

mynetworks.org - an online environment for engineers merging community processes with continued education

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Abstract— myNetWorks (myNW, www.mynetworks.org) is a rich, collaborative web environment developed for practitioners and academics interested in sustainable environmental technology and ecological engineering. myNW provides easy and fast access to resources, tools for communication and exchange, courses and workshops. A special focus is put on the collaboration with developing countries. myNW aims to merge community development with the provision of course activities. Our paper presents experiences that have been gathered with myNW in the first 8 months of operation. It concentrates on community development and courses, and how they can be merged to form a new kind of distributed expertise and a rich, collaborative learning process in a virtual community.

Keywords: collaborative learning, community development, ecological engineering

1. A BRIEF HISTORY OF MYNW

myNetWorks (myNW, www.mynetworks.org) is a rich, collaborative web environment developed for practitioners and academics interested in sustainable environmental technology and Ecological Engineering (EcoEng). It provides easy and fast access to resources, tools for communication and exchange, courses and workshops. A special focus is put on the collaboration with developing countries. myNW has been co-developed by the International Ecological Engineering Society (IEES) and The Network University (TNU) with funding by the Swiss Agency for Development and Cooperation (SDC)

Ecological Engineering has been defined as the "design of sustainable systems consistent with ecological principles that integrates human society with its natural environment for the benefit of both" [1]. EcoEng professionals are a distinct community of practice (CoP). They are few and often isolated within their country and within the other engineering professions. There is a general lack of continued education offers in the field. This situation has lead to the call for a medium for collaboration and exchange as early as 1999.

The high interest in EcoEng technologies for development cooperation has resulted in funding of myNW by SDC. The project started in May 2002. First, a user survey among the 1200 subscribers of the EcoEng-Newsletter [4] and three focus groups with potential users were conducted. The work yielded the following main results:

- The main target groups are practitioners, NGOs, university members and decision makers
- The highest interest was in a working environment for networking and exchange
- The highest rated option was "quickly accessing other people's experiences in dealing with similar problems"
- The most important restriction was "time to access the web environment"

Based on the result of the survey, a basic concept was developed and implemented in a demo version of myNW. In February 2003 a first 2-week workshop was held in myNW. The positive feedback of our guinea pig users lead to the development of a full-fledged version of myNW. It went online in November 2003. Since then we held three online courses / workshops and took various measures to promote and facilitate community exchange. myNW currently has 440 members (June 04). This report is based on the experiences gathered with 8 months of community management and the four online courses.

A detailed description of the background, the conceptual ideas and the development process of myNW has been given elsewhere ([2],[3]).

2. STARTING UP THE COMMUNITY PROCESS

Compared to a CoP that meets face to face, an online community has a number of specific opportunities as well as risks. Concerning the opportunities, the availability of the information at any time, the potential for an unlimited number of members, the potential to tap distributed expertise in critical project situations and the potential to find and contact interesting colleagues can certainly be considered as such.

On the other hand, text based communication (which is predominant in myNW, due to the low bandwidth connections of many of our members) is not preferred by all learner types. It may be difficult to express yourself correctly, even more so since the official language (English) is a non-native language for many. A certain anonymity of the members facilitates antisocial behaviour (e.g., being late at live events, not reacting to direct questions, or even using a rude language in discussion groups or chats).

As first cornerstone of successful community development we consider mutual trust. To promote mutual trust, every new member must lay open his / her identity at least in parts, so that anyone can look up at any time who the other one is. People who do not provide adequate information about themselves are removed from myNW.

The second cornerstone is regular activities. When we started the community building process, all activities were focused on the large group of subscribers to [4]. We organized monthly live chat events with special guests active in EcoEng or related fields. Every chat event included the following measures:

- Publication of an **online article** related to the respective topic well before the chat (available for download)
- Arrangement of a **45 minute chat event** in the public chat room of myNW
- Opening of a **discussion group** for a period of two weeks before and after the event (which was monitored by the host of the chat as well)
- **Announcement of the chat event** in the monthly myNW news bulletin and in a reminder mail the day before the event

The result of these efforts was rather sobering. Some of the chats attracted an interesting group of new users, but in general there was not much participation. It seems that isolated chat events are not very attractive to our target group, considering that most of them are active professionals with limited time.

In the future we will continue live chat events but will try to link them better to institutions and to events in the real world (e.g., conferences or on site courses). We will also try to integrate the use of myNW into existing curricula of colleges and universities.

The third cornerstone for community development is to reach a critical number of members. We believe that once we have reached a level of 1000 - 2000 members, the community processes will start to develop much faster by themselves.

3. DESIGNING COURSES AND LEARNING PROCESSES

myNetWorks has been developed for distant learning activities (it may, of course, also be used in a blended learning setting). In principle, the course concept is based on the concept of "reflective practice" and on the socio-constructivist approach (see [2] for details). myNW courses shall have a straightforward practical approach, focusing on real world case studies and on capacity building by using the participant's own experiences. The presented learning material just provides the context for their reflection.

For course managers of an online course it is important to keep the amount of web programming as low as possible. myNW course material can be written in Powerpoint or Word. For publication they are converted to PDF or HTML. The crucial issue is, to set up a course design suited to the conditions in the web.

With the four courses that have been held so far, we have tested and elaborated different aspects of this concept (see Table I. below). They will be briefly presented in the following.

3.1. Course 1: Guidelines for effective ecologically engineered wastewater systems

This test course was held to find out whether the general course concept would work. The course was managed by members of the myNW team.

In week 1, participation was active and enthusiastic. Many of the topics planned for week 2 had already been discussed at the end of week 1. Thus, at the end of week 1 it was decided that a case brought in by a participant would be used for the analysis in week 2. This change was not well prepared and not fruitful. As a consequence, in week 2 activity was much lower. The "Guidelines..." document was not completed (which may in parts be accounted to the workshop being a pilot). Still, quite about 5 participants took part until the end.

The final evaluation showed that the intensive use of live chats was counterproductive for some participants. The time demanded by them was too much for some of the participants. The discussion groups were therefore hardly used. Those that could not take part in the live chats were deprived from the best discussions. We concluded that a better balance of both functionalities was needed. Hardly any of the participants and none of the instructors had taken part in an online course before. Although there were no major problems for either of the two groups, the need for a face to face (f2f) training workshop for the course managers became obvious.

TABLE I. SETUP OF THE FOUR COURSES RUN IN MYNETWORKS FROM FEB. 2003 TO MAY 2004

Nr.	1 (test course)	2	3	4
Title	Guidelines for effective ecologically engineered wastewater systems	Ecological Sanitation	Sustainable Building Practice	Impact Monitoring and Assessment
Date	Feb. 2003	Nov. 2003	Nov. & Dec. 2003	Apr. & May 2004
Provider	myNW team	seecon and GTZ	SKAT foundation	cde Berne
Course format	2 week workshop week 1: four case studies week 2: cross comparison and evaluation of case studies	Identical to Nr. 1	In addition to Nr. 1: one extra week to complete building evaluation; six case studies	5 week course, different design than Nr. 1-3, focussing on the participant's projects
Course product	Development of a guideline document	none	Evaluation of a building	Evaluation of own project
Active participants	24 (out of 45 subscribers)	15 (out of 45 subscribers)	20 (out of 60 subscribers)	6 (4 project teams)
Workload	2-3 h/day (= 20-30 hours in total)	2-3 h/day (= 20-30 hours in total)	2-3 h/ day (= 20-30 hours in total)	1,5 - 2 h/day (= 40-50 hours in total)
Live chats	2 hours per day	1/2 to 1 hour / day	1 hour per day	Twice a week
Asynchronous	Discussion groups 1 assignment / day	Discussion groups 1 assignment / wk	Discussion groups 1 assignment / day	Discussion groups
Content format	Content elements provided in HTML and PDF format	Content elements provided in HTML and PDF format	Content elements provided in HTML and PDF format	Content elements provided in HTML and PDF format
Course fees	No fee	20 to 300 Euro, depending on status and region	20 to 100 Euro, depending on status and region	200 Euro

3.2. Course 2: Ecological Sanitation

The 2-week course was structured similar to the test workshop but put less emphasis on live chats. Prior to this course, a f2f training workshop was held for the course managers.

The team of course managers worked together very well. The balance between asynchronous and synchronous elements was better in this course, the discussion groups and the assignments were used. Some participants from Mali had serious problems to join the course, due to instable internet connections. They also had problems with the course language (English).

At the end of the course, the course managers were content with the amount and the quality of participation, even though only about a third of the subscribed participants took part actively. This phenomenon coincides with observations made in the other courses as well as by TNU ([5]). The pricing doesn't seem to influence it very much.

3.3. Course 3: Sustainable Building Practice

Prior to this course, a f2f training workshop was held for the course manager. In addition to that, M.A.Pereira was present during the course as a tutor.

Nevertheless, this course never really took off. Discussion groups were not used very much. The assignments were not submitted at all. The live chats were rather active, but people came in late.

In parts this can be accounted to the Sustainable Building Evaluation Tool (SBET), which formed an integral part of the course and was still a beta version at the time. Participants had to get familiar with 2 different web environments: the SBET and myNW. Some participants were confused by the SBET and by too many discussion groups and felt that the course should have been longer.

We concluded that the commitment of the participants is even more crucial in an online course than in a face to face course and a set of measures must be at hands to react when a course doesn't take up speed.

3.4. Course 4: Impact Monitoring and Assessment

The course manager had extensive experience in f2f teaching of this topic. The course was adapted to myNetWorks in a coaching process guided by M.A.Pereira.

Interestingly, even though all participants had paid the full course fee, participation in the course was rather reluctant in the beginning. In the first 3 weeks, the course manager complained that people would not show up in the live chats, would not read the required documents in time and would not respond to his emails. In a face to face workshop he would have been able to get an intuitive assessment of the reasons. When the course was half-way through, the pace of participation increased considerably.

In the evaluation, the participants stated that the course was interesting, very useful and less time consuming than a regular course. However, they had had a time problem and found it difficult to get started. The course was much more time consuming and needed more commitment than they had expected. Coursework and on site project work got into conflict. It was concluded that distance learning cannot replace face to face courses.

3.5. Summary of experiences

The four courses and workshops have shown that myNW is well suited to conduct online courses for a worldwide audience, even if internet connections are slow. We had live chats with participants from various time zones and developing countries. Not the speed, the stability of the internet access is critical.

The basic course concept works and is well suited to the conditions and limitations myNW has to offer. However, setting up the online course structure turns out to be a challenge even for experienced teachers. The preparation of the course material did not pose much problems to the Course Managers (as was intended).

The social factor must not be underestimated: Participants need to be encouraged to work with each other and contribute often. Tutors need to work intensively in motivating participation. The pricing of a course is also crucial - lurkers that are admitted to a course for free, tend to stay in the background. On the contrary, too high fees are discouraging.

A clear limitation of myNW courses is the heavy use of written text. This can only be overcome with other technical functionalities (e.g., live audio, interactive whiteboard etc.) which in turn may impair the usefulness of myNW in developing countries.

4. MERGING COURSES AND COMMUNITY PROCESSES

Our goal is to initiate a self-perpetuating process that leads to a continuous improvement and extension of community and content. Two elements are important here: 1. attractive courses and 2. attractive community activities.

Courses generate new and unique content and attract participants which bring in their own content and tend to take part in other myNW activities after the course. Course content is made public after the course in the myNW library. Active community management helps to generate a good atmosphere where newcomers as well as senior members can find interesting information and can contact other members on an informal level. The direct contact with the members, in turn, allows to identify potential course providers for new courses.

At this point (June 04) both elements are in place but the activities have not reached the level of self-perpetuation. Use of public functionalities (like the discussion forums or the library) is still reluctant. We think, that myNW still needs to reach a certain level of acceptance within the community. Also, the number of community members must reach a critical threshold of an estimated 1000 to 2000 members, before the community will really start to generate its own content.

We think that in order to enhance the use of myNW it is essential to win well reputed institutions as partners. A vision might be that every student who does a degree in Ecological Engineering becomes a member of myNW in the course of his classes, get acquainted with it and (hopefully) will continue to use it later on. Official master courses could e.g. use myNW groupware functions or organize interesting live chat events with senior myNW members for their students.

It will remain the task of the community manager(s) to observe and promote the development of this process.

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