## **RESEARCH NETWORKING with "CORE SQUARE"**<sup>1</sup>

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**Key words:** *MOODLE, Wiki, Fora, Collaborative Research, Knowledge Cooperation, Communities of Practice, Communities of Research* 

### Abstract:

The aim of this paper is to present "CoRe Square", a collaborative research space implemented with standard MOODLE components that we have designed as a space for integrating teaching and research at our University of Applied Sciences. The CoRe Square platform is intended to contribute to the creation and cultivation of a "Community of Research", a new way of organising the integration of teaching and research that we have developed inspired by a Community of Practice approach. The main design concept of the CoRe Square platform is that of two cross-coupled learning loops: 'cultivation' and 'participation'. Our specific design of the combination of the dyad "Forum & Wiki" allows creating interacting dualities where the two learning processes - the cultivation of research knowledge and participation in cultivating that knowledge – activate and sustain one another.

### 1 Introduction

The integration of teaching and research processes has become more and more an urgent strategic imperative at the Swiss Distance University of Applied Sciences (Fernfachhochschule Schweiz, FFHS) due to its transition from the pioneering to the differentiation phase (Glasl 1994). But how to manage and support research practice in a way that best contributes to fulfil this goal? An important part of the answer can be provided by a new generation of e-learning tools integrating advanced collaborative technologies (also known as 'social software') and implementing more and more a Web 2.0 approach to online interaction (O'Reilly 2005, Bettoni 2006a). At the Swiss Distance University of Applied Sciences a major consequence of this trend has been the insight that, in order to reach the mentioned goal, managing research practice requires the realisation of new "research networking spaces" which, by organisational design, need to be tightly integrated with the rapidly evolving forms of networked, collaborative work (eu@Work 2002-2006).

The realisation of a virtual research networking space is a central issue in the research we will report in this paper which relates to an ongoing project that has as its goal the integration of teaching and research by means of the design launch and cultivation of an online "community of research" (acronym: CoRe) for distributed research cooperation by 3 types of research partners: lecturers, students and research staff. The whole CoRe project has a wide spectrum of research issues, like for instance the question of fostering knowledge sharing (Bettoni et al. 2006b, 2006c) or of managing distance cooperation under conditions of weak ties (Bettoni et al. 2006d) but in this paper we will focus primarily on that part of our work that deals with "CoRe Square", a collaboration platform on MOODLE.

Why did we select a community of practice (CoP) approach for organizing research work at our university? The Swiss Distance University of Applied Sciences is organized in a radically decentralized way: learning and teaching happen mostly independently from location, at a distance (distance teaching) and its many lecturers have very low work assignments and teach from "distant workplaces" which are highly geographically distributed. This decentralized structure has for example the advantages of a strong connection to practice (all lectur-

<sup>&</sup>lt;sup>1</sup> In: Proc. of MApEC 2006, Multimedia Applications in Education Conference, Graz, Sept. 4-6, 2006.

ers are highly engaged in professional practices) combined with higher flexibility and much lower costs than with full-time lecturers.

However, decentralized structures do not have only advantages. In particular they tend to have an insufficient level of a special kind of networking between geographically distributed persons that we suggest to call "attentional networking", i.e. mainly mutual awareness and mutual interbeing (Thich Nhat Hanh 2005). But exactly this kind of networking would be important for promoting collaborative research activities in a radically decentralized organisation. In organisational development both theory and practice suggest that this kind of networking is successful primarily in informal structures (Wenger et al. 2002; Cross & Parker 2004). Informal structures are for example practice oriented, voluntary networks of persons ('communities of practice') which are integrated into a formal organization (a school, a university, a business organisation).

Based on the previous considerations we had good reasons for deciding to organize research activities as a CoP. Unfortunately the state of the art in this domain is not correspondingly good: we do not know enough about how something resembling an online community of practice can be designed (Barab et al. 2004). Researchers even claim that enthusiasm about CoP is well beyond empirical evidence (Schwen & Hara 2004). One major open question in this context is how to design for the mentioned attentional networking as a way for managing research in a decentralized structure. Based on our concept of "Knowledge Cooperation" with its background in Constructivism (Bettoni 2005a, 2005b), we claim that in order to answer this question we need an approach that has its primary focus on distinguishing, balancing, connecting and negotiating between knowledge in its two fundamental dimensions: individual and social. This is exactly what our CoRe Square platform is intended to support in order to contribute to the creation and cultivation of a Community of Research.

For these reasons in realising CoRe Square the main requirement leading our design and implementation efforts is that *CoRe Square should support the constructivist model of Knowledge Cooperation*, i.e. two cross-coupled learning loops: "cultivation of knowledge" and "participation in knowledge".

After introducing our technology requirements and our approach to selecting a suitable software tool, we will explain the main objectives and features of our design: 1) a top level space architecture inspired by aspects of community life (seven cooperation areas); 2) a combination "forum & wiki" as inner structure of each cooperation area. We will then shortly sketch the main elements of our implementation and conclude with an outlook on future work.

### 2 Constructivist Knowledge Model

The basic assumption of the constructivist knowledge model behind CoRe Square is that *"things can be rationally accessible to us only as lived experiences"* (Bettoni, 2005c). The question then is: why? The Italian philosopher Gianbattista Vico answered this question shortly before Kant. In 1710 he wrote "Verare et facere idem esse (Vico, 1710). He assumed that everything that is rationally accessible to us (verare) must be rationally produced by us (facere). Kant kept spinning this thread further and proposed in his main work (Kant, 1781/1787) that through lived experiences produced in this way we can attain objective knowledge. In the chapter "Analytics of Concepts" he developed a new concept of objectivity (Bettoni, 1997 & 2000) that, in order to distinguish it from the objectivity of dogmatism, could be written in this way: {objectivity}. Or "objectivity in brackets".

The next steps were then taken by Ernst von Glasersfeld and Humberto Maturana. Starting from Silvio Ceccato's contributions, von Glasersfeld further developed Jean Piaget's Constructivism and elaborated the theory of knowledge that he called Radical Constructivism (von Glasersfeld, 1974 & 1995). This approach suggests understanding knowledge not as "Logic of the Given", as in dogmatism, but as "Logic of Experience". In this conception the essential feature of knowledge is that it enables us to reach our goals. We aim for certain goals; we do something to get there and if we reach these goals, we then know that the knowledge we used "works" or is valuable. That is the 'viability' of knowledge. "Via" means way and "viable" is intended here as having a chance of going on that way and reaching a goal, indicating therefore something "feasible" or "practical".

# 3 Technology

Our first approach for selecting a technology for CoRe Square was to start evaluating only the two open-source web platforms already in use by our lecturers: a plone-based intranet (easy.go 2006) and a MOODLE e-learning platform (Williams 2005). The reasons for this very solution-oriented, highly focused approach are summarised in the following requirements for supporting community life and development (see also Agostini et al. 2005):

- lowering the cost of participation in the system (while performing daily work)
- promoting occasions for informal knowledge exchange
- increasing the visibility of community activities and of personal contributions
- support getting started with research activities (organisational learning)

In a first experiment we built a small prototype on our faculty intranet. This intranet is used for storing university documents (general regulations, forms, regulations about examinations, etc.), for helping lecturers with administrative tasks (make students lists, search other lecturers, download examinations or course schedules, check process definitions, etc.) and for supporting them in their own professional development (announcements and material about workshops, consultation support offers, etc.).

We were just at the beginning of the prototype development when meetings with faculty representatives suggested that lecturers experienced the two platforms as two separate 'worlds': the lack of integration between the two systems (simple example: there are two different logins) was perceived as a barrier sufficient for discouraging easy navigation from one system to the other, back and forth. We interpreted this situation as a serious danger for the implementation of the mentioned requirements and decided to work on a second prototype based on the same MOODLE platform that lecturers use for teaching. First of all MOODLE would allow to have our research cooperation space easily integrated with the teaching space (same login, same tools, same conceptual background in constructivism). Since lecturers do their teaching on MOODLE, having the research space also in the same platform would increase the visibility of ongoing research activities, allow faculty members to easily commute between the teaching and the research environment, offer more opportunities for planned and unplanned interactions and networking and last but not least better support learning of how to do research in the early stage of our Community of Research. Other advantages of MOODLE can be found in a more flexible user administration, better accessibility of the space and the large community of users worldwide (about 100'000 registered users on March 2006, http://moodle.org/stats/).

## 4 Design

In order to support Knowledge Cooperation we decided to design CoRe Square as a "community cooperation space." Its various "cooperation areas" correspond to aspects of community life, so the space architecture supports the ways in which our Community of Research will work. The idea is that the design of the cooperation space is itself a central part of research cooperation. Exploring the space and using it is part of doing and managing research. This general concept and design is based on Etienne Wenger's social theory of learning and on his international online workshop "Foundations of Communities of Practice" (Wenger 1998-2006).

#### 4.1 Seven Activity Spaces

In the current version the CoRe Square space is divided in the following seven areas:

- Individual Hut
- Community Circle
- Domain Club
- Practice Lab
- Connections Room
- Leadership Lounge
- Technology Corner.

The *Individual Hut* is a space where members can create their own individual corners, keep a journal, and visit each other to start conversations on the side and build personal relationships. Why an individual space? Firstly, because communities of practice combine two main sets of interactions and activities: public activities (like meetings and projects) and private ones (like conversations between members, interpersonal relationships, and the development of individual identities). And secondly because in our approach we focus on knowledge in its two fundamental dimensions: individual and social. Accordingly, our community space is divided into two important subspaces: individual and public (social).

The public spaces are: Community Circle, Domain Club, Practice Lab, Connections Room, Leadership Lounge and Technology Corner.

The *Community Circle* is where members gather as an incipient or mature community, share announcements and reflect on their experience. The main characteristic of a Community of Research is that it is a community. Thus CoRe needs a space that embodies this being a community, a space where researchers explore how they function together. This is what the Community Circle is about. It is the center of the public space. It is where CoRe members start using CoRe Square, where they find highlighted "Announcements" so they know what's hot and where to be sure to go and it is also where scheduling and synchronization allows them to work and learn together. Finally this space is also where members can reflect on their experience together as a community of research.

The *Domain Club* is where members discuss current topics and share best practices and lessons learned from past research practice. A community of practice is brought and held together by a joint interest in a domain of knowledge, such as designing a product or carrying out a social or organisational function. This domain is a matter of personal passion to all participants and all want to pursue a joint inquiry into it. They also agree to preserve lessons learned and best practices for use in later inquiries and projects. The domain of CoRe is "Research at FFHS" and this space is dedicated to discussing it together and preserving the results of these discussions and the research know-how that comes from applying discussion outcomes in projects. Members come, listen, share their experience, ask questions, propose answers, contribute their insights and engage in preserving lessons learned and best practices.

The *Practice Lab* is where members can engage in joint activities to solve problems or to build shared knowledge in their domain by telling stories, discussing their own cases and conducting projects. Accordingly in this area of CoRe Square members can focus on three types of activities commonly used by communities: story telling, case-based problem solving, and collaborative tasks toward an outcome.

• Stories are experiences told or recounted in the form of a happening or connected series of happenings that happened to the storyteller. Stories are central to the lives of communities of practice. They convey knowledge in a concrete form. They create a sense of belonging. And they provide recognition to the authors/actors as contributors to the community's stock of knowledge.

- Cases are actual problems that members face in their own work. Helping each other with actual problems is a very important community- and knowledge-building activity. It builds the community because it makes participation valuable to members in a very tangible fashion. And it builds shared knowledge because participants can share what they know in a concrete situation.
- Projects are collaborative activities that members can initiate or join. These projects are more than exploration and discussion of research issues because they have set outcomes and end-products. Each project should have personal meaning for the member proposing it and should reflect her own research goals but it should also comply with the *FFHS* research strategy.

The *Connections Room* is where our Community of Research interacts with visitors, hosts guest speakers and takes fieldtrips to other communities or websites. These interactions broaden up the scope of inquiry in CoRe and connect its members with a wider circle of people than the community itself. This space and its activities are important because a community can become very tightly knit and from there become overly self-centered and so lose its cutting edge. Remaining open to the world through connections with other people and other communities that deal with related domains is key to keeping in touch with the newest trends and with opportunities for development.

The *Leadership Lounge* is where members sign up for and discuss about tasks related to community "leadership" understood as engagement for the community. This kind of internal leadership is crucial for communities of practice: it is about people who take the initiative to engage in community-building tasks or set out to extend a community's practice. This leadership can take multiple forms, for instance: collecting important insights and questions from various conversations, organising a public event, facilitating a conversation with visitors, hosting a guest speaker, welcoming and supporting new members, etc.

The *Technology Corner* is a collection of resources to help designing with MOODLE and using the CoRe Square cooperation space for effective research work (and also socialization fun). In this space we work together for producing resources like a "CoRe Square Tour", a tutorial for newcomers, help pages (on starting new discussions, extending existing documents, working with wikis, etc.), guidelines for designers, frequently asked questions about the space, etc.

#### 4.2 Duality of Tools within Activity Spaces

For designing the inner structure of the activity spaces of CoRe Square we initially began by identifying a set of requirements like making the path to useful content as obvious as possible and more generally ensuring an easy orientation, attracting users with ease of use, fostering engagement with meaningful procedures. Experience shows that particularly the first step, just after entering any activity space, should provide a familiar view and make sense quite immediately.

One way to implement these objectives is to keep the inner structure of an activity space very simple (but not simpler than required) and to make it as similar as possible and useful across all the seven spaces. But how and where could we find a solution to the required simplicity and useful similarity? The answer came from the previously mentioned main requirement that *CoRe Square should support the constructivist model of Knowledge Cooperation*. According to this model cooperating and collaborating on research knowledge consists of two cross-coupled learning loops that activate and sustain one another: "cultivation of knowledge" (Fig. 1):



Fig. 1 Circular processes of Knowledge Cooperation

- The right loop, *cultivation* of knowledge, is the circular process by which a community stewards its knowledge resources (by processes like acquiring, developing, making transparent, sharing and preserving knowledge) and uses them in daily work.
- The left loop, *participation* in knowledge, is the circular process by which community members build social capital (establish and take care of personal relationships, develop individual and collective identities, etc.) and "invest" this social capital in stewarding the knowledge resources of their community.

These two processes are circular because in both cases the output of one process is transformed by a second process and returns to the previous one as input. In this model cultivation and participation come as a pair, a dyad: they form a unity in their duality. Accordingly we have designed also the inner structure of our activity spaces as a pair of tools that should form a unity in their duality: the dyad constituted by a forum and a wiki. The forum is a tool for *conversations* (sequences of verbal interactions bound to time): creating new discussion threads, reading posts and replying to them supports participation as the social experience of being connected with other and being actively involved in a collective enterprise (stewarding research knowledge). The wiki is a tool for *reifications* that preserve the results of conversations (new ideas, insights, best practices, lessons learned, definitions, procedures, etc.) by organizing them in a structured way and independently of time. According to this design, in the current version the seven activity spaces contain for example the following dyads:

- Individual Hut. each member has an own forum ("personal blog") and an own wiki
- Community Circle: a forum for talking about experiences with the platform and a wiki for making a systematic overview of these experiences.
- *Domain Club:* a wiki for collecting an overview of research methods and a forum for talking about individual methods.
- *Practice Lab:* each project has an own forum for talking about project steps and issues and an associated wiki for a systematic overview of project work and outcomes.
- Connections Room: a few important communities have each an own forum where to meet their members and an own wiki where to collect outcomes of meetings.
- *Leadership Lounge:* a wiki where members can sign up for tasks and a forum for talking about engagement for the community.
- Technology Corner: a forum for talking about design issues and a wiki for collecting design decisions

### **5** Implementation

For implementing in MOODLE this design our basic strategy has been to use the available standard features. We are not against customization but we are convinced that at this early stage it is better to rely on available, standard instruments and use them in a creative way rather than inventing and experimenting with new special components. The main reason for this strategy is that it allows us to concentrate our efforts on going in the right direction (be sure of "what" to implement, rather than "how"), to build the prototype on a stable basis and to spare time by having all the instruments ready to use now.

The seven cooperation spaces (areas) of CoRe Square are implemented as one single course in the MOODLE *topic* format. Each area is implemented in an own *topic* that can be accessed directly by a menu bar placed in the upper part of the *Top section* of the CoRe Square home page (see Fig. 2). This menu bar contains seven icons placed on one row, each linked to a specific cooperation area: clicking on the icon (or on the title below it) opens the associated area under the top section (see also Fig. 3).

Below the menu bar the Top section contains only the name "CoRe Square". There are no other elements in the Top section because we want to keep it as thin as possible (currently 30% of the available screen height) in order to have more screen area available for displaying the individual cooperation areas below it (70%).

When the CoRe Square home page is opened, the area that appears below it is a welcoming space. In its lower part members find here access to help in two dyads, one about guidance and orientation (with resources like a tour and a tutorial for newcomers), and one about general information and about ground rules for participation (community standards, etc.). More interesting for an experienced member is the upper part: just below the title bar there are two boxes, a red and a blue one.

The blue box contains the newest information about which activities are going on and provide opportunities for participation to a member who enters the space as a *user*. The red box, instead, contains news about activities that can be relevant to a member who enters the space as a *designer*. These roles are not fixed; in fact all members will be free to act either as users or as designers of CoRe Square, depending on which kind of engagement better suits to them in a given moment.

As an example of an activity area the "Practice Lab" is shown in Fig. 3. Just below the title bar there is a file named "... about Practice Lab". It explains the primary activity in this area. Further explanations are given in three additional "about" files below it. This kind of documents is provided also in all the other areas: they offer guidance and step-by-step instructions for initiating a new activity or cooperating in those already running. When visiting an area for the first time, members are encouraged to review the "about" file.

In the Practice Lab each project has an own forum for talking about project steps and issues and an associated wiki for a systematic overview of project work and outcomes. With many projects the topic area would become very long and difficult to navigate. For this reason we have assigned an individual project area (a MOODLE *topic*) to each project and collected all project names and short descriptions in a table from where a links leads to the associated project area.

Below the file with the project table the Project Lab gives access to 4 dyads: Cases, Stories, Publications and Conferences.

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Fig. 3: Practice Lab Area

# 6 Conclusions

In June 2006 research staff, lecturers and students representatives of our University will participate in a future search event for developing bottom-up a research strategy for our University. In that occasion CoRe Square will be launched and opened for use to participants of the event and to all other lecturers, in total a community of about 250-300 persons. Before that launch work on CoRe Square will focus on the following tasks:

- Site Design
  - Test of the dyad Forum / Wiki as the fundamental design unit
  - Develop designs for the inner structure of the dyads Forum / Wiki in the main activity spaces (Community Circle, Domain Club, Practice Lab)
  - Determine the importance / utility of the different elements in the right-side blocks *in the eyes of community members*
  - o Generate a site index, showing all the folders in one page
  - Welcoming new members: prototype and test of a "Tour" and "Tutorial"
- Development Process
  - Thinking about planning & development process, including regular meetings & mix of media (online, face-to-face, phone, etc. to match processes used by the community and to develop skills & capacity)
  - Involve people at tech support and find out how much help they can provide, what knowledge they have, what time-frame, etc.
- Community facilitation
  - Thinking of sequences of events in the life of CoRe. What's a typical event? What sequence of activities is characteristic of the different spaces?
  - Thinking about how sub-communities (practice groups focused on specific issues) map with the existing site structure; will a subcommunity be active in all areas? or will some areas be shared?

When this will be done we think that our CoRe Square cooperation space will be ready – at least as a prototype - to contribute to the creation and cultivation of our "Community of Research", and will then empirically investigate whether this new way of research networking based on knowledge cooperation and attentional networking will get the needed support.

#### Acknowledgments

The general concept and design of CoRe Square is based on Etienne Wenger's social theory of learning and on his international online workshop "Foundations of Communities of Practice" (<u>http://www.cpsquare.org/edu/foundations/index.htm</u>). We are grateful to Etienne Wenger and John Smith for the permission to use part of the workshop material in the implementation of CoRe Square.

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