

## NEW TECHNOLOGIES AND LAW EDUCATION

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**Abstract:** The new digital technologies open the possibility to radically change the manner in which one learns and the nature of educational organizations, going beyond the limitations of traditional methods and institutions. The paper discusses two features of the new kind of learning which is made possible by digital technologies: the shift from learning mediated by a teacher to self-learning based on the student's interactions with a "learning environment", and the use of simulations of particular aspects of reality as learning environments for learning about those aspects of reality. Both features are discussed with reference to education in the legal disciplines.

### 1. Introduction

Learning traditionally takes place through the interactions between students and teachers and it uses almost exclusively verbal language as a channel of communication and understanding, that is, classroom lectures and the reading of books. This has been true, literally, for millennia and has been the basis of cultural transmission in our and other cultures. Today, this traditional manner of realizing education reveals many limitations and poses many problems. First, the quantitative educational requirements of mass societies make teachers a scarce resource, which is difficult to select and to pay appropriately. Secondly, verbal language has serious limitations as an exclusive educational channel, and this is especially clear in today mass society. As a tool for knowing and understanding reality, verbal language has undoubtable many merits such as its capacity to synthesize, represent, and transmit general and abstract knowledge and to make social discussion possible. However, when education has to be extended to the entire population, verbal language has clear limits as an education tool, limits with respect to students' motivation, effective comprehension of educational content, and possibility to link new knowledge to knowledge that already exist in the student's mind. Thirdly, today mass societies are dominated by communication channels which are not verbal but are

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visual and interactive, so that educational institutions risk to become islands of verbal language in an ocean of non-verbal communication, with the inevitable negative consequences of this isolation. (To give just an example, in a rather "literate" country like England, the percentage of boys and girls who declare not to love books has gone from 23% to 37% in an interval of just six years, from 1997 to 2003.)

This last phenomenon, that is, the increasing importance of nonverbal communication compared with verbal communication, has its origin in the development of communication technologies which has characterized the entire XX century, with movies and TV, and has made a jump forward in the last decades with the advent of the computer and digital technologies more generally. But if these technologies are the main cause of the many problems that traditional verbal language encounters today as an exclusive channel for communication and education, these technologies can also help us to overcome the limitations of verbal language by making it possible to explore the great communicative and educational potential of nonverbal channels. This requires a considerable investment of resources but the main obstacle is not economic but cultural: the very deep roots that an education almost exclusively based on verbal language has in our culture, and in particular in the culture of our educational institutions.

In this paper we want to bring to light the potential and the advantages of an education which uses the new digital technologies, and this from two specific viewpoints: the active character of learning, which becomes mostly self-learning rather than learning mediated by a teacher, and the educational potential of a new tool for analyzing and understanding reality which is made possible by the new digital technologies, that is, the reproduction of reality in a computer (simulations). We will use examples derived from the legal disciplines and from legal education, and we will try to show that the use of the new digital technologies in this field has the further advantage of clarifying the cognitive bases of the legal disciplines, thereby linking the legal disciplines to the cognitive sciences that have had great advancements in the last decades.

## **2. The active character of education based on digital technologies**

Traditional education based on verbal language has a prevailing passive character: the learner has only to listen to a teacher's lecture or to read a book. In the learner's mind the words which the learner hears

or reads can evoke all sorts of cognitive activities which are useful from the point of view of learning and understanding, but externally not specific activity is required from the learner, except to speak and write in his or her turn. In contrast with this, outside educational institutions, knowing and understanding reality has an essential active component of things done and of observation of the consequences of what one has done. And learning about reality is mostly entrusted to the learner, without constant external guidance from a teacher or a book. The "learning environment" is reality itself, not what is said or written about reality.

The first type of contribution that we should expect from the new digital technologies, and that the new digital technologies can actually give us, is the creation and provision of "learning environments" within which it is possible to learn about reality in the same way as one learns about reality outside the educational institutions. Reality is things seen, things done, and the consequences of things done. The "learning environments" created with the help of the new digital technologies should be environments in which the learner sees things, does things, and observes the consequences of his or her actions. Reality, at least the reality in which humans live, is also words that are heard and read. Therefore, the learning environment must also include words that can be heard and read, but in this case too, one must try to realize a form of active learning: words should appear together with the entities and events they refer to, and they should have consequences on reality much like all other kinds of actions. More concretely, digital technologies make it possible to realize visualizations and animations that reproduce reality, and not only reality as consisting of concrete, physical objects and events but also abstract phenomena, relations, structures, and processes. The purpose of these learning environments is to make visible what in actual reality may not be visible, and to provide the learner with the opportunity to see things, instead of just conceiving them abstractly, as is the case if one only uses words and concepts.

The learning environments made possible by the new digital technologies do not only have the concreteness of seeing compared with the abstractness of conceiving, but also of the active interaction between seeing and doing. A learning environment resembles reality outside the educational institutions because it offers the learner the possibility to act and to observe the consequences of his or her actions. As already noted, this is the fundamental manner in which reality is known by all sorts of organisms, including humans. Human beings know reality much better than any other animal because they have the hands. Using their hands they can execute, directly or with the help of

instruments, all sorts of actions on reality, and they can predict and observe the consequences of each of these actions. This essentially active nature of learning about reality is reproduced in the learning environments created by the new digital technologies. The learner learns not only because of what he or she sees but learns because it notes the consequences of what he or she does.

This advantage offered by the new digital learning environments is particularly clear when the educational content has important components of skills and abilities and of knowledge of the concrete situations in which these skills and abilities have to be deployed. An example is knowing a legal process, its rules and procedures, the different roles of the people involved, its possible developments and effects. This knowledge is difficult to acquire by attending and following actual legal processes for obvious practical and technical reasons, and on the other hand it is a kind of knowledge which is difficult and tiresome to acquire by just reading books and attending class lectures. Digital technologies make it possible to reproduce in a computer or through Internet, by means of visualizations, animations, virtual reality, simulations, role playing environments, a variety of legal processes, with their actual physical environments, the different roles played by lawyers, judges, defendants, their rules and procedures, their developments and conclusions. The learner learns by exploring this learning environment, by playing the different roles, and by manipulating the different conditions and factors and observing the consequences of his or her manipulations. This is very similar to the role of the experimental method in the natural sciences, and it should have the same advantages for learning as the experimental method has had for the progress of science.

The knowledge of the nature of legal processes which can be obtained with an active learning of this type has other consequences that it is worthwhile to bring to light. To learn what is a legal process by interacting actively with a simulated legal process, and perhaps to learn in a collaborative way through Internet with other learners who play other roles in the legal process, can induce in the learner an awareness of the conditions that determine if a legal system is efficient or inefficient, for example in terms of the time taken to conclude processes, conditions concerning the rules and procedures but also the relations between the different professional roles, and can suggest ways of making the legal system more efficient. In this manner simulated legal systems can become instruments of public and political discussion that can help to improve them.

### 3. Simulations as educational tools

But the use of digital technologies in the field of law education is not limited to the more concrete and practical aspects of law education such as the operational aspects of legal processes but it can be extended to the more theoretical and conceptual aspects of the juridical disciplines. Computer simulations are becoming an increasingly important tool for doing scientific research and for knowing and understanding reality, a new tool that is being added to the traditional instruments: theories, verbal and mathematical models, laboratory experiments and other techniques of empirical research. A computer simulation has the goal to understand reality by reproducing reality in an artificial system. The theoretical and explanatory interpretation of a given phenomenon or aspect of reality is translated or expressed in a computer program. If it can be demonstrated that the results which are obtained when the program "runs" in a computer correspond to the actually observed phenomena, then one can suppose that the principles "embodied" in the program are the same principles that govern reality, and since we have identified the principles that govern reality, it can be said that we have understood reality. The simulation method is an important addition to the tool kit of science, and in fact it is a method which is increasingly used in all scientific disciplines. However, simulations are especially important for the sciences that study human behaviour and human societies, which are concerned with especially complicated and elusive phenomena to which it is rarely possible to apply precise, mathematical theories. Furthermore, the behavioural and social sciences try to understand phenomena that evoke our values and our cultural/political preferences, and this cannot but make the study of these phenomena more difficult and problematic. Simulations are a new way of expressing our theories and our assumptions, and they force us to generate very precise and unambiguous theories and to make all our assumptions entirely explicit. From this point of view, they can become the basis for more mature sciences of human behaviour and human societies.

As we have already said, computer simulations are increasingly used today not only in the natural sciences, in physics, chemistry, and biology, but also in the sciences of human behaviour and human societies, which include the juridical disciplines. For example, using simulations one can investigate how juridical systems emerge in human societies, where a juridical system is defined as a system that, with an authority to which all the members of a given community are subjected, (a) specify under the form of rules what are the acceptable and the non-

acceptable behaviours of the members of the community, and (b) are able to identify the violations of these rules and to administer the penalty which has been established for these violations. With simulations one can study how a community of individuals which initially lacks any type of juridical system progressively evolves towards the creation of a juridical system which reflects the social, cultural, economic, and political conditions of the community.

Computer simulations are not only a new way of expressing models and theories beyond the traditional verbally or mathematically expressed models or theories but they are virtual experimental laboratories. In the virtual experimental laboratory of a simulation, as in the real experimental laboratory, the researcher can examine the simulated phenomena in controlled conditions, can manipulate the factors that have an influence on the phenomena, and can observe the consequences of these manipulations. With the advantage that in the real experimental laboratory one can study only some of the phenomena of reality, whereas in the virtual laboratory of a simulation one can study all kinds of phenomena, and in particular those that are the object of the behavioural and social sciences, which include the juridical sciences.

But if computer simulations are an important addition to the kit of research tools of science, they are also an important instrument for education in all disciplines. Simulations are important for increasing our knowledge and understanding of reality but also for transmitting what we already know and understand to the new generations. For example, by using simulations of juridical systems as educational tools it is possible to transmit existing knowledge and understanding of the emergence and nature of juridical systems, of the factors that influence their form, of the possible ways of modifying them and making them more efficient. The learner interacts with a simulated juridical system which shows him or her how the system emerges and how the system functions. By manipulating the conditions and parameters of the simulation, the learner can observe the role of the various factors and can arrive to a deeper understanding of the phenomena because it is an understanding which is more active and more under his or her control.

In this case too there are other consequences, that it is useful to bring to light, of using computer simulations as educational tools. The simulation of a complex system such as a juridical system is not only an instrument to better understand, in a more active and controlled way, the nature and functioning of the system, but it is also a tool for managing the system and for planning and evaluating possible modifications. One important problem that arises today with respect to juridical systems is

how to overcome the gap between economical and cultural globalization, on one side, and the local character of juridical systems, on the other side. Juridical systems are systems linked to the states, which continue to be essentially local entities. From the economic and cultural point of view, what we see today is a constant increase of interactions that go beyond state boundaries and produce an increasing economic and cultural integration and homogeneization at the level of the whole Earth. In contrast, from a political point of view, there are many obstacles to the creation of political entities that go beyond state boundaries, as indicated by the intrinsic limitations of the United Nations and the problems encountered when dealing with crimes that go beyond state boundaries. The juridical function is one of the functions of the state, and while there is a problem of a possible juridical globalization that can keep the same pace of economic and cultural globalization, juridical globalization is difficult to realize because of the local, not global, nature of the state authority.

This problem might become an important topic for an advanced juridical education. The simulation of a collection of states, and therefore of separate juridical systems, which are exposed to the pressure of increasing levels of economic and cultural globalization beyond state boundaries, might represent a significant learning environment within which the student could learn about the problems that arise from the juridical point of view and their possible solutions. This might be an active form of education, that could reduce the gap between education and entering the real world of work and of the current problems of societies, or a specialization of juridical education. But in this case too it is easy to see how the adoption of the new educational tools that are made possible by digital technologies has consequences that go beyond education and educational institutions and offers new tools for discussing and finding new solutions to the problems with which societies tend to be confronted today.