Educational innovation & ICT

Giving direction to policy at the University for Professional Education Utrecht

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Abstract: The University for Professional Education Utrecht is working on innovation in education and in particular the role which ICT can play in this. In the Informatics Policy Plan 2001-2003 it is made clear that as a result of social developments changes are urgently needed in education. ICT is an important tool in creating a rich learning environment as well as in creating the necessary conditions: the use of ICT makes it possible to organize educational processes differently.

Key words: change, community learning, communities of practice, employment perspective, innovation, learning environment, management, Lifelong Learning, policy, professional development, sustainable development, vision

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POLICY PLAN ON INFORMATICS

The Informatics Policy Plan 2001-2003 of the University for Professional Education Utrecht describes among other things why there is a need for change in education and the principles on which this can be based. These issues give direction to educational innovation. A short description of these issues is given below.

Issues

The workforce is changing

The workforce which is needed is changing: knowledge workers. Social developments are taking place which compel the university to make changes in the education it offers. Information and Communication Technology (ICT) often plays an essential but also obvious role in this.

The student population is changing

The student population (target group) is changing: lifelong learning. Business and institutions in the professional field served by the university require knowledge workers whose main task is to acquire and process facts and information. They work together in (often multidisciplinary) teams. A large measure of independence and responsibility is expected of them. ICT is of great importance: in office equipment and communication tools, but also in field-specific ICT applications.

The curriculum and its organisation are changing

The curriculum programme and its organisation are changing: from supply-based to demand-based. This applies not only to the educational process itself but also to the way education is organized, the administrative and managerial organisation. A shift is taking place from the designing and implementing of curricula and courses to the organisation and facilitating of learning processes. The programme is arranged so that the student can actively acquire competencies together with others. Students share in decisions about how and where their education will be realized. As in the professional field, ICT facilitates organisation and the exchange of information.

The teacher role is changing

The teacher's role is changing: from the transmission of knowledge to the organisation of learning processes. This sort of learning demands new forms of supervision and assessment. The teacher's role becomes that of coach in a shared learning process and an expert to be called on when needed. ICT resources are a basic requirement for communication between teachers and students and among students, as well as for finding, acquiring and processing the necessary information. As in businesses and institutions increasing use is made of GroupWare applications, including digital learning environments.

Competitive necessity

In conclusion it can be said that social developments compel the need for change. The University for Professional Education Utrecht will have to increase the trend towards more individualization and flexibility. The university will have to strive towards diversification in target groups, more combination of learning and working, and more assignments commissioned from the field. These ambitions will have to be realized in a cost effective manner.

In some fields this could lead to competitive advantage. But above all it is simply a necessity for continuing to operate in a fast-changing education market, where slowly, but surely, more and more international players are coming into the field. In these terms, it is not so much a matter of competitive advantage, but of competitive necessity.

Principles of change

Further on the Informatics Policy Plan contains the following principles of necessary change:

Primary focus is on learning

The starting-point is always education, students' learning, the learning process. The desires and needs arising from this determine the priorities in the strategy.

Diversity in development

The need for change applies to every study programme, but not in the same way and at the same tempo. Each study programme in the university

has its own individual student population and professional field and realizes its education in its own way. There is diversity between programmes, also because there are differences in the phase of ICT development in the professional field and in the programme. The phase of development determines the approach which is chosen for the further use of ICT in the study programme.

Broad strategy and deep strategy

The university intends to accomplish the necessary changes along two lines: a broad strategy and a deep strategy. The broad strategy aims to raise the level of ICT to the minimum necessary level across the whole range of the institution. Examples of this are: bringing the ICT knowledge of all staff members up to a basic level; and in all programmes students learn to work with the ICT resources which are used in the professional field. The deep strategy involves innovations in which staff are leaders in ICT developments within the scope of the desired changes. Characteristic of all these activities is that they are not tied to a specific study programme or subject. Subjects and problems belonging to a particular subject or programme fall under the responsibility of the management of the departments or faculties concerned. Questions which are independent of the subject-specific context fall under the domain of the university which serves to benefit the institution as a whole. These innovative activities serve as an example for other programmes and teachers.

EDUCATION & ICT KNOWLEDGE PLATFORM

The Informatics Policy Plan described in the first section of this paper ends with an Action Plan (Hogeschool van Utrecht, 2001). One of specified actions was the setting up an Education and ICT knowledge platform. This platform aims to make a meaningful contribution to the realization of educational innovation and ICT at the University for Professional Education Utrecht within the frameworks which have been described above.

In the preceding period three themes in relation to educational innovation and ICT were of central importance on the platform's agenda:

- Vision on ICT and higher education;
- Change management;
- Professional development in education and ICT;

These three themes are interlinked: *vision* gives direction to the *management of change* and the way in which professional development is approached; *professional development* is needed to realize educational

innovation. Because these three themes figure in every discussion of educational innovation and ICT, the platform decided to work them out in more detail, within the framework of the current Informatics policy plan, and to use them to define the terms of the professorship in Education and ICT and to advise and guide the university's policy.

VISION ON ICT AND HIGHER EDUCATION

ICT is not an end, but a means

The use of ICT can never be an end in itself. ICT after all is just a means for designing more effective and efficient forms of education. How this takes place within the educational organisation depends a great deal on the phase in which the organisation finds itself. The position of ICT within an educational organisation is also greatly determined by its vision on education. In effective higher education students develop into starting professionals by carrying out assignments in the role of a starting modern professional (Weert 2004).

This form of education has the following characteristics:

1. The work field is involved in the educational programme: in the formulation of competencies, the formulation of (study) assignments, in providing assignments, giving feedback on students' results and in making a contribution to the assessment and development of knowledge;
2. Students form themselves a picture of the competencies and professional expertise which a professional needs to possess. They are helped not only by gaining insight into relevant competencies for the profession (and professional expertise), but also by establishing the level of the competencies they have already acquired. Within an individual (study) path they make a personal learning and working plan in which they indicate which competencies they will acquire and which educational means they will use to do this. ICT can support this in the following ways:
   - Digital support for the study plan;
   - Online information about competencies;
   - Self-assessments;
   - Peer assessments;
   - Digital portfolio.
3. Working is learning, learning is working: students achieve results through working at professional assignments. These are assignments in which students work as professionals; the activities they carry out are recognizable as belonging to the profession; they are motivating and

provide ample opportunity for learning. Through working at these assignments (and reflecting on them) they build on their own existing knowledge and on the knowledge of the organisation. ICT can support this in the following ways:
- Availability of digital tools, instruments etc.;
- Online information about assignments, criteria, possible learning aids, methods of work etc.;
- Communication between student team members; work on shared documents;
- Means of communication for feedback (from fellow students, other students, coach or the professional field) to improve quality;
- Development of an individual 'toolkit' for students (instruments, examples, checklists, etc.).

4. Students are provided with professional facilities and tools to carry out the assignments. In carrying out assignments they are coached and supervised by teachers. ICT can support this in the following ways:
   - On-line question time;
   - Internet site with FAQ's;
   - Discussion forum, in which the professionals involved in the assignments, can also take part.
5. Students are assessed using professional standards and criteria. The assessment is based not only on the final result but also on the method used to reach the results.

Departments and faculties will make a choice from ICT-possibilities. This choice will need to be adjusted to the current situation of a department. Issues such as the degree to which the educational concept is carried within the department, the current use of ICT and the level of professionalism of teachers will all influence this choice. Each department will thus have its own tempo for arriving at effective education in which ICT has an appropriate place.

ICT and change in educational processes

As well as being used to support educational processes ICT can also be used as an instrument of change. Using ICT makes it possible to organize educational processes differently. This means that educational organisations can manage their processes in a more efficient and effective manner and can achieve aims which were previously deemed impossible.

The use of ICT means that learning situations will evolve in the organisation in which the role and position of ICT as a supporting resource will change over the course of time. The development of applications surrounding ICT has not yet been finalized after all. This means that it is not

possible to indicate the end point (if there is one). It can however be stated that ICT developments will continue and that they will become more and more important for the organisation and the learning process. Future generations of students will also have much more experience in the area of ICT than previous generations. They will have grown up with the use of many various forms of digital communication such as the successors to MSN, SMS and e-mail. Educational departments will need to be aware of these new channels of communication if they want to reach this group adequately. Higher professional education will therefore have to continue to invest in staff and resources in the area of ICT in order to adapt its processes further to the professional field and the students.

What education will be like in the more distant future is as yet unclear. We are convinced however that students will have to be addressed as starting modern professionals. It is from this perspective that the use of ICT in education will need to be shaped.

ICT and the people in education

The picture of innovative education, which has been painted here - in which there is optimal use of ICT - has far-reaching consequences, not only for students, but also for teachers, supporting staff and educational managers. Because of their changing role, the people who provide education will have to develop new competencies. For teachers this means that, as well as the traditional roles of explainer, trainer and fountain of knowledge they will also have to fulfil the role of coach of learning processes, as well as designer of assignments and learning resources. And all of this will take place more and more in a digital learning environment. Not only will materials (texts, presentations, training programmes, tests) have to be made available digitally, but supervision will also take place for an important part through the internet. For designing assignments and materials the teacher will have to know how to navigate through electronic information and increasingly to communicate electronically with colleagues and the professional field. After all - as described earlier - teachers will be developing the programme together in teams. An additional factor here is that when students are confronted more and more with realistic assignments derived from the professional field, which they carry out in a rich learning environment, the programme will not be able to be delivered by a single subject-specialist. Not only the students, but also teachers will become team-players.

For the supporting staff it is equally necessary that they are competent at dealing with computer applications: from the multimedia centre to the office,

information is digitalized and the processes for working with information have been automated.

Finally for management it is important that a vision exists of the way in which the changes in society, and particularly the changing demands in the professions for which they are educating people, will influence the content, organisation and processes of education. The organisation will have to remain alert to this and make sure that staff always has the necessary competencies and that enough innovation time is available.

CHANGE MANAGEMENT

According to Arendt (1963) a real revolution always displays two characteristics. Every revolution wants to achieve something new, take a step forward, while at the same time giving a new meaning to the concept of freedom. The digital revolution certainly meets these two requirements. The digital hippies communicated through the internet on their trendy Apples and created a totally new idea of open communication and the experience of freedom in a virtual world. It is also the fate of revolutions, alas, that their original fervour fades; leaders become corrupted and changes get bogged down in bureaucratic discussions and schemes. But the digital revolution thought it could escape from this. One of its most important differences to the grand political revolutions is that the digital revolution has no real leaders, but a bottom-up character and a strongly anti-hierarchical tendency. Katz (2001) argues that, in spite of this, the revolution has stranded. The internet has fallen prey to balkanization and commercialization, and the idea of open communication and open media is as far off as before the revolution. The long path through the institutions seems then the only solution to achieve change. Change, it seems, does not follow automatically from a new fervour, but has, perhaps, to be managed?

Three level change

Digitalization offers the educational organisation enormous possibilities, in regard to both subject-content and methodology. It is not surprising that the application of the achievements of the digital revolution in an educational organisation such as the University for Professional Education Utrecht, are often initiated from the bottom up. The decentralized and anti-hierarchical character of the internet after all invites experimentation at the lowest possible level. This micro level is the level of a single class in a particular programme or institution. It is often individual teachers who

initiate this sort of experiment on the basis of their own understanding and involvement.

At the middle level, changes in education which can lead to improvement and even cost-saving are always welcome. As long as it is only experimentation which is involved there is little attention or involvement from department and faculty management: the middle level. It would appear, however, that it is exactly this involvement which is crucial for the further implementation of change.

Departments and faculties are not islands; the university is an association at the macro level. As far as ICT is concerned the macro level concerns itself mainly with technical provisions. But, for change to be implemented and decisions to be taken, this level also needs to become involved in content.

The implementation of change needs to be structured and supervised so that the three different levels can work together and support each other. The middle level is the key element in all change.

Towards the desired situation

In the vision described before, the desired situation is already imagined: what is implied in effective education, how students are facilitated and how ICT supports these developments. The perspective of the university as a centre of life-long learning lies within easy reach but can only be achieved through phased change (in steps and in leaps): directed evolution

With regard to the implementation of *stepwise change* it is mainly the faculties and departments who are responsible (middle level); the university has a facilitating role here (macro level).

Leap frog change should lead the way to this step-by-step change. It is especially here that the university can demonstrate its organisational advantage. A condition here is that the leaps do not overstretch the limits of the leaping 'frog'.

In the development of ICT in the study programme various phases can be distinguished: *emerging, applying, integrating, transforming* (IFIP, 2000). Realistic leaps in ICT-supported learning have to keep within these phases to be feasible. Taking the perspective of the university as regional knowledge portal and centre of life-long learning feasible leaps are summed up in Table 1.

Table 1. Feasible leaps in educational innovation with ICT

Leaps	From of learning	Student's role	Teacher's role	Role of ICT
Present situation	Traditional, assignment based	Reproductive	Presenting content; controlling	Presenting content; controlling
Leap 1	Task-based learning in teams	Executive	Coaching; controlling	Application in tasks
Leap 2	Problem-based, virtual projects	Tactical and executive	Coaching; maintaining standards	Integrated, allowing flexibility
Leap 3 University as knowledge portal	Situation-based; virtual knowledge organisation	Strategic, tactical and executive	Coaching, consulting, designing	Integrated, transforming,

To keep change under control it needs to be managed, with the kernel of control at the macro level. Macro actions include:

1. The vision of the university for the future is made operational in the Strategic Plan;
2. The vision is translated into operational models of teaching and learning according to the phase of development of the institution;
3. Suitable change management;
4. Methodical design, development and implementation of actual programmes; organisation of knowledge creation and recycling (Communities of Practice 'lessons learned');
5. Phased and controlled development of an ICT-basis (infrastructure, applications, ICT-competencies);
6. Organisation of knowledge-building and professional development.

Vision and educational concept

First of all it is important that the faculty/department has an educational concept that is broadly shared and in which the position and function of ICT is clearly defined. The educational concept describes the basic underlying principles of the study programme, and these form the parameters for the further development of the programme. The educational concept makes a bridge between the programme and professional practice: the practice in which the students will eventually function, whether this is the professional practice of the accountant, the physiotherapist or the teacher.

In an educational model claims are made about issues such as:

- The importance of competencies, the relation to the professional profile and the way in which competence development is approached (through

real professional situations or situations which are as similar as possible to the profession);
- The degree to which students are responsible for their own development of competencies and the way in which this is realized;
- The acquisition of competencies in the programme/ practical study;
- The degree to which the curriculum is supply or needs-based;
- The organisation of the curriculum (project-based, division into modules);
- Assessment policy: it is generally known that students direct their activities according to the way in which they will be tested.

The practice of the profession for which students are being educated stands as a model for the practice of teaching and learning within the programme.

Giving form to change management

Educational innovation and ICT can bring with them big changes in the way programmes develop: in the manner of learning and supervising, as well as in the organisation and supporting facilities. This demands attention from management. There is a great deal involved and a great deal to be dealt with. It is important that department/ faculty management acts as an initiator of change and that it facilitates and actively follows the changes which are initiated.

Success factors in this are:
- Developing new forms of teaching and learning needs to be 'learnt'. This can best be achieved by supporting 'developers' 'on the job': it is through doing that people develop the necessary competencies;
- The introduction of competence-based learning with ICT is complex. This can best be managed by keeping ambitions limited and realistic: in other words by beginning small and in this way acquiring a feeling for the kind of problems which can emerge, moving from experiments and pilots towards implementation;
- Success is important for motivation: are all those involved motivated and kept sufficiently informed? It is important to check whether everyone has the same expectations and whether there is unanimity about the educational concept and the role which ICT can play in this;
- All those involved need to be kept informed of what is expected of them in the change process. Make sure that there is an action plan which is made accessible to all and which is approved by the department management. It is very de-motivating if management or others who are involved are not interested in the progress and results of the change which has been initiated. Through the presentation of interim results or

the organisation of reviews in which the methods of work and the (interim) results are justified, those involved are informed and have an opportunity to provide input;
- The management needs to make sure that there is an open atmosphere in which there is a self-evident place for the justification of choices made (by all).

Change management demands organisational efforts and time at micro-, middle- and macro-level.

PROFESSIONAL DEVELOPMENT

Starting point in thinking about the role of ICT in education, is that the use of ICT only has a chance of succeeding if it is linked to the needs created by educational innovation. New education means new roles and tasks for teachers; the question then is what ICT can contribute in this.

Professionals and professional development

In general a professional is someone who caries out an occupation for their living. The theme group professional development defines a professional as a skilled worker who carries out their work according to standards which have been established for the occupation as a whole. The standards need to be of a high level determined by the profession as a whole, the participating students and the workplace. Professionals must be able to justify themselves at all times to this forum.

Being a professional in education means then that members of the occupation group: teachers and support staff (IT specialists, librarians etc) produce work of demonstrably high quality according to norms which apply to their professional group. Professional development is the process by which professional practitioners continue to qualify themselves as a result of changing circumstances. In higher education these changing circumstances have a sharp impact; among these, ICT, now an essential element in society, makes new approaches to education possible. The professional educationalist must take advantage of this.

A professional is someone who wishes to continue developing and who is enabled to do this, in order to be able to accept the challenge of new problems in his or her occupation in a changing world.

The University for Professional Education Utrecht will have to increase the trend towards more individualization and more flexibility. The university will have to strive towards diversification in target groups, more combinations of learning and working, and more assignments commissioned

from the field. This demands a great deal of the professionalism of staff: they must be able to develop and facilitate education which meets these changing circumstances. All those involved in higher education are undergoing a shift in the roles which they fulfil in the educational process.

In their new roles teachers can make use of the new possibilities offered by ICT. There are however also obstacles to overcome: many of the professionals currently working in the educational process are not yet aware of the possibilities of ICT and will thus tend to do new things with old tools. In particular teachers who are still place themselves at the centre of the educational process will need effective support (of course this also applies to their superiors and the supporters themselves).

How can the university support its staff in becoming modern professionals? In the university's 'Action Plan Taskforce Education' is written that every teacher must possess basic ICT skills by July 2003 and that 60 percent of teachers must by then have developed the competence to create learning environments rich in ICT. Meanwhile it is now March 2003 and these results are still far from being realized. Professional development is not easy!

ICT skills and educational development

When it comes to educational innovation and ICT a distinction is often made between ICT skills (basic skills) and the competencies needed to develop and deliver an educational programme, in other words: to facilitate students in becoming modern professionals. These competencies presuppose knowledge of the possibilities offered by ICT in developing learning environments and in communication with (among others) students. These also presuppose knowledge of the use of ICT in the professional field. ICT skills are necessary to develop innovative education. In the past attempts have been made by departments to make it obligatory for teachers to gain their 'Digital Driving License' (certificate of basic ICT skills). But this generally met with great resistance. Learning things that are not immediately relevant, is counter productive. For the development of basic ICT skills it is more efficient to adopt a sort of Buddy system. Teachers in the workplace help each other to solve concrete questions such as: How do I make a table in Word?; How do I set up a spreadsheet?

It would be useful if people with specific IT expertise within a department were known and could be consulted for specific questions: the department *cyber buddies.* In fact this would simply be confirming existing practice: everyone is always complaining about the standard courses and boasting about the wonderful colleague in the next room (but in the same corridor) who is so clever with Word (lnternet, or whatever) and who you

can always bother with the craziest questions and who can always help you right there and then.

As well as support from a buddy 'on the job' there is also a need for supportive training in relation to the role of the teacher as developer and coach, as a support in ICT environments. These demands for training could be realized through a personal development plan being made by teachers who have a development task.

To find out who can take on the role of cyber buddy and which people have experience with specific aspects of educational innovation, it is useful to have an overview of the expertise which is available among university staff. This could be achieved in different ways: through a knowledge management system (a skills bank): a dynamic database with advanced search technologies representing knowledge development in the university or through the university's intranet on which every staff member (and student) can present themselves on a homepage. As well as skills banks, Communities of Practice can also play an important role in the exchange and development of expertise.

Communities of Practice

In various places within the University for Professional Education Utrecht there are people working on educational innovation in their role as a developer or coach. Educational innovation has many aspects and it is often difficult to get a grip on what exactly you want, how you will realize it, how it fits into faculty or department policy and how it can be organized within a time framework. A great deal has already been published on the subject of educational innovation, ICT and how this and that can be implemented. This literature can provide a good basis but often provides too little concrete information to actually get going. It is precisely in the contact with colleagues that all kinds of experiences emerge which give something concrete to go on in practice. Such an exchange of experience is important: it provides not only support and inspiration but can also lead to new ideas, new experiences and new knowledge.

A Community of Practice (CoP) consists of a group of people who share a common interest in a certain subject and who want to exchange these experiences and information. The members of the community meet to address shared problems.

The aims and results of the community are set up by the members. The community exists for as long as it benefits its members. The exchange between the members is supported by 'face-to-face' meetings and a digital environment. A community can vary in size. The size depends among other things on how important it is for people to know (trust) each other and the

wish to develop knowledge together. Communities need time to come into bloom and they may benefit from support from an expert (moderator) and an instigator (facilitator). The university thinks it important that there is sharing of knowledge and development among its staff, and has thus reserved a sum for the moderator and facilitator. An important success factor for participants is that the CoP benefits them and provides something which is directly useful in practice. A CoP must therefore be closely linked to members' activities otherwise it becomes 'extra' and the energy which is put in is greater than what is produced.

CONCLUSION

In this paper we have described the way in which the University for Professional Education Utrecht is working on innovation and ICT, supported by a university policy and a vision on society and education.

Just as everywhere else in the world, we started years ago with small innovations that were 'invented' by the lonesome pioneer who did something with nice IT-tools. But there was never time and money to take a proper look at the results and go on with it.

Thanks to setting out a policy as well as a vision, motivated choices are being made on what is important in education and what the role of ICT should be. Management of change plays a key factor in innovation. Change can only be realized when the three university levels (macro, middle and micro) interact, set out plans, experiment and implement. Change can also only be realized when people are allowed to learn -as professionals- on the job. We have yet a long way to go, but as workers we learn and as learners we work.

REFERENCES

Arendt, H. (1963). *The Revolutionary Tradition and its Lost Treasure.*

Knowledge Platform Education and ICT (2003). *Educational Innovation & ICT: position paper.* Utrecht: University for Professional Education Utrecht.

Hogeschool van Utrecht (2001). *Aktieplan Taskforce Education en ICT.* Utrecht: Hogeschool van Utrecht.

IFIP (2000). *ICT in Higher Education.* International Federation for Information Processing, Laxenburg.

Katz, J. (2001), *Halfway through the revolution. (*Retrieved December 10, 2002, http://features.slashdot.org/article.pl?sid=01/03/08/2342221&mode=thread)

University for Professional Education Utrecht (2002). *Strategic Plan of the University for Professional Education Utrecht.* Utrecht: Hogeschool van Utrecht.

Weert, van T. J. (2003*). New Education: the achterkant van het digitale wonderland.* Utrecht: Hogeschool van Utrecht.