



# European Conference on Curriculum Studies

## Future Directions: Uncertainty and Possibility

University of Minho - Braga, Portugal  
October 18 and 19, 2013



University of Minho  
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ISBN: 978-989-8525-25-3  
2013

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# Depleting the curriculum: teaching digital platforms and curricular impoverishment

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## Abstract

The paper aims at showing how curricular complexity tends to be depleted by the use of digital platforms based on the SCORM (*Sharable Content Object Reference Model*) standard, which was created with the main purpose of recycling content as it is supposed to be independent both from the context of learning and the supporting technology also deemed to be neutral, all surrounded by a rhetoric of innovation and “pedagogical” innovation. The starting point of the discussion is García Pérez’s model of Traditional Didactics as a simple tool to show almost graphically that any ancient didactic model is far richer in terms of complexity than the linearity, in disguise most of the times but still visible under a not so sophisticated critical lens, of the interaction human-(reusable) content that is the basis of the SCORM standard.

The paper also addresses some of the more common deliberate mix-ups related to those digital platforms, such as learning and teaching, content and learning object, systems of automatic teaching and learning management systems.

Keywords: traditional model of didactics; digital platforms; curricular impoverishment.

## 1 Prologue

I always thought that the (true) discourse on innovation is a minority one and it may not match the discourse on innovation shared by the common sense, which takes for innovative what appears to be new. And I have often stated (e.g. Fino, 2007, 2008, 2011a, 2011b, 2011c) that pedagogical innovation, whether involving the use of technology or not, always presuppose a critical distancing in relation to the processes of teaching and to the curriculum models crystallized by the school of modernity. I also have insisted that pedagogical innovation lies not in the technology itself, much less when it is used to continue the old processes by new means, even though these processes have migrated to virtual spaces where they reside as representations, invariably reduced to a skeleton or even less, of the traditional school, disguised under appealing labels written in English. And I have stressed that pedagogical innovation has to be triggered by a clear understanding of the cognitive processes, and that it is unthinkable without any deliberate and conscious intervention by creating new learning environments that encourage and nurture these cognitive processes. According to this view, the technology, at best, will not be more than a contextual element or, if one prefers, an element for supporting the context.

I must also confess that I have not found many people willing to defend aloud this point of view inside the Academy. On the relationship between pedagogical innovation and the use of technology in education, the voices of the main stream, which a-criticism is deafening, are much more numerous.

## 2 Complexity

Curriculum is a very complex entity. So complex that, even knowing schools and having had a long and direct schooling experience as a student, as a teacher, or as both, few are really able to grasp the entire dimension and ramifications curriculum has grown in our culture. Some have the feeling that curriculum is much more than syllabus, lessons, evaluations, which belong to what is deemed important by society to be taught. Some are able to understand that there is a hidden part of the curriculum, related to what students learn because of the way schools are organized. And



some are aware that curriculum also specifies the way teachers teach, including the tools they use to teach, whether these tools are physical or methodological. And some feel that teacher education is also another curricular branch, particularly controlled by the state as it happens in Portugal, for example, and this feeling could lead to think about who controls whom after all: is it the state controlling the curriculum, or is it exactly the other way around?

I am neither a curriculum sociologist nor a curriculum specialist, but I am used to try thinking “curricularly” as I think about education, especially when the issue is pedagogy and pedagogical innovation, and the use of technologies of information is involved. I learnt from Alvin Toffler (s/d), Gimeno Sacristán (1985) and others that the kind of school that have spread all over the planet since the beginning of the Industrial Age was created to provide work force for the industrial world, which seems absolutely normal. The Industrial Age has wisely reshaped a pre-existent school institution to fit its not so sophisticated new demands, and there is no problem about this. But I also know that the world, these days, is becoming less industrial, more unpredictable and much more complex than it was in the XIX century. Everybody understands that the key skills to succeed in the present are no longer just rudimentary literacy and numeracy and a kit of industrial discipline made by punctuality, capability of staying in a crowded, hot and noisy space without going crazy, readiness to obey orders and to perform the same simple tasks over and over again, eight hours a day, six days per week. The labour force already needed by the present must have another set of qualifications, mostly related to autonomous learning, critical thinking, creativity, problem-solving, etc.

I tend to conclude that a more complex world demands a less linear school. If this happens to be true in the present, then it will be even truer in the future, provided that the school as an institution will continue to be needed, whether directly linked with the labour market or not. In any case, a less linear (hence, more complex) school would request a different kind of curriculum, surely less normative and much more flexible than the one we already know. This “new” curriculum has to evolve from the current one-fits-all teaching curriculum to attain the complexity of so many learning curricula as many are the learners who interact with the teachers and amongst themselves in new contexts of learning, either physical or virtual, inside the school or simply staying out of it.

Pedagogical innovation, in my view, has to do with seeking for this new kind of learning contexts, free from the paradigm constraints of the factory-shaped school, and hopefully existing both inside and outside the school, as the relationship between people who gather to learn together does not need to happen exclusively within the walls and under the supervision of an institution.

Complexity is, consequently, one of the key issues if we really want to change education.

### 3 “Innovating” to preserve the essential

I advocate a concept of pedagogical innovation as discontinuity or as a paradigm shift, according to Kuhn’s (1962) definition of paradigm. In other words, I think that pedagogical innovation implies rupture rather than continuity even with changes. Rupture with the pedagogical practices that have been consolidated along the evolution of the factory school over the last one hundred and fifty years, which includes simultaneous instruction, Taylorism, rigid discipline, top-down curricular decisions, students’ segregation by age, etc. It is needless to say that I cannot consider pedagogical innovation the inclusion of some hi-tech gadgets in the schools, usually meant to be used mainly by teachers to enhance their power of communicating. It is true that some of those gadgets can also be used by students being taught, but it does not modify anything truly fundamental in the traditional pedagogical settings.

I also want to distinguish between *teaching practice*, mainly anchored on didactics, and *pedagogy*, as no one mistakes pedagogy with students’ practices. A pedagogy involves the relationship between people who gather to learn (or help to learn) together and the way this relationship happens. Of course that gathering could involve the use of some didactics, but improving didactics is not the main purpose of pedagogical innovation, according to my view. The main purpose of pedagogical innovation has to do with implementing new contexts of learning where a non-industrial kind of relationship between learners and helpers could happen. And sometimes I wonder if a cocktail of content, digital platforms, technological education, technologists, engineers, marketing men, all using the same jargon contrived and slick, full of labels, that invariably nominate things deliberately to look like they are different, has anything to do with really thinking about education. For example, are the LMS (*learning management systems*) really *learning* systems or just virtual *teaching* machines? Are the LOs (*learning objects*) objects of learning or just teaching content? Is e-learning really about learning or is it more like about teaching? Since when is that the two expressions have become synonymous? And by the way, why is that gone?



## 4 The discourse on pedagogical innovation and the need for a hierarchy of concepts

Any pedagogy, to be worthy of the name, always rehearse global thinking on education, particularly on the relationship between education and life, the list of values by which one orients the ideals he or she pursues. A true Pedagogy always presupposes an answer to what education should be and how it should be and its scope goes obviously beyond the school institution. For example, Giroux (2010: 1), recalling the legacy of Paulo Freire at the time the social relevance of education is replaced by the language of measurement and quantification, defines Freire's critical pedagogy as

*"the educational movement guided by both passion and principle to help students develop a consciousness of freedom, recognize authoritarian tendencies, empower the imagination, connect knowledge and truth to power and learn to read both the word and the world as part of a broader struggle for agency, justice and democracy".*

Compared to Pedagogy, content delivery, both if it happens in classroom and through virtualization, belongs to a smaller and more immediate reality. A reality so close to the eye, that there are lots of people who simply do not find the need to any distancing from it, nor even feel the need of distrusting the presumption of its technical neutrality, disregarding all its political and pedagogical implications. Perhaps because of this, but also because it is easier, or because the lack of a minimum of terminological accuracy, there are those who confuse methods, techniques and resources with Pedagogy, just as there are those who do not make any distinction between teaching and learning, and this the reason for the "definition" of pedagogical innovation by common sense as the use of new technological resources for content delivery purposes.

Now, having Pedagogy a practical strand, which is the creation of learning environments where learners and the creators of these contexts move, it is on the changes in these contexts, and not the in technology itself, that resides the part, let us say, visible of the pedagogical innovation. The other part of the pedagogical innovation is conceptual in nature. In addition to the underlying philosophical principles, this other part necessarily incorporates the most current explanation that science has produced on the phenomena of cognition and on the ways of enhancing the possibility of its occurrence.

In other words, pedagogical innovation is something vastly more sophisticated than the mere introduction of technology, or the mere virtualization of content distribution. For whom the only imaginable school model is the one that crystallized since the second half of the nineteenth century, following the development of industrial capitalism, "innovating" perhaps may be the same as virtualizing with all the inherent adjustments due to the loss of an authentic social (school) context, which invariably reduce curriculum development to the skeleton. But for those who did not give up thinking education critically, and for those who have not surrendered to a kind of sameness saturated of technology, pedagogical innovation means something much more radical than the traditional school served through the new digital media, with adjustments imposed by the lack of imagination, and by the limitations of the technology, or the lack of complete mastery over it.

Pedagogical innovation means rupture and not continuity, critical consciousness and self-criticism rather than self-indulgence, serving the needs of the learner, which need to be determined beforehand, rather than the emphasis on closed teaching contents. Of course, for whom education is teaching and teaching is transmitting content according to a certain degree of sequence and organization, this speech will not make any sense. That is why I reaffirm the conviction that the discourse of true pedagogical innovation can only be clearly minority.

## 5 The issue of critical distancing in relation to the school of modernity

The general meaning of pedagogical innovation in relation to the school of modernity can only be struggling to replace it with something, institutional or not really, that suits modernity in accelerated transformation. If this replacement is limited to the development of the old curriculum through the new virtual media, the old ways, which reappear apparently rejuvenated, are not put into question, and all the potential for change that she may have is removed from the technology and from its use. In particular to allow what has been promised in the eighties (Papert, 1993), when it seemed to be possible that, within the school, the use of computers would bring a possibility of radical change in the approach to the classic triangle *apprentice, technology, knowledge*.



Of course, thinking about how the use of technology can help us to change education is only possible if we think that education should be changed and why. And this *why* must be implicitly or explicitly grounded on an awareness of the problems and contradictions that plague teaching systems, without which it is not possible any movement to modify whatever.

It is also clear that the proposal of *how* to change implies far more than having access to technology and being able to use it. For example, the SCORM standard (Sharable Content Object Reference Model) and its implementations of systems for content distribution require a profound mastery of digital technologies, without which there would be no SCORM at all. What is missing from any SCORM like implementations is a deep and implicit knowledge about the cognitive processes that are not explainable only by the theory of operant conditioning. Also they lack, of course, a distanced vision of the factory school, some procedures of which try to imitate. Not to mention a real pedagogical intention, just a bit more sophisticated than a kind of linear and prescriptive "pedagogy", contained in a vicious cycle of content presentation - questions about the content - following content presentation, and so forth.

Who does not understand that the factory school no longer corresponds, if ever corresponded to the highest degree of sophistication of education systems, and who ignores that a true pedagogy has little or nothing to do with the mere functioning of virtual teaching systems, never asks how technology can be used to build a different school (or no school at all). The struggle for change begins in the detection of the need for change and continues in the understanding and explanation of the reasons why change is necessary, and culminates with the inventory of materials, tools and theories to make the switch.

## 6 Old ways, new media

In the fifties of the twentieth century, B. F. Skinner presented a programmed instruction machine designed to overcome three drawbacks identified by him in the traditional classroom: equal time for students with different rhythms, flawed operationalization of teaching content, and the lack of immediate feedback. With the teaching machine, rather than all being subject to the same pace, each student would take ownership of the course materials according to their individual rhythm. In addition, the course material was organized into small instructional units, according to a coherent order, so as to minimize gaps in the assimilation of each unit by the student. Finally, the machine would give immediate feedback, validating or not each response and thus realizing one of the key recommendations of the theory of operant conditioning, whereby the reinforcement to be effective must take place immediately after the behavior.

The actual Skinner's machine had little success because of its cost (it was needed one machine per student to be effectively used). However, few years later, the evolution of the computer industry and the fall in the size and in the price of computers and the consequently generalization of its use, even in education, made it possible to implement Skinner's idea in the form of CAI (computer aided instruction). For example, in 1960 the PLATO (Programmed Logic for Automatic Teaching Operations) System was launched, clearly based on the principals of operant conditioning, inaugurating a trend of using computers in instruction that led directly to the SCORM standard thirty nine years later. It is also interesting to acknowledge that both the PLATO System and the SCORM standard have been developed under the auspices of the U.S. Defense, the former immediately after the Sputnik crisis and the latter linked to the need of maintaining the military personnel updated while in mission abroad.

As we can find out accessing the SCORM website, "*Sharable Content Object*" indicates that SCORM is all about creating units of online training material that can be shared across systems. SCORM defines how to create "*sharable content objects*" or "*SCOs*" that can be reused in different systems and contexts. And previously, it is possible to read in the same webpage that "*Specifically, SCORM governs how online learning content and Learning Management Systems (LMSs) communicate with each other. SCORM does not speak to instructional design or any other pedagogical concern, it is purely a technical standard*".

Digital platforms built under the SCORM standard are meant to deal with any kind of content that fits the standard, as SCORM was created to grant the reusability of the content, which implies its independency from the context where it is presented. In brief, according to this perspective, the main thing and more valuable thing in instruction is content. The machinery where it is delivered to the learner is to become invisible, as no other context but the content itself was necessary. No context and, obviously, no social context.



## 7 One degree (at least) below the level zero of Didactics

The above any suspicion of defending disruptive ideas, García Pérez (2000), synthesized the Traditional Model of Didactics as follows:

ANALYSED DIMENSIONS	TRADITIONAL MODEL OF DIDACTICS
For what to teach	* Provide basic information about the current culture. * Obsession with the content.
What to teach	* Synthesis of syllabic knowledge. * Prevalence of conceptual "information".
Ideas and interests of students	* Interests or ideas of the students are not taken into account.
How to teach	* Methodology based on transmission from the teacher. * Activities focused on the teacher's presentation, supported in the textbooks and review exercises. * The student's role is to listen carefully, "study" and reproduce on tests the content transmitted by the teacher. * The teacher's role is to explain the issues and maintain order in the classroom.
Evaluation	* Focused on "remembering" the content. * Focused especially on the product. * Made by tests.

In the same article, García Pérez also synthesized the Technological Model of Didactics, the Naturalist Model of Didactics (he called it *Modelo Didáctico Espontaneísta*) and the Alternative Model of Didactics (or School Research Model), showing that these three models are far more sophisticated than the earlier Traditional Model of Didactics.

As anyone can easily grasp, the Traditional Model of Didactics only involves the three classic elements of Didactics: *Teacher*, *Students*, and *Content* as no others are considered. In this model, the teacher transmits the content to the students, and these have the task to (listen to the teacher, read the material he prescribed and) report to the teacher the percentage they have retained in mind, until the test, from the transmitted content. This model describes a situation in which the teacher assumes the lead role, centering in itself the essential of the processes, in this case, the process of teaching as an active and transitive process (who teaches, teaches something to someone), while students' activity is a reflex and a consequence of teacher's one. Seymour Papert (1993), for example, emphasizing the fact that in our culture, despite the propaganda, teaching is given much more importance than learning, referred that there is even a word for naming the art of teaching (which is *Didactics*) but there is none to refer the art of learning (he proposed the word *Mathetics* to express that).

Well, despite the evolution of computers and the expertise of computer programmers, the fact is that, if it looks obvious that virtualization of school is not only possible, but perhaps appropriate or even desirable, it is a little bit more difficult to implement it. So far, it has been possible to make the virtualization only of the content, and the industry has done its best (see SCORM claims) to assure that the content is absolutely context-free in order to be reusable. The virtualization of teachers is never mentioned. As for the students, they can already have access, provided they have credentials and infrastructure to do so. And in this immaterial brave new world, students are allowed to interact with content, according to a plan previously defined by those who organized it.

In this "new" kind of school, once teachers cannot be dematerialized to stay online along with the content, a special kind of curricular development happens beforehand, when the so called LOs are crystalized, and students have no other possibility than interacting with content. Only with content, which has been previously organized by specialists in these LOs, the nickname for *teaching* objects, in spite of LO, in their jargon, stands for *learning* object, as if *learning* and *teaching* were synonymous.

That is why this new model of teaching is poorer than García Pérez's Traditional Model of Didactics. And that is why I consider this endeavour a way of spoiling technology and a way of reducing complexity and depleting the curriculum, by implementing a "new" model of Didactics with only two elements: content and students.



This is not, of course, any kind of improvement nor even on didactics. Not to mention pedagogical innovation that has nothing to do with this.

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