

TRADITIONAL EDUCATION VS MODERN EDUCATION. WHAT IS THE IMPACT OF TEACHING TECHNIQUES' EVOLUTION ON STUDENTS' LEARNING PROCESS?

J.M. del Campo¹, V. Negro¹, M. Núñez²

¹Universidad Politécnica de Madrid (SPAIN)

²Dirección General de Carreteras (SPAIN)

josemaria.delcampo@upm.es, vicente.negro@upm.es, miguel.nunez@madrid.org

Abstract

The main objective of this article is to focus on the analysis of teaching techniques, ranging from the use of the blackboard and chalk in old traditional classes, using slides and overhead projectors in the eighties and use of presentation software in the nineties, to the video, electronic board and network resources nowadays.

Furthermore, all the aforementioned, is viewed under the different mentalities in which the teacher conditions the student using the new teaching technique, improving soft skills but maybe leading either to encouragement or disinterest, and including the lack of educational knowledge consolidation at scientific, technology and specific levels.

In the same way, we study the process of adaptation required for teachers, the differences in the processes of information transfer and education towards the student, and even the existence of teachers who are not any longer appealed by their work due which has become much simpler due to new technologies and the greater ease in the development of classes due to the criteria described on the new Grade Programs adopted by the European Higher Education Area.

Moreover, it is also intended to understand the evolution of students' profiles, from the eighties to present time, in order to understand certain attitudes, behaviours, accomplishments and acknowledgements acquired over the semesters within the degree Programs.

As an Educational Innovation Group, another key question also arises. What will be the learning techniques in the future?. How these evolving matters will affect both positively and negatively on the mentality, attitude, behaviour, learning, achievement of goals and satisfaction levels of all elements involved in universities' education?

Clearly, this evolution from chalk to the electronic board, the three-dimensional view of our works and their sequence, greatly facilitates the understanding and adaptation later on to the business world, but does not answer to the unknowns regarding the knowledge and the full development of achievement's indicators in basic skills of a degree.

This is the underlying question which steers the roots of the presented research.

Keywords: Teaching techniques, university, education, evolution

1 INTRODUCTION

The current method of teaching has succumbed to some tremendous changes in the past 100 years, which makes us reconsider the model of teaching and the typology of the classroom, among others, as well as how to reproduce and display the information to the student.

Thus, we have gone from traditional chalk boards, accompanied by a master class through the audiovisual media and network resources that nowadays populate our classrooms.

The student, meanwhile, has passed through handwritten notes to full memos hanging on the website and having available for consulting many resources just a click away.

But have we gone too fast? Are these developments a success or a curse?

2 METHODOLOGY

To develop our study, we made a list of available resources in chronological order, outlining the most important criteria for and against them. Then we study its effect on the teacher, the student and the learning process.

| FOR | AGAINST |
|-------------------------------------------------------|-------------------------------------------------------------------|
| Chalkboard | |
| Allows deleting and overwriting. | Time to write it. |
| The teacher must know the subject rather well. | Requires good writing and order. |
| The student sees the teacher solving. | Required to draw well. |
| Closeness to the classroom. | Cannot show the reality (photos) |
| Dynamic. | Once deleted does not allow to return to previous boards. |
| | |
| Slide Projector | |
| Can show the physical reality (photos) | Requires prior preparation of the contents (slide revealed) |
| Can turn back to previous slides. | Requires glimmer light or no light. |
| | Can't paint over them. Requires a support board for explanations. |
| | Static. |
| Overhead projector | |
| Allows to paint on the transparency | Static. |
| Can turn back to previous transparency. | Requires prior preparation of the contents (transparency) |
| | |
| Opaque Projector | |
| Allows projecting any book without prior preparation. | Static. |
| Can turn back to previous transparency | Can't paint over them. Requires a support board for explanations. |
| | |
| Conference Paper Roll Holder | |
| Allows deleting and overwriting. | Time to write it. |
| The teacher must know the subject rather well. | Requires good writing and order. |
| The student sees the teacher solving. | Required to draw well. |
| Closeness to the classroom. | Cannot show the reality (photos) |
| Dynamic. | Limited space. |

| | | |
|-----------------------------------------------------------|--|----------------------------------------------------------------------------------------|
| Can turn back to previous paper roll. | | Requires few students. |
| | | |
| Slate Markers | | |
| Allows deleting and overwriting. | | Time to write it. |
| The teacher must know the subject rather well. | | Requires good writing and order. |
| The student sees the teacher solving. | | Required to draw well. |
| Closeness to the classroom. | | Cannot show the reality (photos) |
| Dynamic. | | Once deleted does not allow to return to previous boards. |
| Cleaner than chalkboard. | | |
| | | |
| Television and Video | | |
| Dynamic. | | The teacher fades into the background during projection. |
| Can show the physical reality (photos and videos) | | Requires prior preparation of the contents (search or pre filming) |
| Closeness to the student. | | Requires glimmer light or no light. |
| | | Can't paint over them. Requires a support board for explanations. |
| | | |
| Video Projector (VIDEO + DVD + PC) | | |
| Dynamic. | | Requires prior preparation of the contents (Video, DVD, PC) |
| Can show the physical reality (slides, photos and videos) | | Can't paint over a slide, photo or video Requires a support board for explanations. |
| Allows switching quickly between video, DVD and PC. | | |
| Can turn back to previous contents. | | |
| Closeness to the student. | | |
| | | |
| Electric Whiteboard | | |
| Dynamic. | | Requires prior preparation of the contents (Video, DVD, PC) |
| Can show the physical reality (slides, photos and videos) | | |
| Allows switching quickly between video, DVD and PC. | | |
| Allows to paint over a slide, photo or video. | | |
| Can turn back to previous contents. | | |
| | | |
| Network Resources | | |
| Show instantly updated information (web) | | Slow if network collapses. |

| | | |
|----------------------------------------------------------|--|--|
| Students feel more comfortable than with notes or books. | | |
| Closeness to the student. | | |

AS A TEACHER

There's no doubt that traditional resources, chalkboard and master class, did not allow, especially in technical careers to show students the reality of professional life. The "hardness" of the master class forced the teacher to master the subject exhibited. The class almost entirely depended on the teacher, who could get very close to the audience or full bore.

The revolution came with the video projector. This resource has brought, along with the PowerPoint file, a reign that can scarcely be forgotten in the classroom. The teacher can now bring all the material, previously selected and prepared, and give a class almost entirely with this media. We say almost, because even now, most teachers use the blackboard or the slate markers to solve exercises and problems. However, with the proliferation of pc tablets, sometimes the entire class is taught on the screen, including the exercises. [1]

AS A STUDENT

The student will not necessarily experience these changes as deeply, as they are "short term" passengers in the University. Nevertheless he has changed from taking handwritten notes of all subjects and drawing by hand during blackboard and master classes, to hardly take any notes and have a large number of references, books and documents posted on the web to consult.

This has led to a change that allows him to pay more attention to the explanations, not so focus on taking notes, and thereby, participate more actively in class. [2]

OVER THE LEARNING PROCESS

Currently, we have been seeing that over the last few years, the learning process has changed. Thus, generally speaking, we have gone from passive learning to active learning. Without going into detail on each of the many cases, we will stay with three, which ultimately, summarize the evolution and changes over the past 100 years: master class, collaborative learning and project-based learning, the first a clear example of passive learning, and the latter two representing the active learning.

The video projector and the Network resources have had a very important impact on active learning.

3 CONCLUSIONS

It is obvious that technological advances have brought us some notable improvements in the teaching process, but we may have abused of them, or we have not known how to guide them, often favourably. Conclusions bellow pose a series of questions, which should each teacher, each student and each college resolve according to their capabilities, resources and objectives.

The teacher has undergone substantial changes and now has some means of support in the classroom that provides him safety and reliability. But sometimes, the use of such media has been in detriment of the communication between the teacher and the student; as some teachers are limited to "read" and rely too much on the projected material, forgetting one of the major functions of teaching: motivation. Moreover, the teacher is totally reliant and at the mercy of the electronic resources, so that in the event of failure, he can hardly teach class.

The student has seen no need to take notes in class, he may attend or either be dispersed, as it is confident that at home he will have the possibility to download some perfect notes from the web. But does he really look at all the material at his disposal? Ease of access is causing some teachers to hang lots of information for consultation. The student does not always print all information, which is beneficial for the environment, but can you study on a screen as well as on a paper?

Homeworks of collecting and finding information, in other words, the state of the art, in many cases are obsolete, since the student can download the homework directly from either a national or a foreign university, shamelessly plagiarizing their contents. Even worse is when they do it from blogs or any other not contrasted resources. This, forces the teacher to change the teaching method and propose work on the basis of the logical reasoning more than on the information itself.

We do not know for sure what the future will be, even every day we are at a crossroads of whether the means, techniques and reasoning we try to use to improve education will provide adequate training for our graduates. Today we can only strive to find what we think best, but ...only time will tell.

REFERENCES

- [1] Teacher Questionnaires 1999 – 2011.
- [2] Student Questionnaires 1999 – 2011.