The structure and behavior of virtual communities engaged in informal learning about e-learning standards

Estudio de la estructura y del comportamiento de las comunidades virtuales de aprendizaje no formal sobre estandarización del e-learning

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Villaviciosa de Odón, Madrid, Spain
April 20th, 2006
Focus

Online training, virtual learning, e-learning, are some of the concepts that were born one decade ago when communication systems, Internet and the related services increased their presence and social significance. Facilities like instant messages, email, voice chats, textual chats, image transfer or interchange of files are just a few examples of what raised in the nineties.

On the other hand, the increasing need to optimize the time and the costs related to training, came up with a logical start-up of companies and also with an adaptation of some of the existing institutions and universities to such this new panorama on new learning platforms. The first step was to translate and move actual courses to the new online systems. Two objectives were fulfilled: first, the needed adaptation to users’. demands on new platforms in order to get a better match between users’ needs and resources provided; second, the improvement of the existing learning systems with a new view and a new pool of facilities on interaction.

At the same time, personal relationships based on these systems, both in an asynchronous way (email and forum, mainly) and in a synchronous way (online text chats and, mainly, and IP voice communication, coming), were making bigger and wider to witness a global intercommunication phenomena never seen before, providing a non-ending information and relational flow.

In this context, virtual communities were born. Focused on one topic or subject and living around an Internet web address, assorted and geographically spread people are able to interchange points of view, resources, content as well as they also have access to information. This comes to actual non-directed networks, where participants mainly define the behavior, the meaning, the content, the size and the direction of them. Furthermore, with a basic original structure, the relationships, the content and the progress of a network are fully defined by users’ behavior, users’ navigation (passive participation) and users’ contributions (active participation).

Because of this set of factors (online learning birth, online communication raising and behavior of virtual communities) the appropriate initial conditions are set-up for a development of learning networks, with a non-structure and non-predictable evolution and reaction, and focused on sharing and acquiring some specific topic; with no specific method or pre-defined learning flow or table of contents. Cooking, law, medicine, photography, elder people are just a few of the focus points to attract users with similar interests. No more than a free-identification is required to become a member of every target group. Besides a basic structure and a basic set of services, these communities usually don’t count with a pre-defined way of working or any expected behavior and they usually work on associative relations between members and between content items.

After the fast increase of this kind of social associate networks focused on knowledge sharing and the relationships among members, and after a huge presence of assorted resources for almost everyone in the First World, a new user profile is coming up. This new kind of user, meaning a significant group, is concerned by training quality and specific issues on learning and teaching linked to e-platforms. This increasing group of people is claiming structured means and an institutional reaction, one step further than a few well-intentioned but not-too-much-efficient isolated actions.

Topics like content interoperability, pedagogical expressiveness or platform and learning standardization, are recent key issues to get and consolidate a high quality online learning able to provide some answers to the expectations and aims of these virtual communities on informal learning.

This is the context that came up with process standardization, learning structures, conditions and instructions, deriving e-learning specifications and standards. As it happened before in the electric, maritime or oil markets, just to mention a really dynamic few, a specification or a standard looks for developing a common understanding among the several stakeholders involved in a specific topic. In our research, this topic is e-learning and virtual
communities. These stakeholders are students, teachers, managers, content providers, system developers and a large etcetera. The main objective is to create a common working ground of understanding looking for process quality and learning performance instead of exploitation rights, and communication among members and e-learning platforms instead of business proprietary development.

In addition, several virtual communities are focused specifically on e-learning, standardization and interoperability as their intrinsic topic. This means to research and support online learning on standard systems using the standardization itself as a discussion source. For instance, virtual communities based on Moodle (Dougiamas, 2002) will use Moodle to discuss about it, or virtual communities based on IMS Learning Design (IMS, 2003) will work on this specification and they use it to generate content and resources.

**Objectives**

- Define the concept and features of e-learning and the related learning method, to limit the research and describe positive points and challenging issues

- Research the current state of e-learning standards and describe the outstanding projects, applications and tools developed following their recommendations

- Identify and define the features of learning virtual communities and the conceptual model of the related associative network supporting it, to understand and define the system of behavior and progress

- Make a research based on the behavior of informal learning virtual communities on e-learning standardization, as a bound subgroup of this kind of communities, in two ways: a) through a theoretical research, and b) through the design, implementation and execution of several studies carried out to identify and define ways of participation and contribution inside the virtual communities themselves

**Main hypotheses**

Two main hypotheses are supported on this research: 1) Virtual communities on informal e-learning are organized as directed graphs; and b) virtual communities on informal e-learning follow some patterns on participation and behavior that can be identified and bounded, related to face-to-face and online activities

These two first hypotheses derive on a set of specific statements:

1. Informal e-learning virtual communities and information systems based on directed graphs hold a similar organization.

2. Informal e-learning virtual communities support participation through incentive mechanisms based on reward.

3. Informal e-learning virtual communities support online participation through face-to-face thematic meetings.

**Method**

The research is carried out in two independent phases:
- Along the first phase, we restrict the theoretical framework of this research through the definition of every concept in the title: e-learning, standardization and virtual community. Our research also tries to find the similarities in the structure between virtual communities and directed graphs. A detailed report of the current state of the art is also presented together with every part.

- Along the second phase, we carry out three studies (experiment, case study and field study) that demonstrate the initial hypothesis

  The first study consists of an experiment describing the creation, evolution and encouragement of a virtual community (Learning Network for Learning Design, LN4LD) only focused on e-learning standardization. We apply incentive mechanisms to this community, meaning actual running examples of lesson plans based on standards. We also analyze the behavior of the community along several periods and we measure active and passive participation.

  The second study consists of a case study, right after the first one, and it looks into the logs and participation records, both in face-to-face and online activities, it compares the results and the progress of both settings.

  The third study is a field study of a different but related virtual community also focused on e-learning standardization (UNFOLD). Along three face-to-face meetings in 2004 and 2005, several questionnaires were distributed and a number of personal interviews were carried out in selected target group fully focused on this topic. We provide a meaningful sample based on qualitative appreciations of qualified members. At the same time, we control the participation records of the online activity.

  Coming from these three studies we deduce similar patterns and specific behavior from this kind of virtual communities and we get several conclusions that can be extrapolated to other communities, as a consequence of the experimental reports based on the previously defined conceptual framework.

**Conclusions**

*From the theoretical research*

This research thesis is focused on two main streams: a) a theoretical approach to the structure of informal learning virtual communities; and b) a practical analysis of the behavior in these communities. Two selected groups with a high expertise on *e-learning*, both in theoretical background and in practical content, were used to build several practical studies about participation and behavior. Both communities provide members as consumers of resources as long as interested and qualified people in learning process via *Internet*. Since *Internet* was born, and the World Wide Web afterwards, several services are used as a platform to communicate and interchange information and relationships, through, i.e., distribution lists, emails and forums. Also, a number of approaches and initiatives come along all this social evolution. The Open Source movement based on standards is looking like one of the most outstanding, with a fully rich environment on production, productiveness and information. Both in developments of software and operating systems (like Unix, Linux, *Moodle* and others) and in methodological development focused on online learning (*SCORM*, *Dublin Core* Metadata or *IMS Learning Design*, among others) the assorted initiatives on Open Source bring an increasing number of working groups, development of international project and specific examples of implementation. What makes this study group really interesting is that it is formed as a group to interchange knowledge and opinions, but also to share experiences and feed projects. This comes with a creation of active virtual communities on informal learning around every specific topic, becoming an actual engine of it. All this set-up provides significant members inside every community, and also knowledge and some useful experiences to feedback the community itself and each member inside it. Therefore, there is an amazing discussion about virtual communities and *e-learning* with the
real members of these communities; a discussion about a topic with the users and the creators of the topic itself. In this thesis, we work with them and write a detailed report taking into account their opinions and behavior, meaning a fruitful core of the study and an added value to any analysis on any other kind of informal learning virtual community.

In the first part of this thesis, we take the main types of associative networks (is-a, frames and directed graphs) we show that informal learning virtual communities are based on directed graphs consisting of information nodes (members of the network or contributions of the members) and relationships between them (links between contributions or between user contacts). Although there is no explicit hierarchy inside this kind of virtual community, neither in contributions nor in contributors, the most of the activity is focused around the active members, with more direct contributions, but also with more dependent contributions posted after the main line by less active members. Therefore, there is a de facto hierarchy that influences the general activity in the community, although there is no explicit representative of it.

Besides, there is a huge similarity between the structure of a learning network and the structure of metadata. Metadata, as a common usual base along modelling notations, ground the current structure of e-learning specifications. Languages and notations like XML or RDF become the bottom line of the standards studied in this thesis (mainly IMS Learning Design) and they allow translating pedagogical concepts and methodologies from paper and face-to-face lesson plans to e-platforms and virtual/blended units of learning in a very precise, effective and flexible way.

Open Source wave as well as Standards on educational modelling ground and feed informal learning virtual communities as no other, as they discuss about the same topic that they use as a platform for debate and work. This means that users are not merely interested people, but qualified and in-progress training professionals who provide a critical analysis about the topic and the content, as well as the structure, behavior and running of their own community. This is the reason why all theses studies (direct observation, experimentation and reports based on members and communities of practice, personal interviews and appreciations) becomes a consolidated key factor and the next logical step in the research.

From the practical research

In the second half of this thesis, we have worked with two virtual communities (LN4LD and UNFOLD) with two pre-requisites: a) their content is focused on e-learning with standards; b) they are unofficially bounded to professional members, although they are open to anyone interested, as they have been announced and promoted only in professionals circles. These two first requirements make possible: c) to take qualified users with a critical view on the virtual community; d) to provide a very detailed activity report; e) in addition, the author of this thesis has contributed to design and create both communities, getting an in-depth knowledge of both, f) as well as full access to logs, and g) a better knowledge on users’ profile, coming with a high specific selection of the appropriate samples for every practical study.

Along twelve months we have carried out three different studies based on the seven features aforementioned and taking several measurements on users’ behavior.

Study 1. Encouraging participation in a virtual community

Study on participation and incentive mechanisms of a member in a virtual community. There is a difference between passive participation (only lurking and consuming information) and active participation (making contributions, like posting messages or answering or even scoring messages of others). We focus on active participation as active members feed the community and provide diversity and dynamism.
In this first study we have noticed two main mechanisms while contributing to a virtual community: reward (extrinsic motivation) and altruism (intrinsic motivation). In a period of three months we have done some measurements. A special module has been used to store and rank the scores of every user. Our analysis shows how a rewarding system (based on granting special access to reserved information) has encouraged a higher participation and has contributed to increase the participation in the community. Also, once a user has reached the needed threshold to get this access he/she has kept an active participation, answering and scoring postings of other people. Furthermore, once the extra level is got the attitude keeps the same, although the user knows that there is no additional reward waiting for. This response also proves the second motivation (altruism). Taking into account the restricted range of incentive mechanisms (mainly, reward, altruism and positioning in a group), this last one, more based on the establishment of a social contacts network and on personal self-esteem appears as secondary, although some additional psychological research is needed to get a deeper knowledge on this issue.

Study 2. Influence of face-to-face activities on virtual communities

The second study is focused on the influence of face-to-face events on the structure and behavior of a virtual community and on the related online activity. The usual life-cycle in an e-learning network is usually fixed to the platform where it is set-up where only online activities are carried out. However, we want to study if face-to-face events fully related to online activities can influence the online activity and how. Also, this study comes from a partial conclusion after a direct observation of the virtual community, users’ posts and several answers and points of view reflected in a number of online activities (chats, working groups and workshops). We took as positive to carry out a specific study based on face-to-face conferences. Furthermore, we come across with two parallel and complementary reports: the first one focused on the influence of these users on the virtual community, and the second one focused on a direct contact and interaction with selected users, using questionnaires and interview patterns to acquire some knowledge about uses and behavior in the learning network.

Aiming this objective, we made three controls in six months, taking three face-to-face meetings organized and promoted on purpose for members of the sample communities. A number of additional short activities have been carried out in parallel, such presentations, panels, strands and other contributions to external conferences organized, promoted and audited by others and with a different and assorted target group, and just a few minutes of participation, so we cannot considerate them as a part of this study.

This study clearly shows how important is the influence of face-to-face activities on the daily online activity. Log records of these six months show how the virtual community gets a stronger participation, both in number of topics and in amount of contributions.

Although there is a constant activity along the period of study it is right before, during and right after the face-to-face event when the amount of contributions is exponentially increased.

Study 3. Analysis of the behavior of a virtual community through a direct observation of its members

The third and last study is focused on personal interviews and questionnaires to members of virtual communities along the same six months used for the second study and in the same face-to-face conferences. As the participants in these meetings are active members of each virtual community, their contribution to the questionnaires and interviews is highly significant. On their own side, the distributed questionnaires fulfil specific requirements: a) they are filled up completely; b) they are blind; c) there is no crossing out or any difficulty at reading; d) they are fully understandable. Following these guidelines strictly, we have collected a total of 78 questionnaires, becoming a good base to make an analysis, searching for generic topics, behavioral patterns and recurrent constructive critics.
As in the previous study, this current report is restricted to three specific moments where face-to-face conferences took place, leaving apart other external congresses not limited to LN4LD and UNFOLD communities, for the reasons aforementioned. Nevertheless, from these small disregarded contributions, we have got similar conclusions to the ones described as follows.

These results point out the useful and meaningful contribution of face-to-face events to virtual communities. These conferences have a better ratio on time consumption/learning acquired and they facilitate a broader discussion on certain topics of interest. On the opposite, time and user interaction are limited in online activities. Users underline the huge difference between face-to-face and synchronous debates, where there is a continue feedback allowing several discussion lines and opportunities to get a consensus, and online and asynchronous debates, where more time for thinking is possible, although with a lack of quick and warmer contributions. These two aspects are considered as two key features in order to build a collective and solid knowledge.

Most of the users show also a high interest in participating in online activities leading to a direct interaction with other members of the community. Although they don’t see themselves as experts, they are involved in one or several communities of practice with assorted experience in their specific research topics and a general interest in informal learning. As the strong advantages of this kind of learning networks they see: geographical diversity, availability of a high number of assorted resources on communication and information, strong support to own initiatives and economic profitability. However, the participation in online activities is irregular due to time constraints and a medium-low assignation of priority to this kind of activity in the daily working and personal agendas.

The most used communication media in the virtual community are the forums system and the peer-to-peer, peer-to-many interchange of emails, with a small and restricted list of receivers, though. Personal emails provide a stronger shell against critics of others, they allow any kind of clarification and appreciation after posting and they provide an easy access to interesting information through the personal inbox, with no need of visiting any website address on purpose. On the contrary, forums systems allow an only access point to show a full and structured discussion flow by threads, they are not as intrusive as personal emails in the inbox, although they increase the level of exposure. The full communication flow provides a bi-directional semi-duplex channel for every user, where they can act as consumers and providers, at the same time, according to any of the drives researched in the Study 1 in this thesis (Encouraging participation in a virtual community).

A general opinion held for every single user is the need of an appropriate balance between online and face-to-face activities to keep the best research scenario, as both have pros and cons and they complement each other. Although face-to-face events are not compulsory to build and grow an e-learning network, they facilitate and encourage contributions and the interchange of experiences, becoming a really useful and valuable resource by the actual active members.