

ICT, Research and Teacher Education in France: Issues and Perspectives

Georges-Louis Baron, Professor of education
Institut National de Recherche Pédagogique (INRP), France
baron@inrp.fr

Eric Bruillard, Professor of informatics
Institut Universitaire de Formation des Maîtres (IUFM), Caen, France
eric.Bruillard@caen.iufm.fr

Abstract: ICT and the Internet have now become rather commonplace in the French society. However, their integration into every day classroom practice remains an issue. This paper is based on the remark that changes in teaching and learning activities may often be related to prior research, whose results have been disseminated in a selective way, among innovators, then reinterpreted and modified by different actors. Founded on a recent French synthesis, it presents some current research questions and advocates the opportunity of developing modes of cooperative research associating teachers and researchers and including an international dimension, because similar problems appear at the same time in different countries.

Context: a strong interest for ICT

As in other countries, ICT, and more specifically the Internet, has received in France much attention in the last few years. New words have appeared in French, directly imported from English: web, e-business, e-learning, the “e” being pronounced like English speaking people do, like a French “i”. This is of course not the first time such phenomena occur and it does not prove much in itself, except may be the fact that new realities are quickly disseminating all over the world, and that they are perceived as having originated in the Anglo-American sphere (which is largely true). The level of expectations in the society, as relayed by the media, remains rather high and, so far, there has not been much public expression of distrust toward ICT, like in (Cordes & Miller 2000).

Although the rates of connection are probably on the average slightly lower than in the USA, many people do have access to the Internet (particularly in affluent homes and at the workplace, relegating on shelves the Minitel, the French Network Computer first distributed more than 20 years ago). If ICT has therefore become rather commonplace in the French society, and if new activities using the Internet are spreading, there is still a form of digital divide: rates of internet connection in families depends very much upon the social milieu, even if nearly every school children have, in a way or another, access to computers, notably computer games.

In schools, a national plan concerning the Internet has been launched by the previous minister of education in 1997, aiming at connecting every school and every teacher to the Internet. Symbolically, teachers have been offered a professional e-mail account, managed by the administration (but they have to pay the internet provider costs). The department of education has also devoted important funds to the dissemination of resources toward teachers and faculty members (MEN 2002). Interestingly enough, relationships are being established between schools, regional or local authorities and enterprises, in order to facilitate Internet access to every school. This is relatively new in France where, except in technological and vocational training, there has been for a long time a rather sharp separation between the hierarchies of the “Education nationale”, relayed in every region and territorial administrative unit, the local authorities and the enterprises. The national level has always been responsible for the contents and modalities of education, while the local authorities have been, since the decentralization laws in the eighties, in charge of infrastructure issues. The enterprises had, until now played a very limited role within schools, except in vocational and technological sectors.

With the surge of ICT, one can notice a permeability between traditional boundaries, infrastructure decisions often having pedagogical consequences.

At the same time, French colleges of education (IUFM) have played a rather important role regarding ICT and programs have been launched rather early, aiming at giving teachers a sufficient familiarity with ICT (see Baron & Bruillard 1997). The evolution, since the beginning of the 1990, has however been toward a decreasing importance of specific ICT training, with the wishful correlative idea that what can be learned in the practicum will suffice to cover most of the needs. This trend, partially linked with the trivialization of informatics leaves open (and even blind) those issues linked with the necessary competences that teachers must have acquired to effectively use technology in their classroom (Bruillard & Baron 2003).

It is worth noting however that there are signs of a rising interest for the use of new modalities of teacher education. Some IUFM have begun to implement new forms of distance learning using the Internet and even new forms of collaborative preservice training using case based studies (Baron & al, 2001).

Recurrent Problems of Integration

This new interest for the Internet comes a little more than a decade after a similar interest for computers in education. Although it happens in a very different context and opens new perspectives, it would be imprudent to assume that there is no connection whatsoever with previous waves of information technology.

Concerning those ancient “new technologies”, the situation described by (Larry Cuban 2001) is partially true in France: a great majority of teachers use computers at home for preparing their work. At the same time, only a minority uses them for teaching their school subject; when they do, the impact on existing practice seems to be modest. However, because changes are very slow in an educational system, they are liable to be overlooked.

Over the years, some technological innovations have actually been implemented in schools with some success, notably in the scientific curricula and also in the humanities, without however bringing dramatic change in the way teaching and learning occur. In high school education, the main changes have probably been the apparition in the curricula of new items about using computerized instruments (particularly in Sciences). Learning activities using Computer Assisted Experimentations or digital simulation have developed and the focus of learning is slightly changing.

In primary education, many active and apparently sustainable innovations using technologies are led; many of them involve teachers pertaining to pedagogical associations expressing constructivist views of education. For example, militants of the Freinet movement are traditionally very active with technologies (about Célestin Freinet, see for example Freinet, 1966, 1990).

The question of integrating ICT activities in education nevertheless remains an issue. We have found that, probably partly because of the existence of national curricula, integration of ICT generally follows a path with three main steps, all involving teachers: the first one provides inventions of educational activities using new tools and even *designing* new tools. The second step sees the rise of innovations where technologies are used as substitutions or add-ons to existing practices and a modest appearance of technologies into curricula. In a third step, actual integration may occur, which means that learning contexts are changed and that technologies become common tools. Transitions between steps are always critical.

What is important is that observed changes in teaching and learning activities can often be related to prior research, whose results have been disseminated in a selective way, among innovators, then reinterpreted and modified by different actors...

Research results and new issues

Of course, research does not generally gives the means to identify what is good and what is not and its conclusions may be of very limited immediate value. Among the reasons why is the fact that researchers are always obliged to consider well-delimited objects, even when they are working on big samples. The results produced are highly dependent upon the context where they have been produced. They transfer with difficulty to other conditions, with

different variable intervening. There are entangled issues linked with the way the classroom works, which go beyond a mere resistance of persons. As is now well documented, teachers' actions are constrained by systems and oriented by values that cannot be forced upon them but that must undergo elaboration by the profession itself. However research can provide innovators with insight and give rise to further innovations.

An international francophone symposium addressing those issues was held in Paris in January 2002 (Baron & Bruillard 2002), with two main aims: elaborating a synthesis of existing research and identifying a series of facts and issues of interest and identify trends for further multidisciplinary and collaborative research. The participants mainly came from France, but also from Norway, Portugal, Quebec, Belgium and Switzerland. Teacher education was not always on the stage in the discussions, but was a central issue anyway.

This symposium was an occasion to verify that a consensus existed on a number of research results that can now be considered as facts commonly agreed upon, at least among researchers. Those facts may serve as a basis for posing new research questions. For example, the old belief that computer tools are becoming so "convivial" that no form of conceptualization and no training are necessary now receives little support. However, what should be part of the critical culture needed to use computer in effective and responsible ways is an open issue.

Another result, relative to teacher education is the necessity to develop several dimensions and registers of competences to allow for using ICT in the classroom in an integrated way (Coughlin & Lemke, 1999; Baron & Bruillard 2000). But, again, the modalities and contents of this education remain open to debate.

The quick diffusion of the internet, the development of new "e-activities" pose new questions to researchers, all the more that this happens in a globalizing world, where market values are prominent and may lead to important changes, specifically in countries like France that have an old tradition of central control of public education and strong concerns about equity.

A host of questions are posed by the society, not only to researchers. This social demand, however, is fuzzy. If ICT in education is perceived as an important dimension to explore, its place in the agenda of national institutions that fund research cannot be considered to be very high. Pluri-disciplinarity is advocated in invitations to tenders. But a there is a difficulty, very classical in France and may be in the USA too.

The issues considered are of course not the same for people from computer science, for cognitivists and for sociologists of education. The methods, central to scientific endeavors, are often very far apart. In practice, the recognition of truly interdisciplinary work is an issue, especially for junior researchers, who are in heavy demand of being scientifically recognized by mono-disciplinary and sometimes rather purist recruitment committees, particularly when fieldwork is involved.

Of course, the question of knowing what to do now to alleviate this problem has not received any definite answer. It is worth remarking however that a wider interest for this kind of research (and even for action research) is manifest in European institutions in charge of funding research. Those institutions are now rather important for French researchers, because they offer both an international recognition and an appreciable funding to the projects they select. So a European involvement might be a way to partially work around the problem. But Europe is not yet a federal state and a problem might arise if somebody were to publish too much in English (which is now the main scientific language in European projects) and too little in his own language.

Concerning teachers and their education, three main groups of questions were identified as important. The first one relates to educational resources, to the various meaning of this concept in the different subject matters, to the different usages that may be implemented and to the implication of teachers as authors in the provision of new resources.

As in many countries, the web has brought deep changes in modes of disseminating educational information and resources. At least three models are currently present: one considers free exchange in a community of practice; the second, found in particular in French disciplinary communities of teachers is also free, but with a control by pedagogical institutions (like inspections or the ministry of education) having a responsibility in pedagogical matters.

The third is the market model, with classical requirements for profitability. The forms of evolution of these three models are not yet quite clear and deserve further research.

A second group of questions is more specifically concerned with the new modalities of teacher education (notably case-based education and other forms of collaborative learning) that technologies may foster both for pre service education and professional development.

A third one concerns studying the influence of contexts and infrastructures in teacher practice. Among the contexts, of course are the students' representations and practice of ICT. The times are no longer when using computers was for students something rather unusual, rewarding in itself because high technology was being used. It is beyond doubt that students do invent creative uses of technology (particularly mobile technologies); but existing work suggests that they tend to have naïve and sometimes wrong conceptions about information processing and a limited ability to cope, individually, with computer software. This situation concerns teachers, who must take into account their students' technological culture and give them pertinent ideas, especially in primary education.

Much is at stake for research, both in order to gain insights in the design of new artifacts and to understand the complex issues linked with their usage in ordinary, every day classroom conditions. It is striking that the situation regarding ICT in education has common features in the industrialized countries. Comparative studies are in order and may give insights for explaining the problems encountered, in particular in the field of teacher work with technologies. Those studies must go beyond mere comparisons of average indicators (like the number of students per computer) and take into account qualitative observations of complex, "ecological" situations. Some work is already being done in this field (e.g. SITES M2 launched by IEA - <http://sitesm2.org/>), but there is room for plenty more. What appears most interesting to us (see Engeström, 1987) is to focus not only on the instruments the subjects, or the productions, but on whole systems of activities; taking into account the community, the rules that govern it, the division of labor within it...

A very important point concerns the modalities of research that might facilitate obtaining results useful for the teaching profession. A general idea, which has been illustrated in institutions like INRP, is that modes of cooperative research associating teachers and researchers are feasible and can be productive; even if they do not resort to one single theoretical field, rely on syncretism and often on action research.

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