One more tool – or exploring the practice of introducing new technologies in dispersed communities.

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Abstract

In this paper we share our reflections on the process of introducing a new tool or technology into a learning community. We take a community of practice perspective on learning and propose that the way a new tool changes a community's practice requires us to pay attention to changes in the nature of the relationships of people in the community, particularly to who is "in" and who is "out". It also requires us to pay attention to the learning agenda or the domain of the community as it is reshaped by new voices and changing practices brought about by introducing a new tool. This means that introducing a tool is not merely a matter of facilitating its use or of training the community to use it. Rather, the introduction of new technology or a tool is a contentious issue involving the three structural elements of a community of practice: community, domain and practice. Our experience suggests that when introducing a new tool we should pay as much attention to its interaction with these structural elements as to the tool itself. If not, it will probably lead to resistance, even in unexpected quarters, to what appears to be a productive or timesaving opportunity. We ground our reflections in descriptions of two different cases: one is a global community from the public health arena and the other is a degree course in higher education. Our roles in each case respectively are community consultant and higher education lecturer. We act as technology stewards concerned with supporting and extending the community's repertoire of tools in ways that could improve its learning and communication. The cases are currently work-in-progress and we present our reasoning about the introduction of a new technology with a view to inviting the reader backstage to engage with that reasoning in an iterative cycle of action and research. We started writing this paper with the intention of proposing design considerations for facilitators and technology stewards who are introducing "one more tool" to expand and enrich a community's learning. We ended our inquiry by seeing ourselves as convenors of new and different voices that might change and contest the domain and practices of a community through the introduction of just one more tool.

Keywords

Communities of practice, learning technologies, digital habitats

1 Enhancing community learning with technologies – Introduction

It has become commonplace for many and different types of communities to support their communication and mutual learning with Internet technologies (e.g. Barab, Kling & Gray 2004). Creating this "digital habitat" (cf. Wenger, White & Smith 2009) often starts with a need to find a "home" for documents that are made easily accessible for all members of the community. It grows into a need to bridge communication between face-to-face meetings or to create a shared memory of face-to-face events. Communities then start looking for better tools and technologies that will support their goals and suit their context. The questions of what technologies to use and how to introduce them into the community have always been complex. Research has been carried out into the sorts of designs most conducive to producing and nurturing online communities (e.g., Paloff and Pratt

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1999, Bielaczy and Collins 1999, Preece 2000). Other research has focused on what happens when a community's communication is transferred into the online space due to changing organizational structures (e.g., Kimble, Hildreth and Wright 2001). With a proliferation of communities in ever more diverse contexts and of accessible and easy-to-use Internet technologies, the challenges and opportunities presented by new tools and technology have become significant ones for people involved in community design.

As community consultants, designers, and facilitators, we face these questions on a daily basis. As people who are also engaged in action research we try to unpack the intricate relationship between communities and technologies at a fine-grained level (cf. Arnold, Smith, and Trayner 2006 and 2007). In this paper we investigate the implications of (just) "one more tool" in communities we are working with. Overall, bandwidth has risen in many places of the world, even if not in all. Specialized easy-to-use tools are freely available to many more people. For example, preparing and publishing video on the Internet is now in reach for anyone interested in these freely available technologies whereas it used to require complex software tools and expert competencies. Moving to a new, improved platform is not such an expensive or complicated business as it once was. "One more tool" becomes an apparently easier option for facilitators and community members.

The question that guided our inquiry is: what are the design considerations for supporting and extending a community's learning when introducing one more tool? We look at two cases from our present work and share our reflections for assessing "one more tool" from a community of practice perspective on learning. Rather than analyse the cases in hindsight we share our reasoning about the introduction of a new tool as we face the challenge ourselves. We invite the reader backstage to engage with our considerations as they evolve in an iterative cycle of action and research.

One of our "one more tool" cases describes the introduction of video as a way of bringing in absent voices to a face-to-face meeting. The other case describes the use of a specialized, practitioner-oriented platform in a higher education course. Our descriptions elaborate a highly aggregated pattern (cf. Kohls 2009) rather than focusing on any of these particular technologies. In other words we are describing the introduction of one more tool to a community as opposed to the pattern of "introducing video" or "introducing a new platform". Our result is not a complete pattern for introducing "one more tool" but a more reflexive rethinking of our roles as technology stewards when introducing that one more tool.

The structure of this paper is as follows: in the next section we describe a community of practice perspective on learning and what this implies for supporting a community with technologies. In Section Three we describe our research method, the two cases and our perception of the design challenges they represent. In Section Four we discuss and analyse both cases, concluding with some reflections on what we learned in the process of our investigations in Section Five.

2 Introducing new tools in communities – a community of practice perspective

Although we come from different disciplines our shared approach is greatly influenced by social theories of learning in general and by communities of practice in particular. A social theory of learning takes as its basis that learning is fundamentally a social experience. Supporting this social experience is a principal consideration in designing for learning. From this perspective knowledge is embedded in social practice. Communities that develop, share and refine a specific practice are called communities of practice (Lave & Wenger 1991, Wenger 1998). Communities of practice are a key element of learning. The boundaries between communities of practice are also central to learning. It is at these boundaries where there can be misunderstandings as well as new possibilities for negotiating new meanings.

Conversations in communities of practice are guided by the question of what works *in practice*. A shared identification with a domain of interest brings people together who share a common concern with this domain. They develop relationships of trust that make an inquiry into their practice possible. In their interactions around this domain the community creates a shared repertoire of language, concepts and communication tools that make practice discussable (Wenger 2009). These three structural elements "*community*", "*domain*" the others. and "*practice*" are mutually constitutive. All three evolve in response to changes in each of the other.

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The dimension of *community* includes the people, their relationships, mutual trust and their trajectories toward knowledgeabilty and competence at an individual and collective level. The *domain* is the issue the community cares about; the knowledge area around which the community gathers and which the community constantly refines with their practice. By *practice* we refer to the activities, language and tools that are recognizable to other people who participate in the community and are involved in applying the knowledge domain.

Supporting a community's practice with technologies is increasingly common for dispersed communities as well as those who regularly meet face-to-face. New technologies open new possibilities for places to meet and for holding conversations. It also changes the cues for context and the boundaries for who belongs and who does not. These become key issues when facilitating learning in communities. We have a growing number of choices for creating "digital habitats" (Wenger et. al 2009) using tools such as groupware, learning or content management systems, social network platforms, wiki software, weblogs, chat rooms and so on.

A situation that arises frequently for community facilitators is the need to select a new tool to add to the repertoire of tools used by the community. For a number of reasons a community has supported its practice with a set of tools and has established the principle technologies to use. An increasing number of tool options and examples of new technology practices leads to the potential for a more developed digital habitat as a decision is made to introduce "one more tool". A community leader, acting as "technology steward" (Wenger et al. 2009) often takes a leading role in considering other available tools that could meet the needs of a community.

What should be the design considerations for introducing this one more tool into a community? It is easy to see that a new tool will influence a community's practice, if it is adopted, but what about the other constitutional elements of a community of practice? What are the considerations for domain and community? We argue that introducing a new tool and the practices around using that tool will change the landscape for building relationships and trust among community members that in turn shape the domain. Thus, when we are introducing one more tool we need to consider how a change in practices around that tool will affect community formation and struggles around the domain as much as we need to consider tool features or the process of implementation of that tool.

3   Designing for community learning – our workbench cases

To ground our theoretical reflections in the *practice* of introducing new tools for enriching the learning of distributed communities we present two design challenges that we are facing in our work. These "workbench cases" are not classic case studies that we analyse retrospectively but cases that are "in progress" – where we analyse and reflect upon our own practice in terms that can be shared with a wider audience. Even though both cases are different in their "one more tool" challenge and in the roles and mandate we have in relationship to the community, we present the cases under the same rubrics[1].

Our research method lies between action research and autoethnography (cf. Ellis 2004) and is explained in more detail in Arnold, Smith, and Trayner (2006 and 2007). In short, our data consists of extensive notes from joint planning sessions, individual participant observatory as well as artefacts from the projects on which we report. For a critical reflection of our data we use a community of practice perspective as an analytical framework.

In the case descriptions that follow we change voice from "we" (referring to all three authors who have jointly thought through these issues, "worked the cases" and written the text) to "I" (indicating participant observation and involvement in community facilitation and technology stewardship). "Voices of the community" refers to the perspectives presented by different people in the community.

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[1] These are inspired by the rubrics suggested for e-learning pattern development (Kohl 2009).

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Workbench Case A– Global community of practice in the public health arena

Context
Members of a global community of practice are coming together to discuss their shared vital concerns.

The community consists of agricultural researchers, institutions, governments and non-governmental organisations concerned with intellectual property in the public health arena. Current communication practice is mostly email, telephone and regional face-to-face meetings. An international face-to-face meeting is planned in Africa when twenty key people will come together to reflect on how they are learning from and with each other and to think of how to do it better. I am looking at which tools can be introduced to enrich and extend the conversations outside the *same time / same place* of a face-to-face meeting. I have decided to integrate video and audio recording to the repertoire of communication tools. I can use the recordings for bringing the voices of physically absent people to the table at the face-to-face meeting.

Design Challenge
Many members of this group do not have straightforward access to the Internet or to broadband. Trust is an important issue on several levels. Members come from neighbouring countries with sensitive diplomatic relations. Within countries there are clearly defined hierarchical positions. Some members need to be cautious about who shows up where and with whom. Tools that support transparent processes or leave digital traces can easily be viewed as breaches of protocol or political manoeuvres rather than as opportunities for dialogue. Another design problem is that people are very busy. Their focus is on the immediate pressures of their day-to-day concerns. There is a tension between responding individually to immediate, local problems and contributing to a community's response to those issues on a larger scale.

Added Value
Recordings can help extend the event beyond "same time same place" and let more people participate actively regardless of their physical location. Another advantage of video and audio recordings is that a person can contribute content while I manage the tool. In other words someone does not have to be adept at the tool in order to have his or her voice heard. This is in contrast to other tools such as Google docs, wikis and blogs where someone's voice may not be heard if people are not digitally literate.

Potential Pitfalls
A first video that I recorded in a Skype interview brought up a number of potential pitfalls. Although I have seen some uses of Skype for telephony, the interviewee's webcam produced a poor quality black and white image. Watching a Skype video with a poor image added nothing to the content. This seemed relevant given the social sensitivities of many members of the group. Editing the video to increase its quality was time-consuming and required a kind of know-how that is not widely enough available in the community. At a certain point the time spent editing videos did not add anything to connecting people and developing the community. Another potential pitfall given the sensitivities of the group are those of privacy and confidentiality. Just one perceived breach of confidentiality could be seen as a serious breach of trust.

Forces at Work (behind the scenes)
In the community there is rhetoric openness to new tools but people do not have time to invest in learning how to use or integrate them into their day-to-day work. Until now new tools have been dismissed for one reason or another: Google docs was too hard, Twitter was too politically sensitive, Skype was not practical. I know that I have to do something that will show the value of new tools without creating a lot of work for members.

Workbench Case B – Community of distance learners in higher education

Context
This community is situated in an online study program that is especially designed for students who are working in different parts of the country as they study. To offer greater flexibility in time and location, only 25% of the study modules are taught face-to-face and 75% of the modules are taught completely online. A standard commercial learning platform is used for online modules. Current communication practice in the online modules include discussion forums, chats and file management functions like the assignments/drop box etc. Students have been using this mix of technologies for two years and generally enjoy collaborating and sharing

their work and study challenges. A sense of community has evolved rapidly. For the second half of their study program a new online module lasting four semesters is being designed. It will introduce students to peer counselling techniques and is meant to bridge theoretical concepts and their actual work situations. Students are expected to discuss cases from their work in small sub-groups in a systematic way that has been developed especially for the social sector where funds for external supervision often are not available. Another focus will be on their changing professional roles as many prepare with the study program for a management position in their field of work.

Design Challenge
Existing tools only support online peer counselling techniques while they are enrolled as students so I am considering moving to another platform that they will be able to use when their study program ends. The new platform is designed to enable online peer counselling in the social sector and supports practicing social workers. However, moving to another platform requires that the students give up established routines and time to get to know the new platform. Also, the special peer counselling platform is still under development and students would be exposed to platform development bugs. Learning a new platform in beta may be daunting for working students with time constraints

Added Value
Students will get to know a peer counselling platform they can use now and after their studies for their work. Experience in online peer-counselling will be useful for people hoping to become experts in social work and related management positions. Using the specialized platform, they join a larger community of social work professionals who explore, apply and refine online peer counselling. Being involved in the feedback and ongoing development of the platform could be an interesting experience as they also help shape the design of software to support social work.

Potential Pitfalls
Changing from one communication platform to another always runs several risks. The new platform requires a new set of access credentials (ID/password), a particularly daunting prospect for students working from different locations and computers. Other course modules will continue using the standard learning management system, requiring them to access two platforms. In addition, shortcomings of the existing platform are familiar to students whereas they will have to develop new work-arounds for the new platform. They may even feel mistreated as experimental subjects in a software development process.

Forces at work (behind the scenes)
The colleague with whom I run this module is an expert on peer counseling and one of the founders of the peer counseling platform that is being considered. He cannot be expected to invest a lot of energy to map counseling features onto the functionalities of a standard learning platform. In addition, partnership with a university is a good test bed for the platform and an opportunity to get future professionals already familiar and using it. I wonder if we are mis-using the students in this process. On the other hand, study programs should enable students to acquire "real world" competences. Using the counseling platform is a chance for students to practice peer counseling techniques under authentic conditions and to go beyond the boundaries of a higher education context.

4 'One more tool' interacts with the entire community – discussion

The workbench cases are quite different from each other. The higher education learning community, studying together in its digital habitat, has routines for communicating and co-operating that are quite different from those of a community looking to bridge between face-to-face meetings. In our discussion of the cases the aim is not to compare the different communities or their different communication designs. Our aim is to look at the design considerations for introducing "one more tool" and the potential changes that technology stewards and other community leaders should consider. It may be easy to see that the introduction of a new tool, recorded video in workbench case A and a specialized platform in workbench case B, will affect a community's sense of "being together." However, by looking at it more closely through the community-domain-practice lens we see that a new tool not only influences practice but also interacts with the community and the domain.

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Analysis Workbench Case A– Global community of practice in the public health arena

The "one more tool" being introduced is that of video conversations with people who cannot be at the event but who have something to say. "One more tool" in this practice refers to a cluster of tools that will be used for recording, editing and publishing and watching the video conversations.

Interaction with practice
- As we introduce a tool for recording people who cannot attend we start developing practices for opening a face-to-face event to people who are not physically present. This changes the dynamics of whose voices are at the table and changes the shape of the community.
- The recordings lead to practices of publishing and archiving conversations that stay around longer than face-to-face conversations. This could eventually influence the domain as people consider differently what issues are important and what issues have been discussed previously.
- The practice of creating artefacts that are different from traditional meeting outputs normally concerned with capturing conclusions and decisions made will call for different types of skills and leadership roles from within the community.
- Issues around privacy will lead to developing ethical and other practices as we consider where the video is stored. The decision about who has access to the videos will change the community and how members perceive their roles.

Interaction with community
- We are using the tool as a way to involve people even if they cannot be present. Community development will help build trust; additional voices as a result of trust will help shape the domain.
- Holding controversial voices in the broader discussion, rather than letting them be silent, will have implications for the practice of listening while also changing the issues of domain.
- Through developing ways of holding informal conversations in a setting where formality and status can hinder the deepening of conversations could change a range of practices related to formality.
- Nurturing a sense of horizontal accountability to fellow-practitioners who are not present could lead to more practices that support peer-to-peer conversations.

Interaction with domain
- Additional voices will change the framing of the issues facing the community. The (virtual) presence of a controversial voice will affect the way the community views their domain issues.
- As video is introduced, there are many decisions that will have a bearing on domain: who to interview, what questions to ask, what editing if any, control over video recordings, etc. All these decisions will also affect the relations between people as they develop the practices around interviewing, editing and publishing the recordings.

Analysis Workbench Case B – Community of distance learners in higher education

The "one more tool" being introduced is that of: a specialized peer-counselling platform that is used by a variety of social professionals to organize peer counselling. Until now this specialized platform has not been linked to any higher education context.

Interaction with practice
- Counselling each other on cases consists largely of communication through various means: The specialized platform offers communication features (a non-threaded forum, a wiki, a file repository – all with personalized notification and geared to the different phases of peer-counselling). These features will change the established routines of communicating at a fine grained-level, including whose voice is being heard.
- Students will gain more control over the community's practice: Immediately after registration, they can create their own counselling rooms on the new platform and decide who they allow in whereas the standard platform keeps that kind of control in the hands of the instructor.
- Students can see other peer-counselling groups (outside the higher education context) and could join them if interested. The work of these neighbouring groups will eventually change the domain of this student group.

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Interaction with community

- On the standard learning management system, the community is clearly defined and confined to students in the program. With the new platform boundaries blur immediately: students can allow people outside the study program in, for example other users of the specialized platform or their own colleagues at work. Communication across student cohorts will now be effortless. With the consent of the group, they can also join other counselling groups, visible on the platform, and thus potentially collaborate with other social professionals who use the platform. This will lead to a range of new practices and a reframing of the domain in many ways.
- Students will have to decide whether they want their counselling group to be visible to any platform user or not. In case they opt for visibility, these other users might ask permission to join them. Practices related to permissions will have to be developed.
- Unlike on the standard platform, the default would be that the counselling groups are not open for the instructors. Therefore the role of the instructor changes because now they can easily be "left out." In general, the whole set-up of who is "in the classroom" changes and the roles of students and instructors are much less certain than they were traditionally.

Interaction with domain

- The community's principal domain in this module is peer-counselling. By using the specialized platform that is still under development, a socio-informatics dimension is added to the domain: does the platform support the online peer-techniques well enough? Platform organizers ask users for feedback on the platform's design and functionality. This will be the first time student perspectives form part of the joint reflection and evaluation.
- As the cases that student peers discuss can now come from a wider variety of settings and sources the scope of the domain will change. This will re-define which cases are seen as relevant and the formation of the community around this changing domain.
- The instructor's view of domain is now contestable because other voices are potentially in the conversation. This changing power relationship over the domain will shape who knows and who does not know and the practices for bringing other voices in to talk about the domain.

Table 1: Synopsis of "one more tool" interacting with the structural elements of a community

	Practice	Community	Domain
Workbench Case	Language, concepts and tools	Membership, relationships, history	Shared concern or inquiry
A: recorded conversations	Brings in different communication patterns. Triggers question of expanding tool repertoire (e.g., for the storage of videos).	Changes whose voice is heard and whose is not. Contests the boundaries of the community. Influences power politics within the community.	Extends domain issues and intensifies domain negotiation as previously marginal voices come into focus.
B: peer counselling platform	Connects 'secluded' study practice with mainstream professional practice. Shifts control of practice from instructor to students. Introduces an add-on practice: evaluating software.	Allows community relationships to extend beyond an academic time-frame. Extends participation boundaries: connects with professionals outside higher education.	Extends the domain from "study" to "ongoing professional practice." Proposes adding "evaluating technology" to the domain of social work.

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5   Looking back and ahead – conclusions

In this paper we looked more closely at two different "one more tool" situations. From positions of facilitators and technology stewards for two different communities we shared the design considerations and analyzed the interplay between domain, community and practice in the introduction of a new tool. What might appear as the introduction of a tool that would merely change a community's practice now seems to be more complex. The introduction of a tool will change whose voice is being heard, which voices can be legitimately brought to the table, how competence is negotiated, and, indeed, what matters to the community. Introducing the tool will influence the practices that are developed, shared and refined by the community that cares about the domain. Just one more tool potentially transforms our participation and our sense of identification with the community and the world. It represents a different way of engaging with each other and therefore a different way of learning.

Meanwhile, and all too often, we get frustrated that a community does not accept a new tool. As facilitators or leaders, we explain or provide training in how to use that tool, we use incentives, cajole and chastise our communities as we try to encourage innovation and new ways of communicating. However, it turns out that introducing one more tool has larger implications related to engagement in the community, the practice and the domain. Engagement goes beyond the mastery of a tool or even of a practice. Dealing with one more tool involves testing, contesting and negotiating the boundaries of a community. And in negotiating who is at the table, we are negotiating the issues that concern us. In other words, we are contesting the domain.

How does this help us in our practice of designing for communities? How does it help us introduce a new tool or technology into a learning community? In the process of writing this paper we came to the conclusion that in introducing a new tool a helpful question to consider is this: How will this tool influence the voices at the table? How will it affect who is a party to the conversations and who is not? How will it affect who decides? And what does that mean to this community? These are the questions we intend to pursue.

Through writing this paper we have gone from seeing ourselves as people who advocate for the introduction of one more tool to viewing ourselves as convenors of new and different combinations of voices in a community. It is with that sensitivity and responsibility that we take on the introduction of new tools into the practices of a community.

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