



Peer Reviewed Papers

To an integrated didactic model

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Abstract

The article goes on some considerations written in this review by Pavel Boytchev about the use of technology in learning process: technology can't be thought of as decisive and especially can't be regarded as an alibi to free teachers from their role. On the contrary it's a great opportunity and it needs a permanent attention on the purpose of the didactics effectiveness, in order to play the market. We take into account the experience made in the Faculty of Architecture in Ferrara and we consider all the results given in the first period of integration between e-learning and traditional didactics.

1 Education and judgment: two e-learning items

E-learning goes towards an increasing difficulty of teaching, though a certain advantage of "performance" (you can teach many things in less time to an unlimited number of students). Teachers struggle every day to catch students' attention and especially they try to involve the "digital natives" (so called by Marc Prensky, 2001), while they take into account the sociological (network and community development) and anthropological transformation (Longo, 2009 p. 3), that involves a change of cognitive and perceptive processes.

We must think over and choose to consider these changes as an opportunity and not as a problem.

The starting point is a critical interpretation of the didactics results of the past years: from these initial data we've tried to improve didactics, trying to change some educational instruments and on the other hand we have kept unaltered the judgement instruments. It was chosen to take advantage of the occasions of technology in order to consider some instruments better for didactics than others, and not to get closer to younger generations on the ground of communication.

2 Gradually innovation

The testing realized in Ferrara is probably placed just inside the e-learning experiences, as it's an hybrid between traditional methods and new possibilities given by technology.

Someone says that if we point exclusively at the e-learning, teachers become less important in the educational process. Someone else maintains that different models of problem solving (definition with all precautions and reservations, Scarabattolo, 2010 p.29) and the multiple choices in many different educational fields raise teachers from the responsibility of testing the results.

Maybe one risk is that students study just to pass the exam and they don't learn much more. However the real and important risk we take is that we can create a self-referential didactic model, where education is based on one single exam modality, and it doesn't examine the contents but just allows an automatic correction. All the discussions about the admittance tests of university with closed numbers are about this problem.

It has been decided to go on by grades, in order to be on the safe side (the risk of a self-referential model, whose effectiveness is highly demonstrable). Only the supports for didactics and assistance have been renewed in those parts where judgement was made by traditional methods with systematic control of the results from the teachers, so that these results are considered fit to examine the acquired skills of students.

A graduated experimentation wants to support scientific standards and it does not denote a mere careful cautious behaviour: it's easier to check the effectiveness of introduced innovations if we fix some factors (examination) and we change others (didactic methods).

3 Aims of the Technics of Representation of the Architecture course 2

The Technics of Representation course 2 suggests learning of these softwares. Allplan (for the parametric three dimensional modelling), Cinema 4d (for the performance and photo-realistic return of virtual models), Photoshop (for the editing and post-production of images), Premiere (for video cutting) and Flash (for the creation of a web-site for the objects' presentation). This happens during a 50 hours in half a dozen lessons course.

Since past years the suggested model of testing depended on asking students a revision of existing buildings, while they had to elaborate data from materials already published and for this reason often incoherent and not complete.

The goal of this course is the ability of using these softwares critically and not automatically: to create a sight of an architectural model doesn't consist merely of learning a sequence of commands (create a geometry, attribute a texture, generate shadows, save an image, etc...) but every single information of the output (image) has to be critically analyzed, because it brings useful information for the understanding of the architecture (shadows show direction and exposition of the building, geometry and texture give informations about the seizes and the materials, the representation of contest refers to a geographical collocation, etc...).

The students learn the importance of critical analysis of the results from the beginning and they pay for it: the material already published from which they start (plans, prospects, sections, some photos, etc...) is often incoherent or incomplete, and so they learn the importance of details and of every useful information to fill the gaps, in order to make again a complete model

The preoccupation of the students for the operating aspects of the use of software during these last years has led didactics to bring even into focus exercises in the computer room, although this has harmed the self-critical vision of the elaborated products.

4 First data: the critical reading of results before the experimentation

An estimation scheme has been created first of all to revise old results as to make coming out the lacks of didactics. This new reading hasn't been realized in a statistic way (as a champion) but on all papers of more or less 70 groups that took the exam.

The scheme was made by a certain number of standards (f.e. Completeness, Property, Readability and other specific standards of the used softwares) and kept a score from 0 to 3. After that you fixed some estimation exams A (good), B (satisfactory), C (unsatisfactory), D (very unsatisfactory).

The choice of this scheme has been applied to every single given elaborated object and could emphasize:

- a great amount of procedural mistakes in the use of software (70 %).
- an average quite satisfactory quality in the profit of models.(except the excellences that are 20%).
- pathological disorganization of flow work and especially of elaborated studies (seen in the 80% of the cases).
- a large lack of critical analysis of the subjects.

It's obvious that the same examination scheme has been adapted in this new semester in order to compare at the end of the course some data of the same kind.

5 Intervention strategies of experimentation

Software are extraordinary aids but there's no space for approximation, it does not exist plus or minus and for this reason we get wrong results if we confuse + with -. The problem is that if students concentrate only on processes of computer, which they can learn by experience or repetition, these students miss their self-critical capacity of results. They believe very often in the correctness of their results because they are fond of the correctness of their execution.

If we want the students to concentrate upon critical capacity, and all in a particular practical course we've decided to support traditional methodologies with 3 lines of intervention:

- use of multimedia supports
- sharing of the examination scheme with students.
- assistance supplement thanks to a forum.

6 Multimedia supports

Basing on the purpose of Pavel Boytchev about the natural learning, it has been created a model in which students can watch, repeat and create something by themselves.

The purpose of video support was the key to improve the results directly or indirectly:

- Procedural mistakes:if you let a passage during the lesson slip away, if you overlook some notes, you make mistakes and there is no possibility

to come back.

- The video courses can solve the problem: notes are always available.
- Notes: thanks to video courses students don't take notes and they concentrate on the quality of results.
- At the beginning students don't comprehend the flow of work they must do, they don't realize the importance of data organization: it may be essential to have a Tutorial available, where all the process is clear.
- If the students have video courses available (especially about arguments that are procedural and with nothing to explain) they can have much more energy and time to examine carefully during lessons face to face and exams. This can stimulate critical analysis of the results.

Besides the effectiveness of video courses as regards lessons face to face is of 1 to 4 or 1 to 8, it depends on the arguments of the lessons: in a quarter of time you can talk about arguments that otherwise could take you 1 or 2 hours of exercise.

It has been created a web site including all the videos.

These videos have created an hyper-text, where we have a central structure, the Tutorial, from which branch out deepening video, (of theoretical character) or other processes, also with link or specific web-site on particular arguments. The Tutorial has been subdivided in many models, in which arguments can be discussed not only as far software, but as a comparison between more than one software at a time, repeating in brief all the asked processes to get the tests.

Every single model besides has a material series that can be downloaded as for making the exercises (sketches, different files) and as for controlling autonomously the correctness of what has been done (the files available at the beginning of the model are the material result of the previous work).

All the material is self-made by the teachers in order to avoid the gaps found in many available video courses, which are not suitable and qualified for an university education and this has already been discussed (Balzani *et al.*, 2010).

7 Sharing estimation scheme

It was important for the strategy to let the students know all the adopted examination principles, including partial marks (and so not only the final mark for the single work) and all in order to:

- reduce the subjectivity in examination.
- propose a check list of self-examination for the students.
- show aimed and particular corrections.
- get more transparency of the mechanisms for estimation.
- get a statistic reading of mistakes to improve didactics (with intervention

in classrooms and video courses).

Especially as regards this last point video courses were basic: during a semester we don't have much time to come back to arguments already discussed.

On one side the estimation scheme with clear criteria is useful to come out the statistic importance of mistakes and gaps, on the other side video courses can fill these gaps without upsetting the work schedule.

8 Assistance integration through a forum

Nowadays the more alarmed visions on the attending of virtual places (community sharing, use of the chat, social network) emphasize the lack of capacity to live and relate in the real world.

In this case also the alternative of the total substitution of direct social integration between different ways of relating, with the aim opening that "emphatic collaboration channel" already discussed by Longo in his "Born digital" as shown in many other experiences in the field (Marcelli, 2010).

Together with the use of video courses for testing it started a forum dedicated to course students: place potentially open (everyone could enter also no students) where students could make questions and wait suggestions and advices. The students of the previous years asked clearly this forum: other forum for them had an excessive level of specialization as for the use of software and on the contrary they were less profiled as regard the necessities of an architecture student (normally many of the used softwares were dedicated to graphics and web-design). The forum was started by a student of the past year who acted also as moderator.

One of the forum rules is the possibility of using a nickname for anonymity and especially this condition played a positive role for collaboration among students, in the relationship between students and teachers. It was an important window for teachers to test the level of learning.

Teachers and course tutors attended the forum, always with a nickname. When students talk to teachers normally they go astray in thousands of formalisms, so that it becomes not clear what they ask for. Instead of turning to the teachers (fearing that this behaviour can emphasize their gaps and make themselves badly noticed), they do the best they can.

Thanks to this forum and without many circumlocutions many students expressed doubts, that otherwise teachers had never known. Sometimes they opened short debates (in the forum's way) about specific matters, otherwise not possible.

The collaborative way of forum has effects also in the real world of classroom, without the informal online dynamics, that could compromise the

roles' respect.

Through this forum it was also possible to monitor in real time the difficulties: supplementary lessons or video courses came after reading what was happening in the forum.

9 The result of experimentation

Al termine della sperimentazione si è inteso analizzare proprio quei punti che erano stati individuati come problematici nell'efficacia della didattica per poter operare un confronto. Sono stati ottenuti questi risultati:

- A drastic reduction of procedural mistakes (less than 20% average between the software used in the course).
- Raising quality of images, realistic photos of the models: 80% of groups gets about it a marking more than 27/30 (excellences were 35% of all) and 20% (except very rare unsatisfactory marks) gets a marking between 24 and 26/30.
- In the final presentation a general raising in the not only formal attention but also on the level of subjects.
- Substantial cancelling of the whole deficit in the organisation of the files, that must have been handed in the last years.

We obtained another unexpected result as regards Erasmus students, who have the difficulty of language: these students get many advantages out of it, because they could see and listen the lessons at their home.

10 E-learning effectiveness and next steps

It is obvious that video courses as they are previously described are the best tool for learning as for the use of software not only as regards commands but also for the possibility to illustrate a method of data organisation and to plan a flow work thanks to hypertextual structure. Forum is instead useful for two reasons: you can face in public particular cases (experiences of all make everyone rich) and you can have an idea of the situation of the course. It is clear that if anybody carries out this analysis (the teacher), the capacity of forum becomes less important (understanding) of doubts and taking part of lessons or with other video courses.

In the next semester we will try to improve results acting in two fields:

- testing the self-sufficiency of video courses as exclusive building instrument on the use of software. In the past semester all the processes were shown in classroom and they were proved during the guided exams. Next year 50% of the course will be on some arguments totally auto-

- mous through video courses that are made by the teachers' course.
- broadening the assistance in remote and using a social network instead of a forum.

11 Conclusions

If we express the opinion from experience that e-learning is an excellent support it is just because the raising of critical and interpretative capacity is one of the aims of a university course to the perfection of practical skills.

It is on the basis of experience that we say that this raising is due to a combination of all the parts of e-learning with traditional parts. We declare that we count on an integrated didactic model.

For this reason we come to the conclusion with the assumption that self-sufficiency of e-learning can be used not in university (at least as far as we know and we have cleared) but in other arguments, where the emotional factor is very high: f.e. in the post-degree professional education or post-diploma or professional updating.

In this sense the Faculty of Architecture in Ferrara has already begun to suggest educational courses here or conducted at a distance and dedicated to experts who want to learn the techniques of modeling and representation. Also in the professional courses the examination and the assistance, also in a remote way, should include a contact teacher/learner and it shouldn't propose a system of self-examination. This last point is very important especially as far discipline of architecture representation, where there are many factors of subjectivity as to the available tools and aims that can be pursued. The sources optimization, which e-learning is certainly an extraordinary instrument, must (or should), give up not much of the didactics effectiveness.

Teachers should find the right balance.

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