

Teaching, researching and learning in a technology-based environment

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ABSTRACT. This paper analyses the relationship between teaching, researching and learning in the current wired-society. Nowadays the technology of online communications is having an impact on the way people access to information and culture. Hence, we will show how education industry can take advantage of this “network society”, to tackle ancient problems, and then to build a better course design and to share knowledge more efficiently. We will investigate the role of professors and researchers, with regard to the evolution of these roles due to the use of technology-based educational systems. This requires the analysis of new teaching methods and practices, focusing first on the research and lessons design, and later on the delivery of educational outcomes to students. Our conclusion will focus on the development of high-standard teaching products, based on an integrated system of knowledge and an open network of cultural resources.

KEYWORDS: *Digital teaching and learning for Forensic Science, E-university, Professors' role, Teaching methodology*

Introduction

Laptop U is the title of an article published by “The New Yorker” to question whether the future of college and universities moved online. In that article, the perspective of Massive Open Online Courses – or other types of classes based on lectures videos – refers both to the style of communication, and to the regular evaluation of the students. And the goal of this e-work was identified as a “democratic reach” and then as a solution to high-education overcrowding (Heller, 2013). But, as professors and researchers know, education is a curiously alchemic process, its fluxes are hard to isolate. The relationship among teaching, researching and learning are difficult to analyze, and the evolution of the wired-society makes this task more and more

hard and we must focus on the technology-based environment that qualifies our lives, and then on the tools able to optimize courses for students and professionals based on multimedia itineraries and educational paths.

A critical framework for the analysis of higher education tools after the impact of the digital revolution requires both the knowledge of the challenges related to our digital era, and the awareness of students' and teachers' behaviors. As we will see at the end of this paper, in forensic science and in economic analysis of law, multimedia tools offer insights relating to the practical needs within judicial trials, and in other contexts related to any legal profession (Ho et al., 2014; 2015).

In light of the foregoing, we can understand that an effective use of technology will offer an educational alternative to the traditional face-to-face practices. This alternative shall improve the educational offering, and so a wide application of the new e-learning tools will help the "market for culture" to reach a more stable and efficient equilibrium.

Teaching in a global wired-society

If we could believe that networks had been built for specific purposes (telephony, broadcasting, etc.), today we are aware that any other step forward in the implementation of online technology will produce an unexpected change in our communities (facebook, twitter, linkedin, etc.), having an impact on the way people get access to the information and to the culture. Hence, education industry needs to take advantage of these changes, to link its outcome to the need of a "network society", to tackle ancient problems, and to build a better course design for sharing knowledge to a wider range of people (Binford, 2013).

For example, the multimedia reconstruction of the case – within a web-based system – will help the student to consider the essential events. A video can best introduce the theme, while a set of documents can help the understanding of the debate that surrounded around the case. In this way, students are able to access directly to the documents which have oriented the decision of the judge, and which have had importance in the judicial decision under observation.

We must consider that higher education often refers to two alternative educational systems. And often the first is élite, while the second is based on non-selective schools, colleges or universities. Our society is limited by an educational set-up that turns most applicants away, while the students that walk through certain universities' gates can work hard and have their deserved opportunities. But teaching in a global wired-society shall open these gates to every student, by sharing the tools required to develop students' abilities.

It goes without saying that e-learning requires specific competencies, skills and abilities. This allows effective performances in the environment of technology-based higher education. Self-direction, autonomy, time management, computing and interaction skills are some of these competencies. This does not mean that any student shall understand on his own *how to learn*, but that they should have been educated to this during previous years of school, and this shall be a basic educational goal of any global-wired society (Mitchell et al., 2013). Moreover, if this education lacks, e-learning process shall start with a preliminary course aimed to form a new students' identity, able to be the foundation for the construction of knowledge on multimedia basis.

In other words, teaching in e-learning environments is related both to what the students need *to do*, and what the students need *to have*. But it is difficult to understand the relative importance of these

The role of professors and researchers: leadership, teaching responsibility, and values

In online environments, the role of professors and researchers reflects the evolution due to the use of technology-based educational path. The performance of this role requires new teaching methods and practices, both in the preliminary stages of research and lessons' set-up, and the educational outcome's delivery.

Students online are far away from the teaching set, and then we shall verify if multimedia social connections motivate them as the real ones. The same must be said for the acquisition of the informal skills that qualify a professional. In other words, according to the online educational standards, professors must develop other tools to improve the students' skills and abilities.

It should be noted that new opportunities for professors and researchers arise from the need for high-standard teaching products – based on an integrated system of knowledge and an open network of cultural resources. In particular, the need for innovative and affordable high-quality courses requires paying attention to (instant) feedbacks received from the relevant e-community (made by students, colleagues, and any other relevant web user). And this shall improve both teaching and learning.

Undoubtedly, we shall consider new non-simultaneous interactions among professors, researcher and students. This is due to the asynchronous environment of e-learning. Moreover, we know that text-based conversations influence the way of drafting any question or answer, having an impact on the e-class management. Consequently, we are not dealing only with distance teaching, but with the current continuous changing in the existing learning processes. These findings require that the e-professors shall rely on the benefits of the interaction between teachers and students, and then their role shall include the participation to an e-learning community, by managing an interactive online environment, through the set-up, design and implementation of their courses (Mensch, 2009, pp. 91-95). In other words, professors are called to a teaching role that is capable of building an online learning community, and to facilitate the overcome of the basic e-teaching approaches (that remain unchanged from traditional models). They can also be required to promote a common cognitive e-learning focused on the most common skills and habits, and then to facilitate any law student in accessing to legal community (Schrag, 2014). And the same shall be true for any Faculty. Furthermore, professors shall support a new type of e-pedagogy, through an interactive e-learning system and specific tools. This point of view focuses on the importance of building a new online legal community, and thus because a common framework for teaching can link the people of the next generation of lawyers and judges¹. And then it highlights also that an active role of the professors can be played in developing an e-learning system that allows students to collaboratively explore the contents of any multimedia itinerary. Based on this role, it is important to distinguish the design of the e-learning course, and the approach to the students while they follow their educational path (Bramble, Lu, 2010). And concluding on this point, we can state the obvious. Teaching in our wired-society creates more than an opportunity related to the features of the online environment. Hence, we need to move away from the mere recording of lessons designed for on-campus students.

¹ See Ray Worthy Campbell (2013), where the author moves from the consideration that U.S. law schools find their once serene setting to be under siege, he highlights that No professor with a conscience can comfortably watch half his or her students spend three years of their youth and significant sums on a legal education only to find no jobs that justify the investment.

Step towards technology-based researching practices and new design of on-line teaching processes

Focusing on the current possibilities to develop high-standard teaching products, we must take into account that an integrated system of knowledge and an open network of cultural resources help professors and researchers in developing their analysis and way of teaching.

We are then dealing with a possible increase in the productivity of educators and students. We are not arguing that online education is *tout court* a cure for the low productivity of traditional educational courses, but we shall verify if these new multimedia itineraries can avoid the overload of certain institution, and then the possibility to access online to prime courses online. It is possible, in fact, that online networking is a way to interlink Faculties, to share first rate educational courses, and to reduce expenses.

At this stage of the paper, we shall then investigate the role of professors and researchers, having regard to the use of technology-based education tools. This requires the analysis of new teaching methods and practices, focusing both on the preliminary stages of lessons' design, and the final phase of delivering the educational outcome to students.

We are conscious that the recording of video lectures is the main strategy to deliver content to students in online education. However, researching practices can be oriented towards offering sophisticated multimedia itineraries. Indeed, other schemes have been developed: tutorials, group work, simulators, etc. We must move from the idea that a simple and intuitive navigation, through any kind of multimedia educational system, allows the student to proceed from one event to another, from one video to another, from one document to another. In this case, any student can, at any time, make his own analysis or point out his critical consideration on the different implications of the proposed contents. And all of this can be used in both desktop and mobile devices.

This is the reason why, online, a specific area of these educational paths shall record a set of downloadable documents, while another area shall give access to exercises and simulations that allow the student to focus better on more difficult topics (Wang, 2008). We may also criticise the traditional *transmissive* approach to education for the apparent *indifference* to the tools introduced by the new technologies. But we are aware that it is necessary to teach certain topics, and that new pedagogies, new technical skills, and specific adjustments in teaching tools can coexist with this approach.

However, we must develop our multimedia tools starting from the consideration that online teaching is not a mere split of certain lectures in some lessons shorter than 45 minutes each. Neither it is a subdivision of any lesson into smaller sections, supported by a presentation. It should be noted, moreover, that the design of a course requires a specific study, forcing any professor to develop a specific teaching process. Rather than rely on their experience, professors shall set up online courses providing the students with the agenda of any lesson, and the documents that had been used to prepare the educational path. In this case, this setting can allow any student to access to this material before watching any lesson. Moreover, students and professors shall gloss any course's document. This also allows us to highlight the role of online discussion forums, which can help this process on a massive scale (Christensen et al., 2013).

However, taking a first point, it is clear that moderated online discussion-group is not only a students' community, but it can also be a new e-learning tool (aimed to discover how to write and debate about legal matters). In this case, the professor shall be able to drive the discussions and to preserve

a well-ordered critical-learning community.

It is clear that the use of these tools has specific consequences. Accordingly, we shall assign professors the duty of designing an interactive environment (through a specific pre-course set-up), and then to facilitate the debate that takes place within it.

The benefits of technology-based higher education

The goal of any multimedia itinerary shall be the offering of a contribution able to link students to the scientific debate, and then its appropriate design shall provide a set of guidelines, protocols and principles which can help law students in carrying out their future legal profession.

Consequently, one more time, we must take into account that online education is not only the broadcasting of a professor's lectures. Multimedia itineraries shall be planned to develop a comprehensive and wide-ranging approach to modular materials from multiple sources, and the student shall be able to analyse them in order to gain specific competences.

As example, the conversion into a searchable database of the archives of any Universities' courses allows students to know whether their "dumb question" had been asked before, and if it has been replied, and by whom, when, how, etc. Hence, we are dealing with the possibility that a searchable database can link any student to thousands of previous students, researchers and professors. We can also assume that this tool can collect data over a long period, record cases, crunch inputs, calculate probabilities, and – in the end – orient students towards an experienced educational path².

However, the aforementioned assumptions do not refer only to the possibility of considering an alternative to traditional classrooms, even by using all the above tools by professors able to perform their new e-role. They shall be related to the overcome of the well-known "faculty-to-student ratio" because the same product can be effectively delivered to classes containing tens of thousands. And the analysis of any software tool cannot easily replace the common use of this ratio or other traditional measures of teaching adequacy.

In this context, we must consider that the benefits of certain multimedia itineraries are not difficult to validate. At the same time, it is easy to understand that smaller institutions can become specialized research institutions (by joining an online network) or improve their educational outcome (by using products developed in other universities)³. Furthermore, the transparency of online educations opens any lectures to a public-domain scrutiny by peers, not applicable to on-campus lessons, even if this can be an issue for the safeguard of the relevant intellectual property rights (Crews, 2014).

Under this assumption, professors and researchers can work in teams to set up and produce courses or documents required by a specific educational path, by applying the online technology. And this can change the teaching role through the institutional planning of any professional development.

² So it results essential, for the purpose of implementing an effective system of proprietary data-gathering, to identify the cases in which these databases can be shared among universities, e-learning centers and any other entity committed to educational purposes.

³ This will share the relevant costs among more than one university, and then improve the possibility to reach new goals in researching and teaching; see James Grimmelman (2014).

Conclusions

We have addressed several topics in this paper, and – while dealing with the learning outcomes in a global-wired society, the incidence of the technology-based higher education, the effects of the e-learning processes, and the proposal of regulation – we reach the conclusion that multimedia itineraries provide new opportunities for teaching, researching and learning.

In this context, the above analysis of the relationship among teaching, researching and learning showed us the importance of innovative and affordable high-quality programs. We can now understand that this network society tackles ancient problems and builds a better environment for sharing knowledge to a wider range of people. This is why our research started from the technology-based environment that qualifies the current wired-society. This is also why we agree with the conclusion that the technology of on-line communications had changed our communities and, in particular, the education industry. These changes had an impact on the way people get access to the information, to the education, and to the culture.

I can best conclude what has to be said on online education considering the aforesaid analysis of the role of professors and researchers, and then having regard – one more time – to the use of technology-based higher education systems. This requires the practical knowledge of new teaching methods and practices, focusing both on the preliminary stages of any research or lessons' set-up, and the final phase of delivering the “educational outcome” to students.

Finally, the remarks on the possibilities related to the development of high-standard teaching products are in line with an interdisciplinary approach required by the current society.

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Sintesi

L'articolo analizza la relazione tra insegnamento, ricerca e apprendimento nella società della rete. Le attuali possibilità di comunicazione digitale stanno producendo un cambiamento nel modo in cui le persone accedono alle informazioni e alla cultura. Di conseguenza l'industria della formazione può avvantaggiarsi della "network society" per affrontare alcune problematiche, per progettare al meglio nuovi modelli di corsi e per condividere le conoscenze con la massima efficacia.

In questo quadro assume una notevole rilevanza il ruolo dei professori e dei ricercatori e l'evoluzione di tali ruoli in relazione all'uso dei sistemi didattici basati sulle nuove tecnologie. Ciò implica l'applicazione di metodi didattici innovativi e di pratiche ad essi connesse, approfondendo in primo luogo la progettazione delle lezioni e la ricerca ad essa collegata, e successivamente le tecnologie per l'erogazione agli studenti dei contenuti educativi.

Lo sforzo congiunto a livello di ricerca e a livello di pratica educativa deve condurre alla realizzazione di corsi e materiali con standard qualitativi elevati, basati su un sistema di conoscenza integrato e un network aperto di contenuti e risorse culturali.