Collaboration vs. Participation: the Role of Virtual Communities in a Web 2.0 world

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Abstract— **The paper presents a discussion on different ways of interaction and collaboration among users of web applications oriented to learning. We discuss whether the recent "social" applications, such as Facebook™ or MySpace™, follow a truly "collaborative" approach, very common after of the advent of Web 2.0, or a more simply "participatory" one. We will argue that virtual communities, if specifically adapted to life-long learning settings and not generalized to social networks, are more suitable for educational purposes, thus allowing a better use of social network tools like blogs, wikis etc.**

Keywords-component; e-learning, social network, virtual communities, lifelong learning

I. INTRODUCTION

Nowadays, nobody can ignore social networks. Facebook™[1], Myspace™[2], LinkedIN™[3], Youtube™[4] have gained so much popularity, mainly because they allow people to build connection networks with other people in an easy and timely way, to share various kinds of information and to use a set of services like picture sharing, blogs, wikis etc. Nevertheless, borrowing the terminology and approach from psychological sciences, inside social networks users adopt a personal "I" that could be connoted more by an exhibitionist and immature narcissism, rather than a mature personality oriented to cooperation mechanisms. If we also consider the "fashion/emulation" effect combined with a certain technological narcissism for the coolest innovation available on the web, we believe that the many and undeniable positive aspects of social networks (for example, to come into contact with people you lost track of) are often extended to a general positive view on the entire world of social network and collaboration mediated by ICT. In these uncritical opinions, we mostly forget the most critical aspects and, most of all, the complexity of applying "tout court" social networks in certain collaborative/training contexts. In this context, in our opinion, these tools are partially inadequate and unsuitable. Our interest on this topic stems from the design decisions that we had to take in the new version of our virtual community system (VCS), called "On line Communities". This system, that in different versions is operational since 1998, is a virtual community system allowing people to collaborate in virtual spaces called communities, where participants have some (synchronous and asynchronous) services at their disposal to create a collaboration mediated by ICTs. *On Line Communities* was designed, implemented and managed by our research team and it is the technological infrastructure for blended learning project at the Faculty of Economics of the University of Trento, Italy. The system is currently under a reengineering process, with the aim of making it more permeable to "social" and "web 2.0" approaches. This system has been mainly used in educational settings, thus allowing students, teachers, tutors, administrative personnel etc. to collaborate inside a virtual community. So, the metaphor of collaboration, some of the tools available, and the approach of sharing digital artifacts have been the cornerstones of our system. Of course, when social networks came onto the market, the apparent similarities were more than the differences, and most of all social networks introduced the active role of the user in producing contents for the web.The concerns were about how to modify our platform based on the metaphor of virtual learning communities in order to include new services/approaches introduced by social networks: blogs, wikis, picture galleries etc. We are thinking whether the evolution of our system should adopt all the specifications of the web 2.0 world, or adapt and extend them into a CSCL context, as for example the logic of learning communities. This second solution was the most appropriate to foster a greater collaboration among the users of the system, unlike the easier participation.

II. VIRTUAL COMMUNITIES, E-LEARNING, COLLABORATION AND WEB 2.0

E-Learning systems have shown to be of great utility when used in conjunction with other forms of more traditional teaching: in this case we talk of *blended* e-learning[5][6], meaning situations in which the e-Learning system is used as a virtual extension of the traditional didactic activities based on frontal lectures. In these cases the e-Learning systems create implicitly and explicitly virtual learning communities consisting of students, tutors and teachers. Concerning this matter the definition of Jenny Preece about on-line communities seems appropriate [7].

The sharing and transmission of knowledge among the various users are two of the possible aims of VC. In the measure in which one learning community contributes to the pursuit of these two specific objectives it can be called a learning community or, even better, a "Virtual Learning Community". The third issue that characterizes a virtual community, in the approach that we are adopting, is

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connected to the cooperation among its participants. Our work is based on the concept of VCs adopted by Lèvi [8] [9] [10]: groups of people who are in contact because they share some kinds of knowledge and interest, corresponding with each other using interconnected computers in a cooperation process. This approach differs from that adopted by other authors, such as Beamish [11], that considers the virtual community as a group of people who communicate using *computer mediated communication* tools. The participant of these communities are physically in different places but however they can exchange information on common interest in a communitarian way. Rheingold [12] considers VCs as emerging social phenomena. More relevant to us is the approach of Jones [13] [14] that separates conceptually the technological structure of VCs (named *virtual settlement*) from the community itself. In the project presented, we have a double role: we are both designers and developers of the technological infrastructure, but on the other hand we are teachers and administrators. In other words, we are at the same time managers and users of the platform. We therefore understand the need to separate what technologically the platform can do from how customers use it. As stated, one of the starting points of this approach concerns the process of cooperation and exchange inside a VC. The concept of VC could be associated to what in this moment is commonly defined as Web2.0. The term Web2.0 [15] was coined following a reflexion on the evolution of the Web and the self-selection of the Web Applications after the collapse of dot.com companies [16]. In any case, "Web 2.0" is not the definition of a neo-digital structure, but just a label that identifies the evolution of the structure of the pre-existing global net in the "social" sense. In such context the user assumes the active role both as author and a manipulator of the contents of others. It is not a new concept of web but a new way of using the web. We permeated our paradigm of VC, and its implication in e-learning applications, with the collaborative aspects of web 2.0. We therefore integrated in our platform not only the participatory level but especially the collaboration among users of our system, removing those aspects of social network platforms that, in our opinion, are useless if not harmful in educational settings.

Here is a list of main problems we believe web 2.0 communities have, and that we are able to overcome thanks to the paradigm of virtual communities.

1. web 2.0 communities (w2.0c) have generally no specific mission: the interest of w2.0c is to aggregate as many persons as possible, while VC objective is to aggregate just those people *interested in the community scope;*
2. w2.0c have no tools specifically designed for e-learning activities, like SCORM Learning Object tools, Video/webcast, agenda, whiteboards, questionnaires, polls, personal documents, exams, lists, mobile learning tools, shared presentations;
3. w2.0c have no inheritance mechanisms for communities, there is no hierarchy that ties different communities in one hierarchy. Consequently, there is no possibility of inheriting services from parents communities;
4. w2.0c have no sophisticated and specialized permissions on the services that they offer;
5. as one of the many corollaries of point 3 & 4, w2.0c have no inheritance mechanism for permissions;
6. users have very simple roles and permissions schemas and cannot play different roles in the same community;
7. in web 2.0, the structure of communities is flat and therefore no "propagation" tools can be implemented (ex., send email to all member of children communities).

The general approach of social network "communities" (if we could call them in this way, apart from media hype) is clearly "the person creates his/her list of contacts": this is a community. In our "private" VC system, the community comes before the individuals that are proactive and free in subscribing to communities. Here the person has his/her own personal space, in which one of the services supplied is the list of communities where the person decided to enroll.

III. On Line Communities

In 1999 the Faculty of Economics of the University of Trento decided to have a software system able to enrich its traditional teaching as an extension on the Web. The first aim was to settle the increasing number of teachers' personal web pages into a single platform. To pursue this result it was necessary to have a Learning Management System (LMS), capable of supplying a virtual environment able to support the educational courses of the Faculty. The resulting system started to function from the second half of 1999 and during this period, the system counted approximately 1,200,000 accesses and online satisfaction surveys showed a very high level of user satisfaction. Being a quite traditional LMS, in 2002 some observation convinced us to redesign the software:

- Models of teaching / learning (such as learning by problems, learning by projects, cooperative learning and their combinations) can hardly be connected to the *e-Course*, especially when the software directly represents the metaphor of traditional courses;
- The needs for cooperation within the academic environments is extending to all the activities that constitute the context in which didactic takes place, not just to the specific "lecture";
- The organizational didactic scenario changed with new regulations made by academic institutions, and these changes inevitably reflected on the LMS functionalities. It is important to note that these types of changes are usually the result of a debate process in which both elements of cooperation and negotiation interact;
- The didactics of an university are not built only as a set of studies and tests, but these activities are inevitably intertwined with the university's organization and its information system;

- In an academic context, not everything concerning teaching: for example, the entire faculty is more than a container of degree courses and a degree course is more than a container of lessons.

To answer these (and other) needs, another founding paradigm was need, with at least three basic characteristics:

1. Generalization respect to educational settings;
2. suitability to support cooperation processes;
3. capability of modelling and preserving organizational structure and roles of the educational institution.

This new way of conceiving the collaboration platform was found in the concept of virtual community. The system that arose, called *On Line Communities*, was born in 2003 and runs in February 2005.The collaborative approach [17][18] is a very strong incentive for us to develop On Line Communities; the philosophy that led us to rebuild the system is to allow the exchange of users' experiences within a virtual environment, and within well-defined areas known as "communities". This approach is very different, for example, from the traditional ones available in other LMSs. Our work started before the boom of web 2.0 [16], that has now invaded and changed the way people think and build services on the net. Each Community in our system offers many services to registered users that have different roles/permissions inside the community; the services are general applications that enable the users to communicate in synchronous and asynchronous way, to publish contents, to exchange files, to coordinate events, etc. The services offered by a community are activated by a manager of the community according to the needs, and the users of a community can use them with different rights and duties; in particular the rights and duties in the community are different from rights/duties for the services.

The communities hosted in the system can be aggregated into larger structures with a hierarchic mechanisms and infinite nesting levels. The communities can also be aggregated into larger communities disregarding the possible position of the hierarchical structure, in a sort of "transversal" link that overcomes the concept of "hierarchy" and follows the idea of "mesh". Thanks to these features, a complex but powerful mechanism of propagation of services/roles/permissions/ rights/duties can be set among communities of the same branch or of different branches.All users are recognized by the system and by the community: people external to the system can see public part of the community (services, material, contents etc.) only if managers allow this (ex. a blog of one community could be opened to external contributions). Also the services can take advantage of the "mesh" structure of On Line Communities to provide some interesting though non-existing features, like "transversal wikis", or "merged blogs". One blog, in fact, can be the "fusion" of all the blogs of children communities, or a wiki can take the definition transversally from all wikis in related communities. Last but not least, a VC is the container for collaboration processes not limited to educational activities, but for any collaboration activity needed in an organization (e.g. research teams, recreation groups, friends, meetings, conferences, secretariats, board of directors, colleagues, next social dinner).

The core of the application is composed by some abstract entities, i.e., VCs as aggregation of people to which some communication services are available in order to obtain certain objectives. With this approach, it could be possible to represent all the hierarchical relationships between different types of educational communities (such as Faculties, Didactic Paths, Master Degrees, Courses, etc.), as any other relationship among communities inside organizations. This is also a new area of business for VC platforms: can we imagine a research group of a large international corporate to share latest documents of their top-secret product on Facebook™?

IV. E-LEARNING AND ON LINE COMMUNITIES IN A MORE SOCIAL SENSE

The ratio normally beyond e-learning systems is based on the application of the real world into the virtual one. If we look at some examples of LMSs, like Moodle™ or Blackboard™, we find a translation of the physical course structures into the virtual space; they become e-courses. This logic, however, creates a sort of enclosure that limits the possibilities of the learner to participate actively in the educational processes. For example, think about a lecture conducted by a teacher in front of a classroom; in this case, it is the skills of the teacher that could improve the collaboration between students, creating an active and collaborative environment. Not all the subjects, however, allow that level of interaction. What happens very often is that students organize meetings after the lecture, making collaborative moments to confront the issues explained during the lesson. typical examples are study groups, where it is possible to exchange experiences, doubts and difficulties on topics addressed during the lecture. This collaborative approach was a strong incentive for us in developing On Line Communities. This approach is very different, for example, from traditional LMS such as those cited above.

On the other side, the "social" approach adopted by Facebook™, LinkedIn™, MySpace™, YouTube™ is very interesting, and according to the latest statistics, it involves an increasing number of web users [19]. Such services, however, on one side facilitate the bi-directional communication and the exchange of experiences between users, on the other side can hardly be applied *"tout court"* to e-learning experiences. For example, students will probably rarely use a blog platform inside the "classroom": in principle, a blog is a personal diary, not something related to my specific experience in that specific course. Of course, web 2.0 tools are very eclectic: a blog can be used as the classroom registry where annotating the lecture's topics. If we finally add to blog's posts the capability of associating uploaded files, we can have a very simple but efficient LMS with just one service. Quite strange, but we are not surprised

to see teachers that use their private blog for coordinating and distributing educational material. So, forcing web 2.0 services to become e-learning services in an e-learning platform is a hazardous operation: the result could be an evident loss of quality, institutional misalignment, confusion, workarounds and possibly users' dissatisfaction.

According to some recent statistics [20], the majority of users who use social networks services are concentrating on the well known *"peoplesurfing"*: navigate into the friends' profiles, see pictures, personal information, etc. Voyeurism and curiosity behind the success of these applications? This study seems to suggest this scenario, but what interests us is that they are building a private community of people around their own interest: exactly the definition of "virtual community", and not the definition of "classroom". These statistics show the presence of a large number of users that are more interested to observe their friends' profiles or show their profiles to the others users. This behavior can be defined as "participatory"; users in many cases consider the registration into social network services more "to be" and the inclusion into an environment that at this time represents a real *must*. It is difficult to adopt the social networking approach to a genuine collaboration between users; in these environments the participants can exchange videos, pictures and links, but the final purpose is not the achievement of a common objective. It is more like a "game". The differences here with educational settings are obvious. We are also aware of the phenomenon emerging from friends' social network [21]; it is true that the action of adding a person to the friends' list requires an approval, but it is also true that a user can see at any moment the people connected to his/her friends. This opportunity on one hand could be positive, but on the other can be critical within a learning context (within a university, but also within business contexts). Once again, our virtual community approach solves this problem with this "self reputation" capability of moderated VCs. A user of our system that enters into a virtual community is authorized by the community manager, and from that moment the person is in contact automatically with the people inside the community. This is the pillar of the virtual community: I'm in the community because I share the scope of the community. So I don't have to declare, accept, or manage my contacts inside that community, and I'll never be connected to a friend of a friend of a friend. Of course, On Line Communities allows the users to manage friends' lists, but this is different from managing community members. The differences between "friends" and "community members" are very clear, and the security mechanisms on roles/permissions/rights/services allows the user to manage these two different concepts. A friend is something personal, a community member is in my list because with the same scope *within that community:* outside that community, it is another story. Given that the increase of the social interactions is not a negative aspect, but the risks coming from the direct use of Facebook's approach into an environment with different aims (something like "I'm a friend of a friend who was the friend of my friend….) is very high.

V. Collaborative Services in On Line Communities

From the last remarks and in particular those regarding the evolution of On Line Communities towards a more collaborative and web 2.0-oriented platform, our team developed a first set of services characterized by a high degree of users' cooperation. In this section we will briefly present, for reasons of space, only one of these services, and in particular the "personal diary" of the user. As described above On Line Communities is a system used in different organizations; Universities, High Schools that preceding the university's path, public companies (and especially the Autonomous Province of Trento, the government and administration of our territory). The metaphor of VCs is sufficiently general to model different organizational contexts; at the same time, the use of the application in different context shows that different educational organizations can have different information needs.

What is described here as "Personal Diary" is something more than a blog. As a Blog, the Personal Diary has the progression of time as building paradigm. As a Blog, it should provide mechanisms for content sharing (RSS, API, etc.). and a customizable interface (GUI aspects, content interface, etc.). The differences are in the purposes, functionalities and roles of each user. Definitely the difference lies in the organizational environment in which the diary is used. The first observation concerns the actors involved in the application. While in a social network context, all players have generally equal rights, in an educational space the equality does not exist. On Line Communities has already a set of functions that are able to manage user's rights/duties in a sophisticated way, in relation to their role in a specific community; this characteristic allows also the rights management of the "Personal Diary" service. A change of the didactical context, for example from the university to the high school, could create the problem of "legal age", which forced us to rethink the users' rights and permissions. In fact, inside On Line Communities all the participants are adults and recognized, so it is perfectly legal to provide their personal diaries with content sharing services. In a different context, like for example high schools, a service of this nature is not legally possible, unless we involve the legal representatives (e.g. parents) into the community. A second question concerns the rationale for writing a diary. In academic contexts, a personal diary is a tool used by a teacher to keep track of all topics covered during a course. It is possible to improve the service by downloading Learning Objects (LO) enriched with notes, comments, reports of websites and readings. It is essential that the diary written by a teacher is useful to the work of students. In a high school, the context is more prescriptive. The usual claim is that students study at home

what was discussed in the classroom. Normally it is required to perform a documented work, i.e., home works. The Personal Diary of a teacher should then be enriched with the assignments function. A third question concerns the share level of the personal diary. In an academic context, a professor who uses the diary as a record of his/her activities normally has no cooperation ties with other professors. In high schools, the things are quite different: didactical activities are organized in different topics involving different teachers. In this context, the diary should be shared with the other teachers that have to collaborate on the same material. The reasons for this need are at least two: determining the students' home workload and coordinate the topics where it is useful and possible. Further differences can also highlighted from the roles held within the different experiences; while during the high school only "teacher", "student", and "parent" role exist, academic settings have more nuances, as the presence of different types of students (regular students, workers, Phd students, Erasmus[1] students, etc.), professors (lecturer and tutor, contract professor) and so on. These differences make the "Personal Diary" a service full of many facets. Fortunately, the autonomous development and management of the system allows us to implement services that can be adapted in a more "custom way" to the reality in which we are concentrating than other types of educational software. Personal Diary is exactly one of these cases: the main goal of this service is to allow to each user to manage a personal space inside the system where to annotate lecture notes, where to upload personal documents (slides, exercises etc.), being able to track activities performed by students. On the other side, the teacher has the possibility to create a personal diary connected to one community, inside which to be able to record the activities performed together with the respective material. The combination of these two approaches can be interesting and allowed us to develop new functionalities to our platform:

- Managing delivery and execution of tests / homework
- Managing collaboration among different users of the community during the execution of homework
- Verifying results of homework supplied to users, proceeding to the evaluation

In this context, particularly useful is the service that allows different collaboration services among users of a community, aimed to complete an assignment and combined with the inheritance mechanisms available in the platform. For example, different projects are assigned to different groups (sub-communities) of the course community. The different workgroups can organize their tasks inside the system, subdividing the tasks to fulfill and then reporting within the parent community. The personal diary service, thanks to inheritance and permissions, can aggregate the different personal diaries of the various subgroups, thus providing an unified view of material / activities to the responsible of the parent community.

[1] The ERASMUS programme, or *European Region Action Scheme for the Mobility of University Students*, is a European student exchange programme established in 1987.

VI. Conclusion

The paper discusses the role that social networks can play in educational settings, specifically elements that transform, in our opinion, these virtual spaces in non-suitable environments for e-learning. For this, a different metaphor is needed between typical LMS, bonded to the "classroom" metaphor, and social networks, where the main objective of participants are different from learning. The paper presents the peculiarities of a "built-from-scratch" virtual community system, where some features are specifically devoted to collaboration (thus overcoming main problems found in web 2.0 tools), and other features are totally new and only feasible thanks to specific characteristics of our platform, like inheritance, polymorphism, permissions and roles granularity.

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