This paper presents a research and training project on the use of ICTs in education in an inclusive perspective; in particular, the project focuses on the online learning environment that supported this training course and which involved in-service teachers of the kindergarten, primary and secondary levels of schools taking part in the research-action project named “Didattica inclusiva e nativi digitali” (Inclusive teaching and digital natives) carried out in the region of Umbria (Italy). The training was the result of laboratories and meetings merged with the realization of an online environment as a space for sharing and working open to all participants in the project; it also allowed participants to communicate, share materials and tools, document and reflect on the project development.

KEYWORDS: Higher Education, Personal Knowledge Management, Digital Competence, Lifelong Learning, Research and Information Management.

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1. Teacher training on the ICTs use for an inclusive teaching

The teacher training should be planned as a form of life-long learning and promote the possibility of matching different educational methods aiming to obtain open-minded teachers. From this point of view, the concept of education is to be changed: the traditional model, mainly transmissive and repetitive, characterized by a limited capacity of motivating and involving teachers in their work (Cerini, 2000), is to be overcome, while a model based on social constructivism, guiding adult education is to be preferred (Jonassen, 1994). In particular, a deeper ICT and e-learning-based culture is to be promoted, being aware that it will not substitute the relations existing in the classroom, but rather match them with the online ones. ICT allow indeed more participating and cooperative activities difficult to be carried out in the classroom only.

Taking into consideration the international recommendations on the matter, one of the school’s main objectives is leading students to consciously and critically use ICT; therefore, theoretical and in-service teacher professional development courses are to be planned and implemented in the perspective of life-long learning. They will enable teachers to directly experiment online environments and promote personal researches on the possible applications of ICT to the schooling process.

Inclusive teaching has a student-centered perspective, promotes the development of explicit and implicit resources and potentialities in each pupil and enhances them within the group. It requires a careful interpretation of the educational needs of each and the potential for learning and constructing a learning environment (Rossi, 2009) in which pupils and teachers can experience a favourable relational climate, a social and collaborative approach to the knowledge and a recognition and an enhancement of personal skills, even through the use of multiple languages (Booth & Ainscow, 2008).

The role of ICTs as privileged tools in supporting and enhancing social inclusion has been strongly stressed. Technology can indeed amplify the capacity and the potential in the subject and allow new processes of learning and communication strategies using different languages and strategies, all of them important from the point of view of education.

Therefore, teacher has to get information, knowledge and operational skills on new technologies taking into consideration the students’ different functional needs as well as the most effective methods to choose and use them effectively when teaching, that is in an activity intentionally designed and constantly supported by a thoughtful approach.

It is also urgent to find methods and strategies able to promote in all teachers specific training aiming not only at increasing knowledge or at developing specific skills, but also at getting skills aimed at a conscious use of these resources when teaching.

Teachers are therefore requested to get these multimedia and technology skills. They provide for a level of literacy for the management of online learning environments, the design and construction of hypertext and multimedia products, as well as the basic elements of programming. All these factors, anyway, have to be accompanied by a new cultural approach, that includes awareness of
the changes introduced by the new media in education and in the process of teaching/learning, and a new approach to the teaching/learning that requires the ability to use new media as communication resources for teaching.

Special attention should be paid to the methodology that is adopted in training: it is very important that teachers have the possibility of directly learning new technologies, that is working on it, comparing their findings and cooperating with others; therefore laboratory activities in which, in small groups, they can experience different media, designing and realizing small products using various languages and technological tools, holding and processing fears, anxieties and defenses that may occur in graduates not used to new technologies are to be privileged (Falcinelli & Laici, 2009).

Also the training should be characterized as an analysis of teaching that allows to know and reflect on relationship between young people and multimedia and how, moving from that experience, design and implement meaningful and culturally relevant educational activities. Knowing and understanding different media and technologies should therefore be merged with a psycho-pedagogical and didactic competence. Bridget Somekh (an English expert in education), from the perspective of research-action (Somekh & Zeichnerb, 2009), suggests three basic strategies to be adopted in teacher training concerning new technologies: 1) the theoretical knowledge must be accompanied by a strong operational expertise; 2) the digital competence is to be learned through experiencing it directly in teaching in the classroom; 3) it is necessary that the practical work, being experimental, is to be accompanied by a collective discussion and reflection on practice supported by some meeting with external experts in order to identify, analyze and face difficulties and problems of various kinds that may occur in teaching (Ferri, 2008).

It should be also explored the possibility for the teacher to document and reconstruct the numerous occasions both formal and informal training in a portfolio of skills that allows you to activate processes of reflection and self-evaluation processes all the more significant if realized in educational networks among teachers, also in connection with the university, which allow the sharing of experiences and activate pathways of research and reflection on their own practices, in order to validate them and make them real element of innovation in schools.

2. Presentation of the project

The action-research project named “Inclusive teaching and digital natives” has been designed to test and support innovative teaching that, through the use of ICTs, enables pupils to develop and implement the key competences foreseen in the student’s profile at the end of the first order of school. The project was funded by the School Office of the Umbrian region and availed itself of the collaboration of two nodal points of the Umbrian school: the “De Filis” multilevel school of Terni and the “Birago” multilevel school of Passignano sul Trasimeno (Perugia).

After an initial phase of dissemination and organization of the project (November-December 2012) organized by the two nodal points, involving 65 schools in Umbria, a teacher training was organized (December 2012-May 2013).
The training was articulated in different phases: a four hour workshop on the use of the white board taught by experienced teachers (tutors and co-tutors), a three hour seminar with the help of university professors and an advanced training, always taught by experienced teachers, in form of a course on the experiences carried out within the Cl@ssi 2.0 project and other innovative projects that allowed to explore teaching methodologies and tools for observation and assessment. The total duration of the teacher training was six laboratory hours and ten hours spent in a special online environment, where experienced teachers have also taken on the role of online tutor. The training was then carried out according to a model blending traditional (workshops and seminars) and online (Moodle) methods.

Therefore, the involved schools designed a project by defining the topic and the classes involved in the research, prepared the research tools, monitored tutors and co-tutors both online and in the school and carried out the action-research in the classrooms.

Finally a phase of action-research was organized in each school; it included assessment meetings, monitoring, sharing of tools and methods with tutors and co-tutors, accessing the online environment for sharing, creation and redefinition of the teaching and project tools (wikis, blogs, databases), with the tutor’s and co-tutors’ support in the classrooms.

The project was completed May 20, 2013 and a seminar at regional level disseminated the initiative.

3. Designing of the online environment

The project foresaw the creation of an online environment (www.didatticainclusivaumbria.it) thought as a space for sharing and working open to all participants in the project and allowing stakeholders to communicate, exchange materials and tools, ideas and information, and monitor the initiative.

The Learning Content Management System (LCMS) chosen for the implementation of the platform was the open source Moodle (version 1.9), distributed under the GNU/GPL license, OSI (Open Source Initiative) certified, particularly open and flexible and supported by a wide international community who constantly shares updates, forms, information resources and educational activities.

In January 2013 administrator (researcher in the field of ICTs and school) stated the general guidelines for the environment design, sharing them with the school managers of the schools involved in the project.

The online environment has been designed with the following objectives:

- to develop and disseminate the training activities both in presence and through an online environment;
- to promote opportunities for communication, discussion and reflection among tutors, co-tutors, training teachers and other stakeholders, for the necessary scaffolding;
- to activate spaces for sharing documents and materials/activities produced by tutors and training teachers;
- to enhance exchanges, interactions and sharing of the materials produced among the training teachers;
– to allow reflection and analysis on the foreseen teaching tools, the prepared projects and the processes in progress;
– to promote the formation of learning and practice communities as an element of innovation in teacher training within a networks of schools.

Moodle was then thought of as an environment able to promote the building of an online community of practice and action-research, which could work over the project first year and remain active for additional two years.

The communities of practices were in fact defined as groups of people who share an interest, some problems or a passion for a topic and who deepen their knowledge and skills by interacting and growing together (Wenger et. alii, 2007). Antonio Calvani defines the online action-research as a kind of research in which a group of actors making use of networks as a tool for interaction and sharing, within a system of agreements, try to solve problems collaboratively or study and understand an intervention/situation whose consequences are not sufficiently known (Calvani, 2007).

The initiative in hand aimed to build an online environment organized on a specific domain of knowledge, involving a community that construct new knowledge and where tools, documents, ideas for negotiation and reflection on practice can be shared.

In order to promote a meaningful action, the professional needs for specific moments to re-examine both general situations and his/her behavior, as well as specific spaces where thoughts can be stored and shared (Magnoler, 2012).

The realization of the online environment foresaw the following phases.

– In January 2013 the Moodle environment was set on a dedicated server and designed by the administrator. Then, tutors and co-tutors were registered as “course creators” and “teachers” in conformity with the Moodle requirements.
– February to March 2013 the administrator, tutors and co-tutors took part in two meetings on planning and sharing resources and potential of the online environment. During these meetings the environment administrator and designer presented the resources and activities available in Moodle and some specific tools for the management of the project. Among them the Moodle database was chosen to collect and share learning designs and the various documents produced by the training teachers.
– In March 2013, immediately after the planning meetings, tutors organized seven group courses and registered the training teachers in their respective group courses with the support of the administrator.
– January to May 2013 tutors organized four workshops for the training teachers and organized uploading of materials relevant to the training and supporting meetings, discussions in forum and uploading designs and documents made by the training teachers in the database.
4. The organization of the online environment

The Moodle environment was organized into two main categories: Research-training Area (dedicated to the specific courses supporting the project) and Test Area (dedicated to the free experimentation of the Moodle tools.)

![Figure 1. The organization of the online environment](image)

In particular, the Research-Training Area hosted the “Information and Resources” course, a coordination course managed by the project administrator jointly with tutors and co-tutors. In order to promote full sharing of the research-training and the construction and ongoing discussion of materials and tools, it was decided to open the course to all the participants in the project that could access as students. The course activated the following specific sections.

- Communications: activation of an area named Forum News, dedicated to the exchanges between tutors and co-tutors, an of another one named Technical Assistance Forum, dedicated to technical assistance in the event of technical problems relating to the use of Moodle tools.
- Documents for action-research: sharing folders of documents produced by the tutors as logbook forms, design forms, self-evaluation questionnaires, observation sheets, examples of tasks, etc.
- Tools for action-research: a database model specially designed to collect and share documents prepared by the training teachers in the various group courses and a wiki for the gradual change of the working documents by the tutors.
- Materials on the Moodle environment: provision of teaching manuals, links for further information and video tutorials on using the tools of Moodle in teaching.
Each tutor started a group course in collaboration with the co-tutors (seven courses in total); each one put at his/her own course disposal numerous documents and resources, even multimedia, to support the training process. Discussion forum, chat rooms and databases to share documents were realized by the training teachers.

The Test Area has instead hosted a course named “General Test”; all members had access to the environment with the role of teacher, in conformity with the Moodle requirements, in order to directly experience the environment tools, also taking into consideration their subsequent use in teaching in their own class. Other test courses, each one dedicated to a group of tutors and co-tutors in order to freely experiment the Moodle tools to be used in the group courses, were also organized.

5. Results and online activities carried out

A total of 6 tutors, 25 co-tutors and 478 training teachers (of which 392 accessed at least once to the environment and at least 166 uploaded an online contribution), 2 school managers of the nodal points, 1 representative of the schools involved in the project (Regional Education Office for Umbria) and 2 guest users (speakers who attended the final seminar) were registered in the environment.

During the seven group courses, from the beginning of the project to May 20, 2013, the following resources and activities were uploaded on the environment:

- resources of different types such as pdf and doc files, flipchart, links to web and videos (424 resources);
- twenty forum including 139 threads and 309 messages in total;
- four chat rooms for synchronous communication;
- nine databases in which 241 records were uploaded, as produced and shared by the training teachers;
- one task for the delivery of individual resources (23 deliveries);
- eight wikis for collaborative editing / changing of documents.

The database was the most relevant tool, as specifically designed to give training teachers the opportunity of documenting the training and sharing with colleagues their own materials, in particular the projects for the action-research and the relating tasks. The database structure, built according to the joint observations of tutors and co-tutors, provided for each record the compilation of information fields (teacher’s name, school, type of school and teaching-learning field), together with a description field or a space that could also allow the inclusion of a personal presentation of each uploaded document (short presentation of the document), an attachment to enclose the document and other optional fields to enrich the documentation attached (the date of delivery, image and hyperlink).
Conclusions

The blended (workshops and online environment) teacher training has been successful; in particular the Moodle environment, designed as a strong social environment, which would allow to store information and document the work done, met the objectives foreseen by the project. This should be emphasized in view of the future availability of the environment for everyone involved in the project. It is indeed expected for the next two years that training teachers can experience Moodle directly with the classes.

For the successful completion of the course a decisive role was played by tutors and co-tutors who, in addition to setting up the courses and presenting resources and activities, have put in place a constant scaffolding (also via e-mail and telephone as well as in forums), allowing the trainees to get involved and discuss, even in different times, new tools and methodologies. It should be recognized that training teachers who participated had no previous experience of using ICTs and consequently required special support in carrying out their work.

This training demonstrates how teacher training is a process that takes a long time and demands a constant scaffolding, monitoring and research. At the end of the project the teachers were committed to fill a questionnaire (currently being processed) aimed to analyze their opinions and expectations regarding the use of ICTs in teaching and their perception of the importance of digital competence. The perspective is to better characterize the future teacher training.
References


