



Rivista interdisciplinare  
di tecnologia  
cultura e formazione

*Special issue*  
Qwerty 10<sup>th</sup> Anniversary

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Registrazione del Tribunale di Bari

n. 29 del 18/7/2005

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ISSN 2240-2950

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# From online learning to online lives: the first decade of Qwerty and some issues for the future

Roger Säljö\*

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## Introduction

During the ten years that *Qwerty* has been reporting research on issues of culture, schooling, instruction and digital tools, we have experienced yet another dramatic period in the 60 to 70 years, or so, long history of the spread of digital resources in society. In the areas of education and learning this has been a decade characterized by intense argumentation between technophiles and those skeptical of anything that has to do with computers and digitization. Some consider the alleged failures of schooling a result of the incapacity of school systems to “go digital”, while others want computers, smartphones, the Internet and all the rest banned from classrooms, since they disrupt teaching and learning as we traditionally know these activities. I will return below to some comments on the period covered by *Qwerty* reported research, but let me first remind our readers of some of the steps in this process of marrying digital technology with schooling and communicative practices.

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## **Computing goes to school**

Already in the late 1950's, the first steps towards attempting to integrate computers in education were taken. One of the first interventions launched at about this time was the PLATO (Programmed Logic for Automatic Teaching Operation) project. Scholars at the University of Illinois designed PLATO as a system with large numbers of terminals serving undergraduate education as well as other educational facilities in the state of Illinois (Lundgren, 2014; Molnar, 1997). This was in the era of mainframe computers, and the pedagogical ideology underlying most models was largely built on behaviourist principles of information presentation and written responses by students in a mass-teaching, one-to-many, environment. After this followed CAI (Computer Assisted Instruction) in which tutorial software, often self-paced, took learners through an area of inquiry in a step-wise manner. The point of departure for a CAI environment was often a textbook that had been transformed into a software where learners could read and respond to pre-formulated questions. Large investments in huge projects were made along these lines, and high hopes were placed on the alleged capacity of such designs to support motivation for students and to allow for individualization of learning. Everyone would now be able to "learn" at his or her own pace, it was argued. CAI, in turn, was followed by a number of acronyms that pointed to concepts that were more or less similar in their instructional underpinnings of individual learners in front of screens: Computer Aided Instruction (CAI), Computer Assisted Learning (CAL), Computer Based Education/Instruction (CBE/I) and Computer Enriched Instruction (CEI).

During this period between the late 1970's and the 1980's groundbreaking innovations appeared and computers began to find their ways into schools on a much broader scale. The personal computer, or microcomputer as it was often referred to, with microprocessors, operating systems and color screens was introduced, and the educational system soon became a very important market for such devices. PCs were bought in large numbers in many countries and generally placed in specially designed computer rooms. Unfortunately, however, these rooms were mostly locked and had to be booked well ahead of time.

And when finally available, it was far from clear how the resources could facilitate teaching and learning, and the teachers were largely left on their own with very little support in the attempts to design instruction in such environments. In many cases, PCs served as little more than digital type-writers, and computers were, as accurately put by Larry Cuban, “oversold and underused” (2001).

The instructional ideologies of the time, which construed computers as promising “teaching machines”, and as patient resources for training and rehearsing specific skills, eventually gave way to rivalling interpretations of the role of computers in instructional practices. Instead of adding computers to schools as they existed, Seymour Papert and the MIT people (who later set up the very influential MIT Media Lab) sought to develop theoretical conceptions of learning and instruction that built on constructivist ideas (Papert, 1980, 1993). Learning from Piaget, and extending constructivism to constructionism, Papert saw the role of “children’s machines” as one of allowing young people to engage in processes of constructing knowledge that could be publicly displayed and discussed. And they would do this by means of “powerful technologies”, a favourite metaphor of this line of argumentation. The ideological underpinning of this movement was, at least at times, openly critical of traditional modes of schooling, which were described as out of date, and sometimes these proponents even predicted that the end of institutional forms of instruction was near. “There won’t be schools in the future” as Papert (1984, p. 38) put it in one of his many bold statements. But it is difficult to see that this prediction has held up in any sense. On the contrary, schooling has expanded quite dramatically during latter decades. We spend more time in such institutional settings and on a global level schooling is reaching more young people than ever before in history. Education without teachers in a world of rapidly expanding information and knowledge does not seem to be a good idea, a conclusion that is still very much valid.

From the point of view of the sociology of science, the work by Papert is interesting in the sense that it represents a genuine scholarly ambition to ground ideas about learning with technologies in an articulated theoretical frame. Papert and his team also developed

concrete activities, most famous is the LOGO programming concept, to support constructivist ideas for organizing classroom teaching and learning. In addition, the concept built on Piaget's work, which had a profound impact on curricula and instructional practices in many countries from the 1970's and onwards (cf., e. g., Bergqvist, 1990; Edwards & Mercer, 1987). In spite of all these promising elements of transforming instruction, his work received very little recognition by educators. His books were read by computer enthusiasts and probably sold in large numbers but did not make into teacher training or in-service training to any significant degree. Digital tools were still something kept outside the mainstream of discussions about education and continued to receive very little attention in teacher training programs. This problem of how to connect to the concerns and priorities of teachers continues to be a prominent issue that still has to be addressed. In fact, this very issue has been a problem throughout the past century, and the many inventions in the area of media that were made from the radio and the motion picture and onwards had little effect on schooling (Cuban, 1986).

Another significant break from the "teaching machines" conception of computers was the movement where digital resources came to be seen as ways of connecting learners/users when engaging in joint activities and learning through collaboration (Koschmann, 1996). Peer-to-peer (P2P) computing emerged as a significant movement connecting users and allowing for communication, file-sharing and other activities. Somewhat later, during the 1990's, acronyms such as CSCL (Computer-Supported Collaborative Learning) and CSCW (Computer-Supported Collaborative Work) were introduced by groups of scholars in the field. These initiatives systematically took the ideas further on the basis of an interactive and collaborative metaphor of learning construed as an emergent property of joint activity. A pivotal element in this turn towards an interest in computer-mediated collaboration in institutional activities inside and outside schools and universities, of course, was the spread of the Internet, a global network of computers and computer networks using the same protocol, where rapidly increasing numbers of people could avail themselves of the resources of the World Wide Web. The impact of this develop-



ment for the circulation of information and support of new interactive formats can hardly be exaggerated, perhaps it is almost on a par with the invention of book-printing some 450 years earlier. This was the birth of the network society and a radically new environment for disseminating information, interacting and making experiences. When talking to young people today, it is hard for them to realize that the more general use of the Internet is not more than, let us say, 20 years. Internet activities are so much a part of their lives that it must be difficult to realize how time was spent before this. As late as 1995, less than half a per cent of the world's population was connected to the Internet, while the current percentage is close to 45, a stunning number of well over three billion users (Internet World Stats, 2014). In the wake of this development, we have seen an explosion of more or less successful initiatives for organizing teaching and learning from virtual universities to MOOCs and many other activities.

### **The Qwerty era**

In the last decade, the idea of digital resources as something external to our everyday practices has lost its meaning. In many respects we live digital lives in a manner which we could not have foreseen even ten years ago. We pay our bills, book cinema and train tickets, do a considerable part of our shopping, search for whatever information we need, navigate in our cars and when taking a Sunday walk in the forest, and we establish and maintain social relationships with the Internet as a mediating resource. In professional activities, we use digital calendars, software for book-keeping and registration, and we access various websites to find what we need and to update information. In hospitals, public and private administration and in many other settings, professionals carry out their work tasks by continuously interacting with digital resources. Our cars, mobile phones and television sets are full of digital accessories, many of which we become familiar with only after considerable time. Online gaming has become one of the largest popular movements in the world with millions of players collaborating over long periods of time. Even at the cognitive level,

technologies are becoming increasingly important. Cognitive activities, such as remembering and problem-solving in their modern versions, illustrate that we nowadays operate with “hybrid minds” (Donald, 1991). Thinking is no longer an intra-cranial activity of the kind psychologists used to study, but relies on co-ordination with external tools and “artificial memory systems” that we have access to more or less continuously. Expressions such as “I’ll google it” or “send me an sms so that I remember” testify to this seamless merger between minds and digital tools.

During the life-time of *Qwerty*, the pace of technological innovation has showed no signs of slowing down, on the contrary. New habits have been established very quickly, and many of the things we now take for granted have appeared in this period. We have seen the emergence of social media with an enormous impact on people’s everyday lives, but with much less impact on schools and universities which are still somewhat bewildered and, at best, trying to adapt. Facebook, as an example, is a big part of the lives of many, and it now has well over a billion users. Twitter, Instagram and many other fora have also appeared and made the world global, even approaching some of the characteristics that Marshall McLuhan (1962) talked about over 50 years ago in his visionary analyses of a coming “global village”, where we all live and share experiences. Googling, as another example of a recently established cognitive habit, has become a daily practice for millions, if not billions, of people. And these resources for virtual activities, as can be expected, bring their own problems and challenges to societies and individuals, all the way from infringement of people’s personal integrity to cyberattacks on vital social services.

At the technical level, one of the biggest transformations during the *Qwerty* era has been the appearance of mobile technologies. Tablets, smartphones and nowadays watches and other devices make it possible to stay connected 24/7. The social implications of mobility cannot be overrated and the implications for teaching and learning have to be researched and thoroughly discussed. For instance, if you go into a regular classroom in many schools in Europe, there will often be more digital resources than students (Nordström & Lundin, 2014).

The penetration of smartphones among young people in many, though far from all, parts of the world is at amazing levels, sometimes reaching well over 90 per cent. Tablets have dramatically lowered the threshold for using digital resources in preschools and in the early grades. Many two – to three-year olds are now experienced tablet users and surf the Internet on their own (Findahl, 2014). Given this development, many of our established questions of how digital technologies can support learning seem somewhat obsolete. A more relevant and urgent set of questions concerns what learning will be like when we grow up in and live such digital lives (Säljö, 2012).

### **Missions for the future**

When looking at the kinds of issues that have been addressed in *Qwerty* during its first decade, many questions triggered by technological innovations that concern communication, learning and education pass in front of our eyes. On the one hand we see explorations of themes such as online learning, blended learning, chats, the potentials of blogs and the role of computer-mediated learning inside and outside classrooms. On the other hand, there are at least two strands of inquiry that illustrate the manner in which the most recent innovations have changed the rules of the game of research and psychological inquiry in these areas to such an extent that we are challenged to ask more fundamental questions. Given the development that we see around us, these are issues where the *Qwerty* community could contribute even further. One of these issues, in my opinion, concerns the nature of the methods we use in research when studying digital lives. Here we face a number of interesting challenges that call for observation and analyses of a wider scope of activities than we used to pay attention to. Learner engagement in practices that potentially involve learning has become much more diverse in nature and distributed in time and space. Schooling no longer controls the learning environment in the manner it did just a few decades ago. Pre- and posttest studies with short-term design interventions no longer suffice (if they ever did, but that is another matter!). Ethnographies, video-based and

virtual, and microgenetic studies (Wertsch, 1985) need to be carried out in order to understand and analyse the manners in which communication and learning are embedded in social practices in homes, in schools, in voluntary activities, at workplaces and in other settings. Such issues have been productively addressed in recent issues of the journal.

The second question is intimately tied to issues of method, and it concerns the theoretical perspectives that provide avenues to understanding communication and learning in a complex information society, where knowing is distributed between people and tools. Here we see how the very notions of what it means to interact, to establish joint understandings and to learn need to be renegotiated. Participation and joint engagement in communities are important avenues for learning, and this recognition is one of the most interesting current challenges to our theoretical perspectives (Ludvigsen, Lund, Rasmussen & Säljö, 2011), which have been dominated by ideas of knowledge as residing within the individual mind. It is therefore interesting to see how analyses of communicative practices, of voicing and of co-construction of knowledge appear as central topics for scholars and make their way into the journal. By publishing work of this kind that relies on other metaphors of learning than those dominating mainstream scholarship, *Qwerty* will continue to play an important role as an antidote to the persistence of the rhetoric of the individual learner as the natural, and final, unit of analysis and target of research. Given the manners in which the public debate on educational outcomes is moving in this era of large-scale, international comparisons, there is a need for an alternative voice that invites research that deals with the issue of how we come to know in contemporary society from a broader perspective.

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