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The interactive whiteboard as a tool for teaching, learning and creating material

Collaborating institution: Smart Technologies

Timing: 2012-2015

1. Contextualization of the experiment

The experiment was carried out at the Faculty of Education Sciences and Psychology (FCEP) of the Universitat Rovira i Virgili (URV). The students who took part were from the first year of the degrees in infant and primary education from the Sescelades Campus in Tarragona and the Terres de l'Ebre Campus in Tortosa.

The project came into being as the result of one of the first-year subjects on the infant and primary education degree called Communicative Abilities. It was a 12 ECTS credit-subject that was part of the "multimodal and mass media literacy" module that specifically dealt with the teaching and methodological use of the interactive whiteboard (IW) by teaching staff. Approximately 450 students take this module every academic year. It is taught by three teacher trainers who have completed the official teacher trainer course for this technology and methodology given by the firm Smart Technologies.

Two bilateral agreements were signed: one with the Department of Education of the Catalan Government for its collaboration in educational innovation programmes and projects, and the other with the company Smart Technologies for its collaboration in lifelong learning and the professional development of URV students.

2. Description of the experiment

2.1. General aims

- To be aware of the teaching potential of the IW.
- To give guidelines about how to use the IW in the classroom.
- To understand the basic programs for managing the IW.

- To propose and analyse how to use the information resources of the IW for teaching.

2.2. Specific aims

- To plan the use of active learning methodologies for developing abilities and competencies.
- To propose and produce materials for use with the methodologies selected with the IW.
- To develop critical thought and encourage cooperative work and the search for information.
- To create a variety of educational activities and multimedia resources using the IW.

2.3. Learning outcomes

Students will:

- Acquire competencies, knowledge and professional and personal training that are entirely appropriate to the current educational environment.
- Work with others, take responsibility for teaching-learning processes and take decisions that are shared and agreed on by all.
- Teach in a multidisciplinary and functional way, which will give an integral and overall view of professional knowledge, and predict social and organizational changes in the infant and primary school profession.
- Acquire professional identity and maturity, which will encourage them to keep learning and adapt to the change in professional competencies required by infant and primary school teachers.
- Study the effects of the IW in teaching and learning process. They must bear in mind that it is to be used for technical and didactic purposes, and for producing multimedia resources, and they must be able to create and experiment with a variety of teaching models that can exploit the IW in the classroom.
- Be able to use the IW to support explanations; present activities and resources for coping with diversity; make oral presentations; illustrate debates, video conferences and on-line group presentations in class; carry out exercises and other joint activities; correct exercises as a group; respond to unexpected questions; and make a group summary.

2.4. Content

The topics dealt with are the following:

- Multimedia resources in teaching-learning processes.
- Programs for managing teaching-learning activities with the IW.
- Educational resources for the IW.

2.5. Technologies used

The resources that have been used are: the Smart interactive whiteboard, computers, and the program Notebook.

2.6. Activities carried out

The first task that the first-year students on the infant and primary education degrees do is to attend a 2-hour-long information session in one of the lectures on communicative abilities, which is part of the multimodal and mass-media literacy module. The aim of this first session is for the students to become familiar with the potential, possibilities and functions of the Smart whiteboard.

Subsequently, those students who wish to do so, can register on a free 16-hour course entitled "The interactive whiteboard as a tool for creating information and teaching and learning". Every year about 100 students take this course.

The training sessions are held at times that do not coincide with those of the curricular subjects so all students who wish to do so can attend. The material used is the Smart whiteboard and the supporting documentation provided by the company Smart Technologies. The training sessions take into account the following methodological aspects:

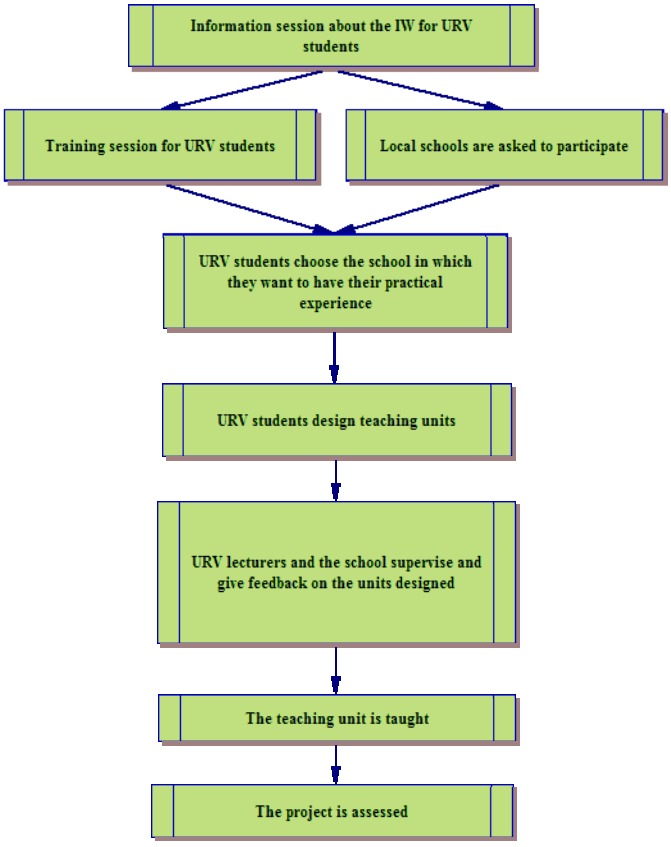
- The groups must be small.
- The participants must have a lap-top computer, which they must bring to all face-to-face training sessions.
- Students must interact directly with the IW during the training sessions
- The training sessions must be dynamic.
- At the beginning and the end of all the sessions students are asked to reflect on the concepts learned and how they can be applied in the classroom.

After the course, students have to carry out a practical session, in which they have to implement a teaching sequence in a school in the local area so that they can demonstrate the competencies they have acquired. Several schools collaborate in the

project. They all select interested teachers who have an IW in their classrooms and who can use it competently. Students decide at which school they wish to do the practical part of the course, and they have an interview with the teachers to agree on what sort of activity they should design. They must bear in mind the characteristics of the school where they have to present the activity and the capacities and competencies that the pupils have to acquire. Teachers and students agree on the content of the special material that is to be designed and the students create the activities with constant feedback and supervision from the university lecturers and the tutor at the school chosen.

Once the students have finished designing the activity, they teach one or more classes at the school they have chosen using the material created as part of the teaching sequences designed. Finally, all the agents involved in the process have to carry out a triangular evaluation in which they assess the project, the students and the teaching staff who have taken part. The materials designed by the students are sent for publication on the Smart exchange website (http://exchange.smarttech.com).

The following scheme sums up the protocol followed:



2.7. Methodologies used

The teaching-learning model implemented was functional (the content was useful and applicable), significant (contextualizable within the knowledge structure) and interactive (students actively intervene in the learning process).

The course was highly structured: first, the main features of the Smart interactive whiteboard were presented; secondly, the program for managing interactive whiteboards was explained; then the main teaching models that can exploit the whiteboard were identified, as were examples of types of learning activity; finally, some computer applications and programs that can be used with a Smart interactive whiteboard were discussed.

The active methodology used was based on:

- The use Of ICT and particularly of the Smart interactive whiteboard in the educational process.
- Students being the protagonists of their own learning.
- The development of Smart interactive whiteboard skills.
- A varied, active and participative methodology.
- The use of social and interdisciplinary interaction, and teamwork.
- Personal and diverse treatment that encourages personal autonomy.
- A standardised view of reality.
- Work is organised around motivating activities.
- Learning to learn.
- The figure of the lecturer as a guide, facilitator, who helps and stimulates students to discover what sort of learning strategies are most appropriate in each case, who provides them with access to a range of material and who creates a working atmosphere in which learning is a pleasure and students interact with one another.

The teaching processes used were based on problem solving, case studies and project work. The elements that have been taken into account are positive dependence, participation, significant learning, the relation between theory and practice, the relation between knowledges, the overall focus, research, team work, cooperation and responsibility.

After the various informative and training sessions, the students assumed that the current, constantly-changing world requires education to be wide ranging, specialised, interdisciplinary, and based on competences and skills so that people can experience a variety of situations and change activities. It is for this reason that the

methodologies used encourage critical thinking and creativity, aim to develop the ability to analyse problems and provide solutions, and prompt students to accept responsibility.

3. Results

The various activities that were carried out prompted the students to reflect on the most suitable methodological approach to use in the activities they planned with the Smart interactive whiteboard.

The students were immersed in a teaching-learning process that used teaching strategies which involved new roles and new responsibilities. They acquired more knowledge and a personal and professional training that is more suitable for the current educational reality. They worked together more, got to know the other members of the group and took on a more active role in the teaching-learning process. They took joint decisions agreed on by all when carrying out the proposed activities. The teaching strategies that were used required research, and information selection and management, and the students involved in the project were trained to acquire these competencies. As users of the information technologies they learned how to use the IW for teaching purposes, how to incorporate it in the teaching-learning process as an important support tool and how to use it as a technology for learning and collaborative knowledge. In short, the students became autonomous users of the Smart whiteboard and the tools that it makes available.

The innovation process has affected how the educational community is administered, since it has been suggested that changes be made to the way in which the teaching-learning process is managed, to structures, to the distribution of responsibilities, to the needs for resources, to classroom design, etc. Teamwork was essential for this innovation process to achieve its desired goals.

The criteria for selecting the various teaching approaches were the following: they had to encourage the students to take part in their own development process; they had to promote research; they had to prompt reflection and critical analysis based on scientific theories and knowledge; they had to affect the management of information and help this to become knowledge.

In an attempt to respond to the professional needs of future teachers, the training provided was multidisciplinary and functional. It provided an integral and overall view of professional knowledge, and predicted social and organizational changes pertaining to the profession. It gave students a certain professional identity and maturity, and encouraged future learning and adaptation to the changes in the professional competencies required.

The professional tasks that the students carried out in a variety of roles consider the teacher as an educator-researcher, manager, designer and planner of education,

monitor of educational activity, integrator of the educational project, independent learner, developer, monitor and evaluator of projects and educational activities.

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Researchers

Ramon F. Palau Martín. Departament de Pedagogia. Facultat de Ciències de l'Educació i Psicologia. Universitat Rovira i Virgili. <ramón.palau@urv.cat>

Luis Marquès Molias. Departament de Pedagogia. Facultat de Ciències de l'Educació i Psicologia. Universitat Rovira i Virgili. <luis.marques@urv.cat>

Josep Holgado García. Departament de Pedagogia. Facultat de Ciències de l'Educació i Psicologia. Universitat Rovira i Virgili. <Josep.holgado@urv.cat>