Puntoedu: a blended e-learning model

Elena Mosa *

INDIRE, National Documentation Institute for Innovation and Education Research, via M.Buonarroti 10, 50122 Firenze, Italy

In this short report we present the model of blended learning adopted by INDIRE in 2001 for the training of teaching personnel and, following its evolution, we examine its phases and its main features.

Keywords: learning environment; social system; cooperation; blended model

1. Theoretical background: communities of teachers interacting between face-to-face settings and virtual environments

According to the ancient philosopher Aristotle, "man is a social being" and, as such, needs to compare himself with his equals in order to better understand himself. Whether virtual or real, people gather in communities for a basic need: to share common views and ideas. However, the sociological root of this need is not the main focus of this study; generally speaking, being part of a community can be the answer to different needs and motivations, therefore we may have as many groups as aims. Our focus here is mainly on virtual communities with a didactical aim. In the graph below, Trentin [1] represents the types of on-line communities according to their dimensions (the whole web or a part of it) and the cohesive level (high or low, depending on the extension).

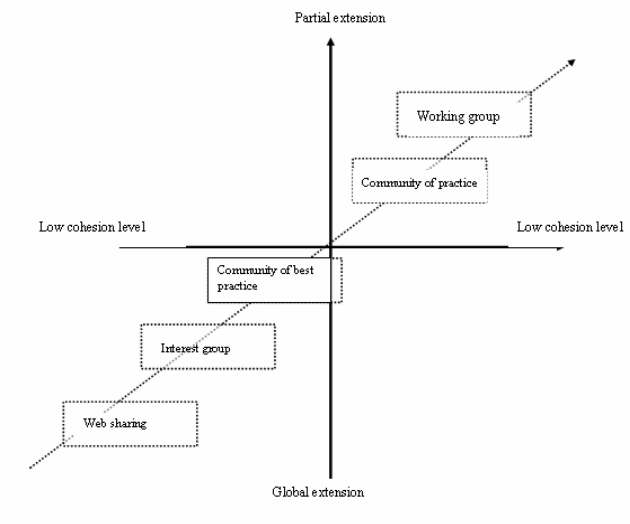

Fig.1 Trentin's graph [1] on various kinds of on- line teacher communities; reformulation of a graph available at: http://www.knexsis.com

* Corresponding author: e-mail: e.mosa@indire.it , Phone: +39 055 23 80 412

He distinguishes five kinds of on-line communities:

- **Working group** – formal aggregation with a specific aim, deadlines and tasks. Cohesion and communication fluxes are intense, geographical proximity is needed.
- **Community of practice** – spontaneous aggregation of a group whose main aim is to share knowledge and ideas among a community of peers. Some meetings might be useful to feed the social network and the cohesion level.
- **Community of best practice** – the degree of collaboration is lower since the group is not intended to produce, but only to share practices and to find, among these, the best ones. This kind of group has a low/medium cohesion level, and does not require physical meetings, therefore the extension is broader.
- **Interest group** – informal aggregation based on the idea of sharing information on a specific topic and creating a network of people with the same interests. High geographical extension, low cohesive level.
- **Web sharing** – not a proper community, but a site where people share documents and files rather than communicate. High geographical extension, very low cohesion level.

The first definitions of virtual groups were mainly based on the idea of enunciative interaction (a group can demonstrate its existence when it communicates), then other, more complex definitions of groups came along and introduced the idea of social identity.
Tajfel and Turner [2] maintain that the perception of one or more people sharing some kind of social identity is the basic element for the existence of that group. The focus here is more orientated towards the psychological aspects, on the sense of being together ("togetherness") and a shared "we" ("weness"). We might assume, therefore, that a virtual group is composed of people who perceive themselves as members of the community and, working with an electronic medium, experience an enunciative co-presence.
This definition gradually leads to the constructivist theories that are based on the idea that ICT can foster the creation of Communities of Practice [3] and that knowledge is not a solipsistic process but, rather, a wider phenomenon that entails starting from everyday life with its messages, social networks, newspapers and any other formal and informal suggestion [4]. Thus learning becomes a social practice based on sharing, discussion and collaboration, actions of a community that shares rules and goals among its members.

2. PuntoEdu, the history of a blended learning model

The "PuntoEdu" model is based upon the concept of community and sharing and embraces, at different degrees, any of Trentin's virtual groups described above. It was created to answer the formative requirements of school education, and to bring Italian teachers out of their usual isolation. PuntoEdu is therefore a site where teachers can learn, share and exchange didactic practices, and where they can get in touch with other teachers from every part of Italy who, after having completed their training, continue to interact on-line, forming real communities of practice. Using a blended learning environment enables them to reach another important aim: introducing innovative elements with a conscious use of ICT in the classroom, with students, thus eliminating the digital divide, the generation gap which keeps students and teachers apart. Upon these premises and on behalf of the Ministry of Education INDIRE has planned and implemented in Italy the e-learning blended training model Puntoedu which involved 60,000 newly-

employed school teachers in the year 2001/2002; since then the model has been upgraded and is currently in use in the training on ICT involving 182,000 teachers [5].

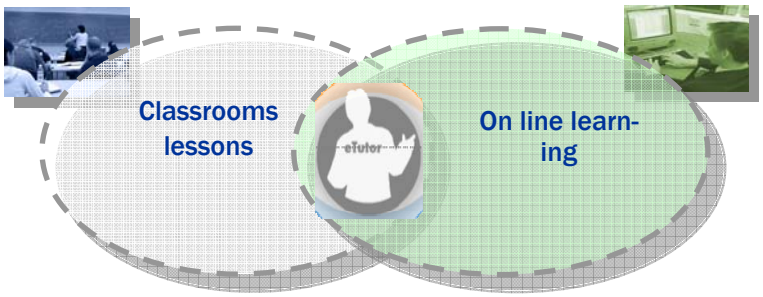

Fig.2 A representation of the blended model and the role of the e-tutor, "human interface" between in class lessons and on line learning.

The figures of Puntoedu: more than 350,000 school teachers enrolled in various courses, hundreds of learning objects created and exchanged, thousands of forums and virtual classes held. Puntoedu is "a social system that focuses on the continuous development of knowledge and abilities and their certification, in a specific domain" [6], an environment based on the learning-by-doing concept in which the activities, in spite of the download of materials, are the focus. The learning objects offered are numerous and enable teachers to choose the best didactic strategy for their own cognitive paradigms: either webquest or simulation, study of a case, didactic route or problem solving. Puntoedu uses an integrated e-learning method: on-line learning and classroom lessons together in a single course of study. The result is a total, diversified and personalized training geared toward the true didactic and professional needs of teachers. The model suggested from the beginning entailed some meetings, integrated in the course. Integration is "in presence". The model cannot be considered blended if some "in presence" activities are not connected with the rest. The tutor plays an important role in the Puntoedu method since he or she supports the student by helping him or her to become orientated and to plan their course of study. The tutor is, therefore, very important, especially in the presence of dual-mode models, which are based on the double dimension of presence-distance; the tutor avoids the separation between "in presence" and on-line training. As a matter of fact, the environment is designed to permit the personalization of the courses by taking the prior abilities of teachers into account. This confirms the characteristic of conferring rather than merely "distributing" knowledge. The tutor supervises the interactions which develop in the virtual classroom, an environment which creates continuity with the real classroom, sharing their ongoing training, but at the same time respecting the differences between individual training needs.

The virtual classroom is equipped with a webforum, a chat and a board where the tutor highlights the deadlines and news of any kind. A credit system guarantees the flexibility of the study plan and the certification of activities completed by way of a "portfolio". The focus on teacher's methodological education rather than on didactic content or materials is just one of Puntoedu's unique characteristics. Puntoedu's method and structure result in a collaborative environment in which teachers can communicate, share work and research experiences, compare notes and discuss didactic matters with colleagues and experts. Those enrolled in Puntoedu are not merely students: they play an active role by helping, among other things, to "fuel the system". Specific functions of knowledge management and community situations (forums, virtual classes...) are geared toward the representation, the proposal and the critical analysis of the knowledge attained. The activities are many and varied: synchronized and non-synchronized, individual and group, free and guided, spontaneous and organized focus groups. It is possible to further examine a topic by discussing it with others in the subject forums where it is possible to consult experts, such as professional researchers and university professors, regarding more complex or

technical matters and problems. PuntoEdu is based on a blended model because it is in the mixture of class lessons and on-line activities that it finds its strengths, because it changes the old teacher-centred training model and supports teachers in their daily school activities by offering them the opportunity to familiarize themselves with ICT.

2.1 Towards a more collaborative approach: Edulab

PuntoEdu is an open, flexible model and responds to the needs of its trainees. The monitoring carried out by the main Italian universities on the results obtained with this type of activity has demonstrated that, as the school became more aware of ICT, it was necessary to adapt the model to a new consciousness. Therefore, INDIRE has started, in addition to the PuntoEdu model which is aimed at thousands of people, some innovative elements aimed at smaller groups which learn on-line (1,500 to 2,000 teachers). Along these lines, the blended model adopted has now evolved, becoming more explicitly collaboration-oriented, providing small virtual labs (called "Edulab"), which are task-driven and based on the idea of a cohesive on-line group working as peers and supervised by an e-tutor.
The difference between virtual classes and Edulab, apart from the possibilities of interaction, lies in the duties of the supervising tutor: in the former he or she facilitates learning, in the latter they are also experts on the subject which is being taught. Furthermore, the virtual class is mainly dedicated to discussion and sharing, while Edulab focuses more on collaborative planning of new didactic units which will integrate the ones already offered on-line.
Edulab is equipped with many interaction and communication opportunities, such as:

- web forum (crucial areas for knowledge building)
- textual chat (useful for immediate interaction and also social cohesive processes)
- video and audio conferencing tools (to promote collaboration and social cohesion)
- whiteboard (useful tool to create flowcharts together or share a text. Ideal for brainstorming)
- file sharing (to store the work produced; useful in showing the step-by-step growth and coming together of the community)
- computer screen sharing (useful for broadcasting files stored locally or for guiding other participants in the web)
- wiki (to produce a collaborative hypertext)
- blog (to build the "history" of the learning process)

According to the philosophy of these labs, both the process and the product are important, since they might be shared with the totality of the people in the virtual environment, in order to make people feel motivated and part of a larger peer community. The tutor is responsible for the fluxes of interactions occurring in these labs, he or she is in charge of preparing the "storyboard" of interactions designing the collaborative patterns according to constructivist theories and collaborative models (Jigsaw, Co-op-Co-op, Circles of Learning, Group investigation...).

3. Case studies: PuntoEdu Neoassunti and PuntoEdu Apprendimenti di Base

3.1 PuntoEdu Neoassunti

PuntoEdu Neoassunti is a blended learning environment aimed at hosting the interaction of thousands of teachers (60,000 in 2001, 14,000 in 2006) who must carry out training to obtain a teaching qualification. It is open to teachers of all
school levels and subjects who, under the guidance of the tutor, explore and surf the environment, choosing among the various activities on offer, personalizing their own training programme and putting into practice the method of "learning by doing".

The teaching plan consists of 40 hours of training divided as follows: 25 on-line and 15 "in presence" (generally divided into three meetings of five hours each). This environment echoes the training model described in paragraph 2.

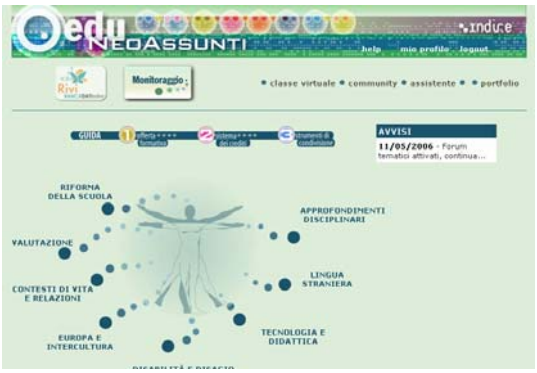

Fig.3 The home page of the learning environment "PuntoEdu" Neoassunti

Fig.4 Examples of activities (learning objects) matching learning objectives in "PuntoEdu" Neoassunti

"Evaluation by the users of Puntoedu Neoassunti"

From a survey carried out by CEPAD-Università Cattolica di Milano, we learn that over 90% of the teachers consider the course to have been a positive experience; 60% say that they have used some of the resources suggested by the course with their pupils; and 95% intend to use these resources in the future.

97.26% of the sample interviewed say that the on-line training environment should be kept open and continue to be updated; 89.35% believe that it would be useful to repeat e-learning during their professional career; and 97.42% would like to extend the course to all teachers.

3.2 PuntoEdu Apprendimenti di Base

This environment echoes the training model centred on collaborative dynamics (para.2.1) and was planned for teachers of Italian, Mathematics and Science, subjects that have proved to be weak in Italian students, according to the latest OECD study [7].

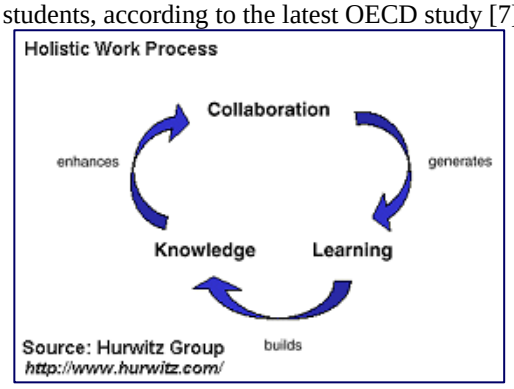

Fig.5 The circular flow of the knowledge building process

This learning environment represents an evolution of the Puntoedu model since the focus is more on collaboration rather than on learning. The student is no longer invited to send an individual project to the tutor, but is involved in more complex tasks. Together with his or her companions, they are asked to work together, according to cooperative learning strategies and under the guidance of a tutor, with the aim of producing integration of the learning material which is already published in this environment. Thus a circular flow of knowledge is created [fig.n.5] and the teachers are involved in an editorial project which will increase the knowledge base for those who will follow the course in the future.

Thus the motivation is increased and positive interdependence dynamics are triggered among the members of the collaborative groups.

4. Conclusions

We believe that the evolution of new technologies must proceed simultaneously with research on education in this sector; informatic solutions must be a support to didactics and be at the service of the requirements of training. That is why the INDIRE learning environments are developed ad hoc and can adapt themselves to the needs and aims of training.
The monitoring carried out on the training offered by PuntoEdu (for a complete list of the courses now being held and the ones already completed, see http://puntoedu.indire.it/) shows a high level of satisfaction and application to real school teaching:

- **Application in school classes**

40.96% of the teachers say that they have successfully used at least one laboratory activity in their classroom teaching, 23.44% of them with sufficient results. 22.68% have not done so for reasons of time. Furthermore, from the survey responses we see how this training has helped the teachers to improve their teaching technique: 42.02% gave from 6 – 5 points, 49.96% gave 4-3 and 8.02% gave 2-1 (on a scale where 1= no satisfaction and 6 = full satisfaction).

- **The levels of satisfaction**

The final questionnaires filled in by the users show a positive opinion of the experience of training; 93.21% of the users interviewed would in fact repeat the experience. 61.18% of the answers given by the teachers is on the positive side, on a scale where 1= no satisfaction and 6 = full satisfaction. As regards the integrated model of training, 55.2% of the teachers are satisfied, only 4.5% are not.

In particular, the effectiveness of the whole experience of training face-to-face the didactical aims, was valued in a thoroughly positive way by 44% of the people interviewed and in a positive way by 38%.

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