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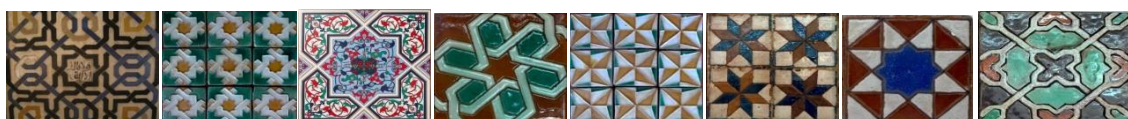
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**BLENDED UNIVERSITY TEACHING:
INNOVATION AND EXPERIMENTATION AT THE UNIVERSITY OF
FERRARA**

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Abstract

Antecedents/Previous literature. The sector of this work is the construction of knowledge with the aid of technologies in two degree courses provided by the University of Ferrara through the *Distance attendance* model. The intention is to reflect on the didactic functionalities of this model. The research is part of the international debate on learning with new technologies, in particular the use of the models of social constructivism and collective and connective intelligence and in the wake of the research activity by the *Centre of communication technologies, innovation and distance learning*. **Method.** Cognitive artifacts, technological tools and didactic methodologies have been investigated through empirical observation (in the virtual environment) of the conduction of the modules of the first semester. **Results.** Analysing the criticalities has enabled us to provide an experimental teaching model with a strong epistemological impact, able to optimise learning potential and minimise the critical elements observed. **Conclusions.** The study highlights how in the *distance attendance* model the practices of distance learning are metabolising into ordinary teaching methods. This, alongside the clearly positive aspects, is leading to the formation of ineffective e-learning methods, as a *relocation of the face-to-face lesson*. Therefore the normalisation process must be accompanied by a new teaching model.

Resumen

Antecedentes. El sector de este trabajo es el de la construcción de saberes con apoyo de las tecnologías en dos cursos de grado de la Universidad de Ferrara con una modalidad de presencia a distancia. Se intenta reflexionar sobre la funcionalidad didáctica de dicho modelo. El estudio se coloca en el interno del debate internacional sobre el aprendizaje con las nuevas tecnologías, en particular sobre el empleo de los paradigmas del constructivismo social y de la inteligencia colectiva y conectiva, y sobre la línea de

actividad de investigación del *Centro di tecnologie per la comunicazione, l'innovazione e la didattica a distanza*. **Método.** Se han estudiado artefactos cognitivos, herramientas tecnológicas, métodos didácticos utilizados, a través de la observación empírica, en el ambiente virtual, durante el desarrollo de todos los cursos de enseñanza del primer semestre. **Resultados.** El análisis de los aspectos críticos ha permitido predisponer un modelo didáctico experimental de fuerte impacto epistemológico capaz de optimizar el potencial de aprendizaje y minimizar los aspectos críticos relevados. **Conclusiones.** El estudio evidencia como en el modelo de presencia a distancia las prácticas se están metabolizando en modalidades didácticas ordinarias. Esto, junto a evidentes aspectos positivos, está determinando la manifestación de modalidades de e-learning poco eficaces, como el *desplazamiento de la lección frontal*. De ahí la necesidad de acompañar el proceso de normalización con un nuevo modelo didáctico.

Introduction

At the University of Ferrara, the alternative methods to traditional teaching refer to the following models: e-learning, blended learning, classroom video conferencing and distance attendance. The first two are the most common and have been studied the most; precise learning methods have been drawn up for them, in line with relevant studies and the work of the researchers of the University of Ferrara (Frignani, La Vecchia, Pedroni & Poletti, 2007; Ganino, 2009; La Vecchia & Poletti, 2009; Pedroni, 2006). Classroom video conferencing, which envisages a delocalised but in-person teaching system, is the one that has been used and studied the least. The *distance attendance* model considered in this study may be considered an evolution of classroom video conferencing and was used experimentally for the first time during the academic year 2013-14 in some degree courses (Tab. 1).

Tab.1. Students enrolled for the *Distance attendance* method

Degree course	Year	Total enrolled students	Students enrolled for Distance attendance method (first semester)
Science and technology for cultural heritage	first	37	16
Science and technology for cultural heritage	second	27	14
Science and technology for cultural heritage	third	33	20
Communication science and technology	first	159	65
Quaternary, prehistory and archaeology	first	58	29
Quaternary, prehistory and archaeology	second	50	25
Culture and traditions of the Middle Ages and Renaissance	first	23	15
Culture and traditions of the Middle Ages and Renaissance	second	33	20
Total		420	204

This experiment did not entail any formal difference, in terms of the enrolment method, between the *face-to-face* and *distance learning* courses. There is a clause in the notice stating that students who cannot attend in person can make use of a *distance attendance* method to allow them to attend the lectures via streaming (web conference).

In practice, two different methods have been developed (Tab. 2): a basic one, which aims not to create any difficulties for lecturers not used to using advanced teaching technologies; and an advanced one, with the double aim of allowing lecturers to experiment with Web 2.0 teaching methods and not penalising distance learners, aware of the didactic limits of the basic model. In the first method the web conference was provided through non-invasive procedures with the aim of making the technologies invisible within the didactic setting. To overcome resistance to technological innovation in work practices (Bauer, 1995) a highly technological environment was created, to be experienced naturally.

In the second method, alongside the basic teaching methods, the lecturers were

asked to use a series of didactic strategies functional to distance learning, on an intentional and non-compulsory basis, in line with practices used internationally (Tab.2). The lecturers were provided with a methodological and a technological support (Centre technicians and researchers).

Tab.2. *Teaching methods used in Distance attendance courses*

Basic method	Advanced method
Web conference	Web conference
Web conference (on demand)	Web conference (on demand)
System tutoring	System tutoring
	Video lectures
	Multimedia didactic material (e-books, videos)
	Social networks
	Online collaborative activities
	Shared board
	e-seminars
	Forums
	Wiki
	Blog
	Self-assessment test
	Contents and motivational tutor

Method

The research investigated cognitive artifacts and didactic methodologies through empirical observation (in the virtual environment) of the conduction of the 19 modules of the first semester of two degree courses, for a total of 596 hours (Tab. 3). The stages are as follows:

1. Data cataloguing and analysis;
2. Critical review of initial hypotheses;
3. Reorganisation of the initial work plan in light of the results achieved.

Tab. 3. *Number of modules involved and hours of lectures transmitted and recorded*

Degree course	Year	Modules 1st semester	Hours of lectures recorded
Science and technology for cultural heritage	I	3	124
Science and technology for cultural heritage	II	3	106
Science and technology for cultural heritage	III	3	82
Quaternary, prehistory and archaeology	I	5	156
Quaternary, prehistory and archaeology	II	5	128
TOTAL		19	596

The analysis highlighted how, apart from some very rare cases, the only method used was the web conference. In order to investigate the teaching methods used with this technology, the founding characteristics and corresponding criteria are summarised below (Cattaneo, 2009):

1. Use of audio visual communication on three levels: multimedia presentations to support the lecture, prepared previously or during the lecture, image of the people taking part in the face-to-face lesson, the lecturer and learners; list of distance learners, present via chat¹.
2. The new relationship is created on two levels: in the classroom, between the lecturer and students present in person; between the lecturer and the distance learners mediated by the screen interface.

These aspects must find practical application with respect for precise procedures and guidelines.

Multimedia presentation, the new graphical/textual esperanto (Clark & Lyons, 2010; Mayer, 2001), if well prepared and supported by didactic design logics (Ganino, 2009), provides the teaching/learning processes with visual communication potential,

¹ The students could appear in the virtual classroom also by audio and video, but to simplify the process, this was prohibited.

maintaining students' attention and allowing them to remember the fundamental parts of the lecture and letting lecturers structure their presentation.

Aware of the impoverishment of non-verbal signals and proxemics in a setting mediated by the screen, in terms of poor legibility, it is possible that the image of the participants could be fundamental to convey the sense of social presence (Cattaneo, 2009) and facilitate the didactic processes only if the technology used offers a legible, well-constructed image and if, alongside the contents, the lecturer also uses communicative skills (correct use of the voice, non-verbal language, visual contact with the students).

Regarding the different relationship that is established between the participants in the didactic process it is important to consider how the new multi-screen geography of viewing transforms perception and relationships between the body of the observer and images and, therefore, the way knowledge is acquired. Ergonomically suitable environments increase concentration and improve the learning processes.

Results

The most significant data from the photograph taken highlight some general trends.

Social utility and help for distance learners. The model has proven to be useful for students who cannot physically attend for various economic or work-related reasons. The model was also popular with the classroom attendees: as a study aid for 75% of the sample and to follow the course in a more flexible way alternating time in the classroom with distance learning, for 38%. Consider how the social value would increase if the University decided to use the thousands of hours of recorded lectures as MOOC (*Massive Open Online Courses*).

Web 2.0 absent. The exclusive use of the web conference with its basic potential, does not exploit the true communication and teaching potential permitted by that environment, but only its distribution potential.

Need to train lecturers. The experience highlights the need to develop the theme of training university lecturers. The analysis shows that there were not many technological issues (only 35% had trouble), but the communicative issues appeared to be greater (65%) with the clear impact they have on didactic aspects.

Discussion

From the analysis it can be inferred how distance learners are penalised compared to their classroom peers. To solve the limits identified, the discussion must refer to the logic of the interfaces and the concepts of *presence*, as the experience of the physical environment, and *telepresence*, the environment perceived through the mediation of the medium (Steuer, 1997). In effective *e-learning* experiences the *distance* must be eliminated in the teaching environment and the interaction space must be made natural. Thus the illusion of not experimenting with a mediation of technology in the communicative and interactive process is not created (Lombard & Ditton, 1997), to the extent that people are induced to think that the physical environment is decontextualised or people's bodies are dephysicalised (Cattaneo, 2009). The sensation of presence can allow distance learners not to peep at the lesson through the keyhole but to enter the classroom.

Conclusions

The study highlights how in the *distance attendance* model the practices of distance learning are metabolising into ordinary teaching methods. This, alongside the clearly positive aspects, is leading to the formation of ineffective e-learning methods, as a *relocation of the face-to-face lesson*. Therefore the normalisation process must be accompanied by a new teaching model.

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