Schools of the Future

Working Group 3.1

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Abstract: The School of the Future will be formed during the next 5-10 years. The discussion focused on important changes related to the Learning Processes and New Learning Environments when integration of IT evolves. The present teacher role was analysed in order to discuss and foresee the future role of the teacher. The third aspect of integration of IT into schools is a holistic school perspective concerning the whole organisation.

1. INTRODUCTION

This professional group discussed different aspects of the 'school of the future'. This included different aspects of changes in education and paid obviously attention to the role of ICT within these changes (ICT in the broadest meaning and in every variety that occurs or may occur in the future). From the discussion it was considered useful to make some preliminary remarks.

First of all *the* School of the Future does not exist. The educational environment may have many forms: formal, informal, physical, virtual, public, private, commercialised etc., and all kinds of combinations of these forms. The group focused on different aspects which could be characteristic

of a school of the future, whereas a *school* is defined as a learning environment where assessment on learning takes place and credits are given for positive learning results.

We decided to take a 5 to 10 year perspective; far enough in the future to emerge from our present status and close enough to use the same words and stay realistic. In this respect one can distinguish four phases of development: emerging, applying, integrating and transforming (van Weert 2001). We agreed to examine an educational environment in a transformed stage.

Finally we did not elaborate on the why question: why should education change? We just assume that societal, cultural, technological changes and new scientific concepts will enforce change whatsoever.

The theme Schools of the Future was elaborated on at the WG3.1 conference in Chile 2000 (Taylor and Hogenbirk 2001) where four different aspects were identified. We discuss in this report the following three aspects, integrating at the same time the issues of 'connectivity' or 'networking' in all three. Each one starts with an opening from the briefing document before the report from the professional group.

2. THE LEARNING PROCESSES AND NEW LEARNING ENVIRONMENTS

ICT already provides us with new opportunities in education, particularly for teaching and learning. Traditional models of classroom practice may not be appropriate for an information rich environment. Equally, it may be that the only access to this potential environment comes through the use of ICT. This aspect addresses the following questions.

- What will be the context of the new learning environment in the School of the Future?
- What will this new learning environment look like?

In a school of the future the learning environment and the context within which learning takes place will have changed. We assume that the learning environment is a connected environment with access to the World Wide Web and other tools and technology. In this context, we will need to rethink the curriculum and the roles of both students and teachers.

In relation to curriculum, there will be a shift to more flexibility in the curriculum and a decrease in the amount of material taught by a teacher. The core curriculum will be reduced, with fuzzier boundaries across subjects. This will allow students to make more decisions and determine more of the tasks they will complete to achieve the outcomes or objectives of the system.

As a result of this greater flexibility of the curriculum there will be a shift in the balance of power relationships within the learning environment from

the teacher to the learner. Students will be a part of the process of deciding how to achieve the standards or objectives and the curriculum will no longer be 'secret teacher's business'. The teachers' role will be to guide, facilitate, advise, challenge and intervene when and where they believe it is necessary or when approached by their students.

The new roles of teachers and students will affect the environment and we need to consider what learners will be doing and how ICT can empower the learner to achieve their outcomes. There will be multiple learning environments and multiple possibilities. Although we do not yet know what new technologies will be available and used in the future, we do know that they will play an increasing role in the way students obtain information and the speed with which this information can be acquired.

Among significant technology developments that we can foresee over the next 5-10 years are those having the effect making use of technology totally seamless and totally portable. The notion of 'taking the group to the lab' will disappear and teachers can use traditional methods and technology as it seems appropriate, allowing a variety of approaches. This is due to several developments. Large screens that are at present not generally affordable will be so as the development of light emitting polymer screens promises to make a large screen in every classroom a reality. This is also due to radio networking that will enable wireless communication with all devices, clearing the learning space from all trip-wires. And finally is the battery technology that will soon enable all portable devices to last easily the whole day. Pupils will then have small, light-weight, radio connected devices, capable of performing all the tasks of the teacher's devices.

Students will be interacting with the global environment not just a local one. They need to learn the social and cultural ramifications of this.

As learners take control of their own learning, they need to learn how to learn. This will entail learning about their own learning style. The teacher will need to guide the student to get to know this and the range of possibilities. The student will also need to learn how to learn in other less preferred ways in order to be prepared for diverse learning contexts.

Students will choose whether to work as an individual or collaboratively with others. Intervention by the teacher occurs when and where necessary, and is still part of the learning environment; Explicit teaching or assistance still occurs at the point of need for the student or students. ICT will enhance the quality of the teaching but the use of ICT does not necessarily ensure quality teaching in itself.

3. CHANGING THE ROLE OF THE TEACHER

Currently teachers play the most significant role in shaping the learning environment for pupils. Politicians might claim that ICT can take over some of the teachers role while others believe that ICT can only realise its full potential to enhance the learning process if teachers are empowered to play their full part in an ICT rich environment. This aspect addresses the following questions:

- How will the role of the teacher change in schools of the future?
- How can ICT support this new role of the teacher?

In discussion about a changing role of teachers it seems necessary to analyse what that role has included and see how different parts of it may become or have already been influenced by ICT. The job of teachers has partly been directed by decisions from outside, for instance about the syllabus, partly by making decisions through own professional knowledge, and it has partly been about presenting to students but also about interacting, reflecting on and carefully laying foundations for a community of learners. The teacher's job has partly been that of a stimulator and supporter but also an evaluator of progress toward competency. Important decisions in the students' process of learning that have been taken by teachers have frequently been without much collaboration and co-deciding with other professionals.

Which parts of a teacher's job are already influenced by ICT, which can be and which will be, supposing that there will always be teachers because they as human beings have an important role in the life of young people? If teachers will in the future meet students regularly as a group, how will ICT affect the initiating phase of work that earlier has been a presentation by the teacher. How does a powerful learning environment affect the work of students and what kind of interaction, intervening, challenging and orchestrating, will be valuable contributions by the teacher? How does the teacher deal with the managerial role that goes with making use of a rich and powerful learning environment that is not limited with a school as a building?

One question is analysing a teacher's role with respect to future development. Another one is to find how necessary changes can take place. Shortage of qualified teachers in many areas is a threat to schools and ways of acting on new situations by all teachers require breaking the isolation of each classroom as a working space.

Teachers will in the future provide modules of learning to provide a more ICT flexible learning – arranged by projects and results based upon individual and team needs. They will also make an effort to help their

students in constructing a coherent and for them an easily attainable personal knowledge.

Various learning immersion patterns will be visible. Students can work for 3-4 days solidly on a project which will call upon a shift-work pattern for teachers to support students with help of ICT.

The role of teacher as facilitator of learning will continue to advance as content becomes more available through an increasing range of ICT resources. This enhanced role of the teacher as guide of learning process will enable teachers to focus on the individual needs of the learner rather than be content deliverers. The increased range of available resources to match the variety of learning styles will enable teachers to scaffold student learning in more meaningful ways.

Connectivity will enable teachers to collaborate on a wider scale thus improving opportunities for critical reflection in a peer-supported environment in order to improve the teaching/learning process. These enhanced communication and information retrieval facilities will also support teachers as life-long learners with a range of professional development opportunities available for 'just-in-time' learning. The variety of roles performed by teachers will further be able to be streamlined by the use of ICT so as to enable teacher time to be focused on student learning rather than on some of the current administrative tasks.

Teachers and pupils will make increasing use of institutional intranet systems for storing resources, which will be shared throughout the greater school community (including pupils' homes). Entire courses will be stored here for on-line use. And broadband internet will continue to evolve and offer quality educational resources, which will become more and more interactive.

Within schools of the future there will be a movement towards more types of professionals than is the general situation now, as experts from industries will be found working with teachers. Teachers will be able to work in different schools at the same time, to work only for a short period or part-time and have flexible timetable. Older students will also be found mentoring younger students.

Lifelong professional learning will be of paramount importance for teachers. They will be able to access own learning modules online as required, and as at present will make profession use of email and video-conferencing to share ideas and resources with other teachers in other institutions.

4. CHANGING SCHOOL CULTURE AND THE ORGANISATION OF THE SCHOOL

At the IFIP World Conference on Computers in Education (WCCE) in 1990, Seymour Papert commented that unlike other professions, a teacher from 100 years ago would still feel familiar in the classroom of today. One might argue that this is still true, but increasingly challenges are being made to the structure of the curriculum and the classroom environment.

This aspect addresses the following questions:

- What might the classroom of tomorrow look like? Will there be a classroom?
- How will the infrastructure of the school and the possibilities offered by ICT, support the changes foreseen?

Countries differ culturally, economically and socially. Additionally within countries there are issues around class, race and culture. These issues will influence what a school or classroom of the future will look like.

ITC in education will provide the opportunity to totally reinvent learning as we know it today. An ITC classroom of tomorrow will be an open learning community, and could exist either with or without physical boundaries. ITC will have the capability to provide increased access to learning without regard to time and place. Through ITC integration, boundaries between subject areas, schools, nations and even businesses will begin to dissolve, leaving teachers and individual schools less isolated. Management of the learning environment will be the responsibility of the teacher and the student, with the student able to self-assess their work. Parents would have access to their own children's electronic portfolios and up to the minute progress reports could be generated at will.

The learning communities could be world-wide, with the capability of providing 7day x 24hour access for students, parents, and teachers. There will be many different types of learning spaces available for people of all ages to access resources, support, guidance, and feedback. Collaborative learning will become standard, both face-to-face locally and through video ITC, on a national and international basis. Businesses will become part of the learning community as well, providing learning partnerships. Schools will remain the main source of education, yet partnerships with business and industry will provide real-life learning for students.

Call Centres located world-wide could be accessed and Chat type technology would be essential to support flexible learning. ITC tools will be ubiquitous and multi-sensory, thus providing open flexible learning for all learners regardless of ability, skill level, or special needs. These tools will provide support in the management of the learning community as well.

Teachers, through ITC tools, will have the opportunity to receive the professional development needed to be effective in the educational ITC environment. Traditional teacher training and individual teaching methods will evolve to compliment ITC technology. ITC in education has become the catalyst for change, empowering teachers, students, parents and businesses with new learning opportunities, providing them with a new, open flexible and global learning environment.

REFERENCE

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