



ICT in education: The role of the Teacher Training.

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Abstract

Role of teacher training in the process of educational innovation and the implementation of ICT is very important. The teacher training institutes are providing the teachers of the future and teachers are the key figures in arranging learning processes. Researcher gathered additional information on the role of the teacher by visiting schools where ICT is already being used 'extensively'. Information on organizational level was gathered and interviews were conducted with teachers. These interviews were aimed at the teacher's tasks, roles and required competences to fulfill these tasks and roles properly. In addition, literature on job profiles of teachers and implementation literature was studied. The research shows that the implementation of ICT cannot be realized by blueprints. Schools and teachers should learn and should be able to design their own educational situation, possibly choosing from the varied potential ICT has to offer.

1.1 problem definition

The use of Information and Communication Technology (ICT) in education is lagging behind expectation and desire. Role of teacher training in the process of educational innovation and the implementation of ICT is very important. The teacher training institutes are providing the teachers of the future and teachers are the key figures in arranging learning processes. The institutes, therefore, have to anticipate new developments and prepare prospective teachers for their future role. The nature and extent to which ICT is being used in education is considered to be a result of synergy

between 'top-down' and 'bottom up' processes. In the latter especially, a contribution of the teacher training institutes can be expected. According to commit, teacher training institutes therefore have to shift their focus from dealing with present education to that of 'future education'.

Information and Communication Technology Mediated Learning Information and Communication Technology Mediated Learning (ICTML) covers Computer Aided Instruction (CAI) for teachers and the use of multimedia technologies for producing course materials and Computer Aided Learning (CAL) for students. Computer assisted instructions have been in use elsewhere in developed countries especially at early years of learning. They provide ample opportunities for students to broaden their learning skills and for teachers to develop better multimedia and interactive courseware. Studies indicate that learning takes place through communication. This is generally poor in the classroom model. Classroom models are largely "one-way teaching models" in which the teacher plays the acting part whereas pupils and students are merely reacting.

Teachers can be as much as possible prepared and thus, can encourage the implementation of ICT in secondary vocational education.

The main research question is: What is the teachers' prospective role in a richly ICT-designed learning environment and what competences are required for this role?

1.2 Research questions

The following questions are posed in study:

- What are the consequences of (the use of) ICT in occupational practice on the attainment targets and curriculum of secondary vocational education?
- What are the interactions between new educational insights and the use of ICT in educational practice?
- What are the consequences of an 'ICT-integrated' curriculum (in secondary vocational education) and the use of ICT on the job of the (future) professional?

- What is the new – ICT-integrated – job profile of the professional, based on which the attainment targets and the curriculum of the teacher training can be altered?
- Before presenting the research methods and results, we will discuss the concept of a richly ICT-designed learning environment and the status of the use of ICT in vocational education.

1.3 Research method

This paper discusses the questions concerning ICT and education (not ICT in occupational practice). Several methods of data collection were used for this component of the project.

As described in the first paragraph, the main research question concerned the future learning environment and the teacher's prospective role. To know more about this future, several scenarios on future developments in education have been studied. Because many scenarios have already been completed Published studies were scanned especially for the role and impact of ICT. Furthermore, experts were heard about this topic, gathered additional information on the role of the teacher by visiting schools where ICT is already being used 'extensively'. Information on organizational level was gathered and interviews were conducted with teachers. These interviews were aimed at the teacher's tasks, roles and required competencies to fulfill these tasks and roles properly. In addition, literature on job profiles of teachers and implementation literature was studied.

1.4 Results

The four main tentative conclusions of the study.

1.4.1 'educational designing-skills' as the core of the future teaching profession.

Having to use ICT in an innovative manner is an important bottleneck teachers have to cope with . It can be interpreted as a 'design-question' and allows us to formulate the

proposition that ‘educational designing’ skills form the core of the future teaching profession.

Based on the scenario-studies and interviews with experts we can conclude that (to learn how) designing is necessary to be able to realize the desirable education. Furthermore, reasoned from the actual situation, it is plausible that teachers do not yet possess these ‘educational designing skills’ sufficiently at present. We will clarify this.

Given its uncertainties, we do not know what education in the future will look like. Nevertheless, it is possible to outline scenarios and to formulate expectations. From previously conducted scenario-studies, politics appear to have deduced a sort of idealized image of future education in which ICT is integrated completely. An image in which, for example, ICT is used for communication between students and teachers, in which internet, laptops and simulations are being used and (consequently) in which a variety of learning environments are possible. Teacher-centered and whole-class instruction is no longer the dominant teaching method. Other essential points are the booms in the field of ICT and the large availability of information. As a result, there will be less time for passing on information in education.

Based on this image we can actually conclude that education is nowadays lagging behind the expectations and wishes. However, in some scenario-studies, it was pointed out that external developments could prevent extensive integration of ICT in education. Experts especially emphasize the strong coherence between the strategic ‘design-thinking’ of the schools and of teachers (inside these schools) and the degree in which education as outlined will be realized.

First of all, schools should, from a society point of view, reflect on the concept of learning in a future society, the part that education will play, what they will teach their students. Subsequently, schools should determine how they can realize this from an educational angle. Especially it seems to be lacking of this view on society.

Once the objectives have been determined, the question of using (if and when) ICT becomes relevant. In this process, a great variety of alternatives and choices are possible,

which may arise among schools depending on the way and degree in which they will use ICT as an adequate mean to realize their educational goals. Whether or not ICT is being used, a vision and 'educational design' is necessary.

It seems that the attention focussed on the use of ICT in education has rather quickened and sharpened the discussion about educational development and future education.

For what characterizes current education? Although teachers consult each other more frequently, the teacher eventually decides on the educational practice in his class room. He is responsible and has the opportunity, as long as the results are satisfactory, to teach in the way he pleases. However, in practice (the classical teaching situation), the teaching method usually seems to be determinative and limits the teacher in his possibilities. Education and teacher are tied to a specific content of education, timetables, amount of face-to-face instruction, instruction time, class rooms, etcetera. Even the teacher's status is laid down . Legal provisions also determine the educational practice in schools.

Because of these constraints teachers are insufficiently challenged and stimulated to create powerful learning environments and guide students in their learning processes individually and therefore, the use of ICT does not take place.

Summarizing, we can conclude that the implementation of ICT cannot be realized by blueprints. Schools and teachers should learn and should be able to design their own educational situation, possibly choosing from the varied potential ICT has to offer.

Concluding from the scenario-studies and constructivistic learning theories, the profession of the teacher will shift from transferring knowledge to guiding learning processes. It has to do with the fact that information is increasingly available in the present (knowledge) society. moreover, information is dating so rapidly that education cannot keep on focussing on the transfer of knowledge any longer. Instead, it becomes more important that students learn how to search, select, process and use information. The teacher mostly has to guide these processes.

In interviews, teachers identified this development, although it is not particularly ICT that determines their role. They point out a new didactical concept in which the student works more individually and independently. The use and impact of ICT cannot be separated from this concept.

Would the teacher 'solely' be a guide of learning processes in the future? We answer this question negatively. Firstly, all kinds of differentiation in functions and tasks become visible in schools, where ICT already is 'extensively' used. On the one hand, this differentiation is a direct result of ICT-related activities, such as the expansion of the system management or the presence of an ICT-coordinator. Conversely, differentiation may be concerned with a vision which is oriented on 'designing education', in which different members of the school organization each take care of a specific part of the teaching- learning process.

It is outdated to expect teachers to perform all aspects of this teaching- learning process equally well. Education needs more than sole guides of learning processes; for example, there is also a need for people who are able to prepare the curriculum properly and who can create learning environments.

Another respondent expressed it in another way: 'Teaching and learning no longer are functions, but roles which pass to others. Each time the teacher has a different part, and sometimes he actually is a student. Schools become 'learning communities' in which students become teachers and teachers take place in the school desks.'

1.4.2 ICT-skills partly necessary for using ICT in education.

Looking at the afore mentioned research results, it seems unnecessarily to argue for specific ICT-skills for teachers as a key for the problems experienced by the implementation of ICT in education. How to implement ICT in education mainly seems to be a design-problem (how does a teacher create a powerful learning environment?)

A teacher requires many educational and didactical skills to deal with questions adequately. In concrete terms, it concerns matters like:

- A great pedagogical, didactical and educational psychological craftsmanship.
- To be a professional on the subject matter (vocational content)
- A large knowledge of (the application possibilities of) modern educational tools.
- Skilled to 'cut to size' of student guiding processes (e.g., formulating assignments, structuring the guiding process, assessment etc.)

It requires skills like:

- Creativity
- Flexibility
- Logistic skills (e.g. for assigning work- and study places and grouping students)
- Skills for working in projects
- Administrative and organizational skills
- Collaborating skills.

References

Commissie Onderwijs 2010 (1997). *Optrekkende krijtdamp; de school op weg naar de 21^{ste} eeuw*. Utrecht: Algemene onderwijsbond.

Dool, P.C. van den, Moonen, J.C.M.M. & Kraan, A.G (1998). *Van didactische driehoek naar lerend veelvlak. Naar een onderwijstechnologisch researchprogramma*. Den Haag: NWO/PROO.

Heule, K. van (1998). Docenten voor de onderwijsspiegel van 2002: een 'ander' spiegelbeeld? In: Biemans H.J.A. (ed.). *Studielandchap 2002*. Wageningen.

Janssen Reinen, I.A.M. (1999). *Beroepsonderwijs en volwasseneneducatie; ICT-monitor 1997/1998*. Enschede: University of Twente, OCTO, Onderzoek Centrum Toegepaste Onderwijskunde.

Kwakman, K. (1999). *Leren van docenten tijdens de beroepsloopbaan: studies naar professionaliteit op de werkplek in het voortgezet onderwijs*. Phd. thesis, Catholic University Nijmegen, The Netherlands.

Leenders, C (1999). *Samenwerken met het onderwijsveld een serieuze zaak*. In *Velon: Tijdschrift voor lerarenopleiders*, nr. 20/2 maart/april,1999.

Moonen, J. & Kommers, P. (1995). *Implementatie van Communicatie- en Informatietechnologie in het onderwijs*. Enschede: OCTO, University of Twente.

Onstenk, J. (1997). *Kernproblemen, ICT en didactiek van het beroepsonderwijs*. Amsterdam: SCO-Kohnstamm Institute, University of Amsterdam.

Pilot, A. (1998). *De student als junior medewerker*. Utrecht: IVLOS, University of Utrecht.

Pilot, A., Smit, N.J. & Ruijter, C.T.A. (1996). *Onderwijs en informatietechnologie. Kansen en mogelijkheden voor het universitair onderwijs*. Utrecht: VSNU.

Plomp, Tj., ten Brummelhuis A. & Rapmund R. (eds.)(1996). *Teaching and learning for the future*. COMMITT, Committee on MultiMedia In Teacher Training (prep. by). Enschede: COMMITT, University of Twente; Den Haag: Sdu DOP.