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# TEACHING FOR TOMORROW THE CHANGING ROLE OF TEACHERS IN THE CONNECTED CLASSROOM

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## **Abstract**

*What is the impact of ICT on teachers and teaching? How is the role of the teacher changing? ICT is one of many factors stimulating change in classrooms everywhere. It is distinctive in its universal prominence and in its dual role as both a reason for change and a means for achieving it. This paper examines the impact of information and communications technology on two key aspects of education, communication and learning, and goes on to consider how it affects teaching and learning..*

## **Introduction**

The advent of the information society has called into question many of our assumptions about education. New information and communications technologies (ICT) are changing the world we live in, and the way we learn to live. ICT changes teaching and learning through its potential as a source of knowledge, a medium to transmit content, a means of interaction and dialogue. Thus, ICT is both a cause of change and a means of achieving it.

As ICT enters every classroom, what is the impact on teachers? Does it give them more work, or less? Is it a tool that helps them to teach the curriculum or does it add extra curriculum content? Does it change what they teach and how they teach it? It is beginning to look as though ICT and, in particular, connection to the Internet will have profound effects on schools. It is too early to draw firm conclusions about what those effects will be. The advance of the most significant new application, the Internet, has been both recent and rapid - the World Wide Web started its exponential growth only in 1994. But we can identify pointers for teaching in the connected classroom. This paper does so by addressing two basic questions:

- what differences do communications technologies make to school?
- how does ICT enrich learning?<sup>i</sup>

## **Communication**

New applications of information and communications technologies, such as email, Internet, the world wide web and video-conferences, have created many new communication possibilities for school. In a classroom connected to the Internet, communication over distance is simpler than ever before. Communication outside the closed culture of a school can extend cultural understanding beyond the immediate

social environment. Pupils in one country, for example, can exchange experiences with pupils in another using email or a video-conference. In one case, pupils linked up with an expedition on its way to the North Pole, demonstrating the dramatic possibilities for on-line interaction.

When pupils work with ICT, they often work collaboratively in groups or teams. Originating often as a solution to shortage of computers, the experience of group work brings new benefits, by stimulating pupils to develop the interpersonal skills necessary for life after school. The ethos is one of working together to solve problems and achieve goals. Each pupil has a distinctive role but is fully involved in a common task. ICT gives them a means to communicate and to control their communication. The challenge boosts their self-esteem and gives them a sense of power. Relations between teachers and pupils tend, in consequence, to change. On-line communication - when a computer is connected to the Internet - inevitably gives control to the user, in this case the pupils. In the connected classroom the teacher no longer controls what happens, and loses the monopoly of authority. The teacher becomes leader, helper, partner and evaluator, combining the traditional role of subject expert with that of a manager.

Through engaging pupils in joint endeavour, ICT can help to make the classroom a more inclusive environment. ICT has something to offer most pupils, whatever their individual capabilities. Email, for example, offers "virtual mobility" to those who lack physical mobility. But communications technologies can also be a force for exclusion. Pupils are disappointed or frustrated when they encounter language barriers on the world wide web, for example. Sometimes enthusiastic pupils exclude those who are more tentative about using computers, while some are reluctant to use computers at all.

For pupils, then, ICT provides a set of tools that help them - more or less - with their school work and - once the technicalities are mastered - make it mostly enjoyable, sometimes frustrating.

For teachers, it provides a different challenge, that of becoming facilitators of learning - organising teamwork, enduring inclusion, managing classroom activity. More of their time is likely to be spent supporting individuals, less on whole class teaching. Nicolas Negroponte has suggested that:

"We may be a society with far fewer learning-disabled children and far more teaching-disabled environments than currently perceived. The computer changes this...."<sup>ii</sup>

The creation of teaching-enabled environments through effective use of ICT in the classroom may indeed have the effect of releasing hidden potential amongst pupils.

### **Enriching learning**

The school curriculum is under review. The learning necessary to face the future goes beyond the knowledge-based learning of traditional schools. In the search for a new agenda, one framework for educational reform for the new environment was proposed by the International Commission on Education for the Twenty-first Century. It forms a good basis for discussing the relations between ICT and learning. The key idea of the report is a powerful one - a framework for learning of four pillars:

- Learning to know
- Learning to do
- Learning to live together
- Learning to be.<sup>iii</sup>

The vision of the four pillars introduces a new and different balance between knowledge and other types of learning. The first element, learning to know, is the basis of most traditional education, but in the new framework also comprises "learning to learn". The second is conceived broadly, including "the competence to deal with many situations and work in teams". Learning to live together refers to family and community as well as the global context: "developing an understanding of other people and an appreciation of interdependence... in a spirit of respect for the values of pluralism, mutual understanding and peace." Finally, "learning to be" relates to the development of individual potential.

The four pillars present a striking image of an empty space within a framework, where learning might take on new and different dimensions. In traditional education learning is linear. In the future learning may reflect more closely the complex and multidimensional nature of life outside school. What will be the role of ICT?

Experience suggests that it has an important role in stimulating interaction and discouraging passivity. Perhaps ICT will help to liberate teaching and learning from the constraints of the linear curriculum. It can provide a bridge between learning at school and learning outside, at home or farther afield, giving substance to the notion of learning to live together.

The notion of "Learning to be" is particularly relevant, suggesting as it does that the implicit learning that takes place in the connected classroom will in future have a legitimate place in school. It is summarised as follows:

"Learning to be, so as better to develop one's personality and be able to act with ever greater autonomy, judgement and personal responsibility. In that connection, education must not disregard any aspect of a person's potential: memory, reasoning, aesthetic sense, physical capacities and communication skills."

Some of the themes identified above are very close to these qualities and capabilities. Traditional school tends to neglect what the Commission calls "the treasure within", the talents hidden like buried treasure in every person.

There are many other ways in which ICT enriches learning. But the framework of the four pillars emphasises the value of balanced development. If teachers are to achieve this balance they will need a new approach to teaching and learning.

### **Teaching for tomorrow**

The discussion above of ICT, communication and learning has highlighted some significant changes in the teacher's role:

- Change in relationship with pupils;
- Change in role to facilitators and managers who support learning;
- Change in the content and scope of teaching
- Changing locus of control, from teacher to learner.

These are dramatic changes. It is no wonder that the teaching profession is concerned about the implications of integrating ICT in schools. The barriers are formidable. It is easy to suppose that the main ones are resources and technical expertise. Resources are of course important. Although the situation is changing rapidly, shortage of computers and the high cost of connection to the Internet is a problem for most schools. But it seems that hardware and infrastructure are not the biggest barriers. The main difficulty is transforming teaching:

"The challenge of integrating technology into schools and classrooms is much more

human that it is technological. What's more, it is not fundamentally about helping people to operate machines. Rather it is about helping people, primarily teachers, integrate these machines into their teaching as tool of a profession that is being redefined through the ... process"<sup>iv</sup>

What help do teachers need? The principle barriers faced by teachers in the adoption of new technologies have been summarised in a recent study as follows:

- "large psychological barriers to trying out and using ICT
- difficult to change the pedagogical beliefs underlying teaching
- difficult to change deep-rooted mental structures on the "art of teaching"
- teachers are afraid of losing authority and class control because they believe their competence in working with ICT is inferior to that of their students
- rapid pace of change in computer infrastructure and software; teachers and schools cannot keep up
- problems and pitfalls at the institutional and governmental level
- the effort required from teachers to master new technologies is underestimated."<sup>v</sup>

These are principally human factors. ICT is apparently seen by many teachers as posing a threat to their professional expertise. The teachers of tomorrow need a new approach to their job and a new vision of what it means to teach and what it means to learn.

ICT is as we have seen a tool of great value, but its effective use entails mastery of a range of specific skills. The challenge of introducing teachers at all levels and in all sectors to the necessary skills is immense, particularly at a time when technology applications continue to develop almost as fast as they can be learnt. But technical know-how is only part of the story. Effective use of ICT cannot be separated from attitudes and approaches to teaching and learning. The "new" teacher needs to take an approach that is relatively open, to seek to inspire, support and facilitate learning, to create an environment conducive to learning. There needs to be a balance between using technology and traditional methods of teaching and learning.

Effective integration of ICT in schools may thus, in the end, require the transformation of school culture. ICT will perhaps, in retrospect, be seen as the catalyst which stimulated new ways of thinking about teaching and learning, and finally opened the classroom to change.

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<sup>i</sup> Much of the next two sections summarise parts of a report published as part of the SOCRATES Mailbox project, Janet Jenkins, Sigmund Lieberg and Inger Lise Stieng, (1998) The Connected Teacher Oslo, NLS; I would like to thank my co-authors for their agreement to adapt and use this material

<sup>ii</sup> Nicolas Negroponte, *Becoming Digital*, 1995

<sup>iii</sup> Delors, Jacques et al (1996) *Learning: the treasure within Report to UNESCO of the International Commission on Education for the Twenty-first Century*, Paris, UNESCO, p37

<sup>iv</sup> Means, B et al (1993) *using Technology to support Education Reform*, OR-93-3231, Washington DC, US Department of Education Office of Research, pp83-4

<sup>v</sup> quoted (summarised) from Dillemans, R, J.Lowyck, G Van der Perre, C. Claeys and J.Elen, *New technologies for Learning; contribution of ICT to Innovation in Education*, Leuven, Leuven University Press, 1998, pp 227-8