. Each workplace also had one local facilitator who normally

worked in that workplace, so all the workplace employees knew this person. A typical week is visualized in Figure 4.1.

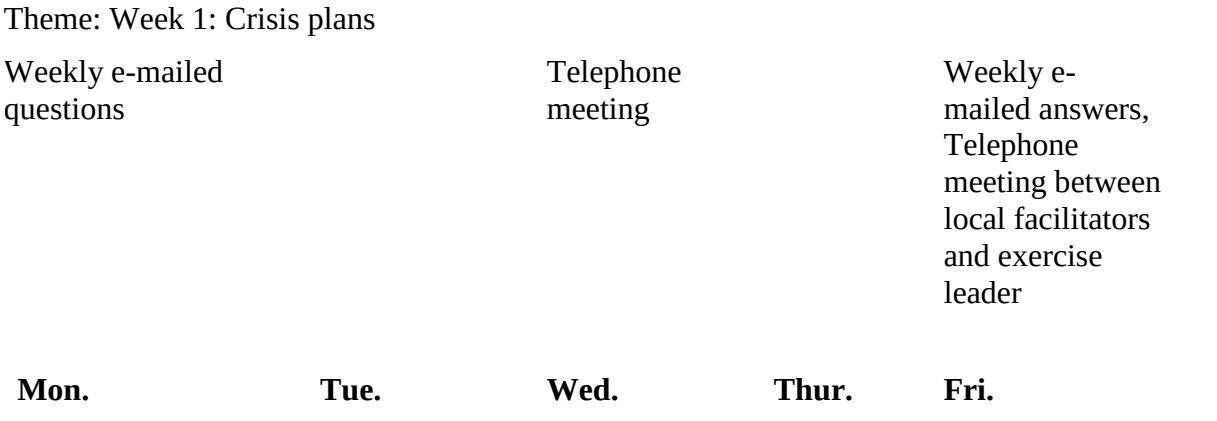

Figure 4.1 Example of a typical week during the exercise

Over a time span of 4 weeks, 185 participants were guided by 23 local facilitators across 26 organizations. These organizations were municipalities from two Swedish counties, energy companies, non-governmental organizations, county administration boards, national agencies, the Swedish church, an association responsible for cooperation and maintenance of water economy, the alliance of fire brigades in two counties, the federation of Swedish farmers, an SOS alarm center, regional level healthcare and the Swedish armed forces. Each week the exercise focused on a distinct theme (see Table 4.1, column 2). Weekly questions (see Table 4.1, column 3) were triggered each Monday. This was achieved by the exercise leader disseminating information by email to the local facilitators who in their turn discussed it with the employees of each organization. Once each week, on Wednesday, a pre-scheduled telephone conference meeting took place between the exercise leader and a representative delegation from each organization including the local facilitator, during which they could raise questions and discuss emerging issues. Besides this pre-scheduled conference meeting, participants could also contact participants from other organizations by e-mail or by phone to discuss exercise-related issues. Every Friday, each organization could, via the local facilitator, email answers to the exercise leader. Also on Fridays the local facilitators and the exercise leader met in a telephone meeting to decide whether the original exercise plan had to be adjusted.

Data collection

The aim of this chapter is to ascertain whether specific forms of learning exercises contribute to the development of a CoI within the crisis management context. A mixed methods approach was used to collect both quantitative and qualitative data. The rationale behind collecting quantitative data was based on earlier studies using the CoI model (for example Arbaugh et al., 2008). These quantitative data were complemented with qualitative data to achieve in-depth explanations of the quantitative findings.

In this study, we used a survey to support quantitative measurement of mean values for social, cognitive and teaching presence. The survey was translated from the original 34-item CoI instrument developed by Arbaugh et al. (2008). Because the instrument originally was developed in a teaching context from a student-teacher perspective, we altered it into a

participant-facilitator perspective to suit the crisis management exercise context. Consequently, the adaptation process included validation with experts within the crisis management as well as the crisis exercises context and an expert on the CoI model (see Öberg & Nyström, 2016, for a detailed description). Three examples of the final survey are focused on: "The telephone meetings that were used during the exercise were a good channel for social interaction" (Social presence), "Problems posed during the exercise triggered my knowledge about crisis management" (Cognitive presence), and "The local facilitator clearly communicated the aim of the exercise" (Teaching presence). The survey was emailed to all 165 participants and 23 local facilitators within HUBBE 1 after completion of the exercise. A reminder was sent out one week later to those who had not submitted a response to the survey. The response rate for the survey was 89% for the participants and 100% for the facilitators.

Qualitative data was gathered in the form of the answers to the open questions in the survey, the weekly emailed questions and answers, the weekly reports and the notes of the weekly meetings.

Data analysis

The quantitative data have been analysed using descriptive statistics and mean values as suggested in the CoI model (Garrison et al., 2000). The concepts that were used in the analysis concerned social, cognitive and teaching presence. During the analysis, it was identified that the HUBBE1 project did not resemble the development of one community as reflected in the CoI model. From a CoI perspective it was, therefore, problematic to reach a high level of social presence in the learning community, which, in turn, influenced the analysis of cognitive and teaching presence. This resulted in a second round of analysis of the qualitative data that was grounded on additional theories concerning multiple and shifting communities. In this second round we used the work of Ramondt et al. (2002) to analyse the data. These analyses from both perspectives (three forms of presence as well as multiple and shifting communities) are discussed in detail in the following sections.

Community building – cognitive, social and teaching presence

Cognitive presence, social presence, and teaching presence were all found within the groups who participated in the HUBBE1 crisis management exercise. Participants and facilitators gave consistent responses, as illustrated in Table 4.2.

Table 4.2 Mean values for the different presences measured in the survey. 1=do not agree, 4=strongly agree

	Participants N=165 (Response rate 89%)	Facilitators N=23 (Response rate 100%)
Cognitive presence	2.76	2.76
Social presence	3.00	3.17
Teaching presence	3.06	3.07

Looking at the results presented in the table, it is remarkable that participants have a lower mean value for ***social presence*** than the facilitators. This higher perception of social presence as observed by the facilitators might be explained by the fact that each facilitator met with facilitators from other organisations during the planning and performing phases, whereas the participants had fewer opportunities to meet people from outside their organisation. Despite the lower value, the mean value indicates that the participants did experience social presence during the exercise.

Further interrogation of the data shows that this sense of social presence and the feeling of belonging to a community is complex. For example, the weekly meetings were designed as opportunities to raise questions about specific issues. However, when asked to reflect upon the weekly telephone meetings, almost half of the respondents said that the statement "the meetings were valuable for the understanding of different perspectives" was "not relevant". Just over 40% of the remaining respondents answered "no" or "insufficient evidence". A related question asked if telephone contact during the weekly meetings provided an effective channel for social interaction. Two-thirds of the respondents considered the channel sufficient, and one-third said it was irrelevant. Apparently, the learning environment did not support discussion around specific issues, so, in reality, the weekly meetings included an attendance roll-call and discussion about formal processes. The use of an ordinary telephone and the high number of participants (26) in the meetings may have made it difficult to hold in-depth discussions. Therefore, the design of the exercise and the environment did not enable participants to gain a sense of social presence. Participants were not aware of the ongoing issues and the sorts of problems other organisations might be experiencing. Thus, even though there had been a social sense of community building during the exercise, the data demonstrates that this community did not support the development of key crisis management skills.

Rather than a single CoI, multiple smaller communities were formed within organizations. Many participants were co-located in the same room with others from the same organization, resulting in *intra-organizational social presence*. Two questions asked whether people had formed impressions of participants inside and outside their own organisations. Two-thirds of the respondents indicated this as insufficient, yet the same respondents said that the sense of presence of participants within their own organisation was "sufficient" or developed to a "large extent". Thus, the data revealed that everyone involved in an exercise needs to be aware of "other" participants and this can only be achieved by bringing people together. The exercise supported people from the same organization, who might not be familiar with each other, to a sense of social presence leading to the high mean values. As for the use of technology tools, the participants indicated they wanted to learn about ways of facilitating intra-organisational communication to share information with others in their own organization.

However, the exercise was less effective in creating a sense of social presence of people across organisations. Only participants who had opportunities to talk with people in other organisations were aware of *inter-organisational social presence*. Only 9% of the respondents had been in contact with a colleague in another organisation and this communication had to be facilitated through the use of technology tools, since the organisations were not co-located. Participants were uncertain about which channels of communication they should use in a crisis situation. This uncertainty could prove fatal in a crisis. It also negatively impacted the sense of inter-organisational presence and decreased the potential for community building. Participants identified a need to design exercises that demonstrate how to use a range of

digital communication tools, such as video conference systems, safe radio communication and so on, for inter-organisational communication.

Overall, when it comes to social presence, the participants had no problem making themselves heard and seen in their own organizations, but they were not visible to participants in other organizations. This supports the interpretation that HUBBE1 has contributed when it comes to co-located communities but not in the wider community that includes all participants.

Garrison et al. (2000) argues that the primary importance of social presence is a support for ***cognitive presence*** which means that if the mean value for social presence is low, cognitive presence will be harder to reach. Furthermore, cognitive presence is found to be the most important form of presence for learning (Garrison et al., 2000). In our study, communications were limited to face-to-face communication within co-located communities and weekly telephone meetings once a week. In this way, the communication between the participants was limited and restricted to the exercise design. This means that all the meetings where pre-scheduled and only some of the participants were invited. This way of work restricted participants' social presence, in its turn restricting their cognitive presence.

Finally, ***teaching presence*** consists of the functions design of educational experience and facilitation. Questions we asked around participants' perceptions of the local facilitators' role show that instructions and support had been sufficient. In this case, the facilitator's role was more often that of a tutor than a teacher, so it was not possible to measure the teaching presence.

According to Garrison et al. (2000), the CoI model assumes that learning occurs in the community through the interaction of three core elements: social presence, cognitive presence, and teaching presence. In our study, we found that all three types of presence were evident in the participant groups. On the other hand, the participants clearly stated they had a clearer impression of the participants in their own group than of "the others". So, a key question is, which community, if any, is developed? The data show that several smaller inter-organizational and intra-organisational communities co-existed. This finding made us question whether the three CoI elements could, in fact, be used to describe the communities in HUBBE1, since they appeared too unstable. Therefore, another theory was adopted that may explain what was observed. In the next section, the results of the second round of analysis are described, outlining multiple and shifting communities based on ideas presented by Ramondt et al. (2002).

Community building – multiple and shifting communities

De Laat (2005) identifies three types of collective learning, i.e. learning in networks, learning in teams and learning in communities (see also, chapter 12, Vrieling-Teunter, Wopereis, Van den Beemt, De Laat, & Brand-Gruwel, this volume). In line with this work, Ozturk and Ozcinar (2013) observed that communities and sub communities exist in a networked structure. They wrote, "Learning in multiple communities requires a fuller understanding of the complexity of learning from diverse multiple communities which are connected in a social structure" (Ozturk & Ozcinar, 2013, p. 1). Hodgson and Reynolds (2005) also view networked learning as a more promising way than the CoI model to conceptualise the cross-site learning as observed in our study, because community-based discourse can thwart acknowledgement of differences across sites. Instead, networked learning facilitates "participative and democratic values" because it allows for emergence of subgroups.

Ramondt et al. (2002) outline various types of communities that may improve 'presence' within a learning environment: home communities, cohort communities, specialist communities and local working groups. The first type, 'home community', allows members (around 25 in total) to become familiar with the online environment and with each other. The second type of community, the 'cohort community', is designed to provide a central space for teachers to send out questions and receive answers from learners. The third type is based on 'specialist communities', where learners can collaborate and discuss issues but have to ask for permission to enter the community. Finally, 'local working groups', comprising people located in the same region, make it possible for participants to meet face-to-face. According to Hodgson and Reynolds (2005), these communities constitute a learning environment that can be varied and dynamic and they allow for the fluidity needed to support shifting communities. In the following is elaborated how these ideas might relate to the CoI framework in crisis management exercises.

The outcome of any crisis management situation is highly dependent upon all the participating organizations. The Swedish crisis management system is a structured hierarchy at national, regional and local levels. Based on the idea of a ***home community***, all organizations at the local level can be considered as one single community. However, some situations, such as the flood crisis enacted in HUBBE 1, require cross-organisational cooperation. This means that the home community might consist of local, regional and national organizations.

A key characteristic of communication and cooperation in the crisis management context is that the relationships between employees or groups of employees changes, depend on the type of crisis, the resources available, the geographical location and so on. By analysing the descriptive data, we found that the most visible community in HUBBE1 was the exercise planning group that spanned across the 26 organizations participating in the exercise. The planning group had similarities to ***cohort communities,*** since the participants were responsible for the design and planning of the exercise. They engaged in a number of meetings before, during and after the exercise and communicated regularly through e-mail, face-to-face and through telephone conferences. Their responses indicated a strong sense of social presence.

In terms of decisions about the exercise, the process was characterized by consensus thinking. The exercise planning group chose the dates when the exercise should be carried out. Some of the members of this cohort community were also part of a more stable community connecting security managers located across all municipalities in the Jämtland region of Sweden. This type of community could be considered a ***specialist community*** and this may have been a critical element in terms of enabling learning (i.e. cognitive presence). Another example of a specialist community was a group of staff members that worked with crisis information. These individuals also organised meetings to discuss how they worked with crisis information and issues they faced.

A number of communities were identified that shared similarities with ***local working groups***. Here the greatest variety was observed in the number of participants (varying between participants working alone to groups consisting of 10 participants) and the stability and strength of the group connections. These local working groups, in fact, represented the different organisations participating in the exercise. Some organizations consisted of a number of co-located people who seldom worked together in their daily work task, but did communicate, and cooperate on a daily basis in the HUBBE1 project. One example was a

municipality that formed one local community of participants who worked in various departments (security, central management, water-related jobs and so on) and had no previous experience of working together. The qualitative data provided evidence that this type of community (in the project described as 'local management teams') was viewed as central for the project. This type of community was cited as critical for inter-organizational and intra-organizational cooperation. It appeared that some of the local working groups worked together well during the exercise with strong connections between the participants. In this matter. It was also observed that participants who were co-located within a single organization, generally shared a sense of both social and teaching presence. It is also striking that some organizations stated that, if they end up in a scenario like HUBBE1, they would prefer to work together by sending one person from their own organization to the organization that is considered as central.

Another key concept for community building appeared the ***adoption*** of the various groups into the community. Overall, the development of HUBBE1 was based on the concept that all participants and facilitators should be considered as one community. It is notable that most organizations indicated that in the future they would prefer to work with the same bodies they worked with in the past, indicating that being adopted into a community takes time and effort. HUBBE 1 included a number of organizations that were not part of the traditional crisis management system, for example the Swedish church. No other organization mentioned the church as a likely future partner.

The concept of ***partnership*** needs close consideration while building a community. HUBBE 1 showed that the types of organizations that people were likely to work with depended on the nature of the crisis. The project focused on a flood crisis that involved many organizations working with electricity and water companies. Nevertheless, some organizations that were not invited to partner within HUBBE 1 - groups of private entrepreneurs and volunteers - were considered important partners in a crisis. Although the participation of volunteers was considered important, their involvement was not clear. One HUBBE1 participant (municipality) explained this issue as follows:

*"We cooperate well with the home guards. There are organizations for volunteers but there is no model for how to cooperate with them". (*Participant (municipality) in exercise HUBBE 1).

Value creation (see also chapter 11, Van Amersfoort, Korenhof, Nijland, De Laat, & Vermeulen, this volume) is another important concept for community building. The data indicated that the exercise meetings contributed to the participants' awareness of social presence. The need for attending meetings seemed important particularly for participants that were not part of the traditional crisis management groups, such as electricity suppliers. The perceived value of the weekly meetings is illustrated in the following quote:

"*We will not participate in the exercises the coming weeks. But our experience is that the [weekly] meetings on wednesdays have been really important, so we will try to participate in those meetings*" (Participant (electric supplier) in exercise HUBBE1).

A final key characteristic for community building in HUBBE 1 concerned the ***visibility*** of the participants. Participants did not consider it important for the management to be visible. However, it was critical for them to know which organizations were involved in the crisis exercise. This is very challenging from a community perspective, since there are a wide variety in organizations that should be included within the community, and this mix depends

on the nature of the crisis and the context (geography) where it takes place. An important step is to make sure the home community is visible, perhaps by using information technology (IT) to visualize the various organizations and participants involved.

Discussion

The aim of this chapter was to ascertain whether specific forms of learning activity contribute to the development of a learning community in a crisis management exercise. From a CoI perspective, it was concluded that the exercise did not contribute to the development of a learning community to any extent. It was also concluded that the CoI model had to be complemented with other theories because it did not reflect multiple and shifting types of communities. It was, therefore, unclear in which community the participants felt which sense of presence, if at all. Since each crisis management situation is characterized by cooperation amongst multiple and shifting communities, learning activities must be developed in ways that engender presence. In this chapter, as postulated by Ramondt et al. (2002), different types of community were analysed within a crisis management exercise. This analysis has helped to identify a range of technology tools that can be used to support communication and information sharing within specific types of communities. IT communications are ideally be based on agile, online systems, such as online forums or video conferencing systems, instead of (static) telephone conference systems. A range of systems developed for information sharing should be available for use during crisis exercises. In HUBBE 1 the organizations used e-mail, however a more extensive range of systems might have generated a greater sense of presence.

Finally, we recommended the CoI model is expanded to include four community types: home communities, cohort communities, specialist communities, and local working groups. Besides these form of communities, four additional concepts appeared important for community development: adoption of the various group, considering important partnerships, value creation and visibility. This extended model could be used to help to plan, monitor and evaluate professional learning of communities in future crisis management exercises.

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