BIG CHANGE. LEARNING AND TEACHING IN A DIGITAL WORLD
[WIELKA ZMIANA. NAUCZANIE I UCZENIE SIĘ W ŚWIECIE CYFROWYM]

Abstract: The transition from industrial to knowledge based economies will require deep changes in the way we educate children, students and adults. We expect libraries and library educators to be deeply involved in these changes. The future tools of education will be based on the web rather than on paper documents. In this paper we explore the transition from traditional to web-based learning through a concrete case: an international summer course designed on and for the web. We find that the web supports a production-oriented – rather than lecture-oriented – approach to learning and allows us to engage and integrate a very heterogeneous group of participants around multimedial production tasks.

EDUCATION 2.0 – ECONOMY – MULTILINGUAL EDUCATION – NORWAY – WEB-BASED TEACHING

Abstrakt: Przejście od modelu gospodarki przemysłowej do gospodarki opartej na wiedzy będzie wymagałoasadniczych zmian w sposobach kształcenia dzieci, młodzieży studiującej i dorosłych. Od bibliotekarzy i specjalistów w dziedzinie edukacji bibliotecznej oczekuje się głębokiego zaangażowania w te zmiany. Narzędzia nauczania będą w przyszłości opierały się w większym stopniu na technologiach webowych, aniżeli na wykorzystaniu dokumentów drukowanych. W artykule przedstawiono proces przechodzenia od nauczania tradycyjnego do formy opartej na aplikacjach webowych, biorąc za przykład konkretny przypadek letniego kursu zaprojektowanego i przeprowadzonego w sieci. Na tej podstawie wyrażono wniosek, że środowisko Web-u sprzyja podejściu do nauczania zorientowanemu nie na czytanie, lecz na tworzenie, a także pomaga zintegrować i sklonić do aktywności bardzo niejednorodną grupę uczestników zajęć przez skupienie jej wokół zadań zakładaćcych kreację multimedialną.

EDUKACJA 2.0 – EKONOMIA – KSZTAŁCENIE WIELOJĘZYCZNE – NAUCZANIE OPARTE NA TECHNOLOGIACH WELOWYCH – NORWEGIA

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A digital revolution

The topic of this article is big change. To illustrate what I mean by big change, I’d like to go twenty years back. In 1989 the Berlin Wall came down. It had symbolized the political division of Europe for twenty-eight years. The only thing that remains is a tourist attraction. Today pieces of the wall are sold as souvenirs. In 1989 Poland was a member of the Warsaw Pact (1955–1991) and Comecon (1949–1991). Today Poland is a member of NATO and the European Union. This is big change.

Political change leads to social change. To illustrate social change, consider the movement of people from Poland to Norway. In the seventies emigration from Poland to Norway was almost impossible. In an average year about only about sixty persons would leave Poland in order to work, study or settle in Norway. Today the numbers are more than two hundred times as high.

Modern organizations are accustomed to change. We live and work in societies that develop all the time. Every year is slightly different from the last. But most changes are small and gradual. They can be handled by established procedures and existing personnel. They do not threaten our working habits and our professional peace of mind. Big change is different. When big change hits a social system, the old routines stop working. In order to cope with the new environment, we must be willing to change our own intellectual foundations. In Eastern Europe the Soviet Union used its military power to stop normal processes of social and political development for forty years. When the communist party lost control in 1989, the structure of power collapsed. The Soviet Union did not adapt to the new situation – it simply went out of business.

My topic is computers rather than communism. But I start with the Soviet Union because its fall was so unexpected. The difficulty we face today is not to predict big change, but to accept its practical consequences in our own lives. In the nineties, most people looked at the digital revolution as a form of technological change. By defining it as technology, they kept it at a distance from the things that really mattered: family and friends on the one hand, colleagues, clients and customers on the other. Computer enthusiasts – the famous nerds – were seen as intelligent and amiable, but somewhat strange individuals. Personal relationships, professional activities and political struggles continued as before. The human basics – love and work and power – were not touched.

As we approach 2010, this is no longer the case. Digitalization has started “to change our society and our daily lives as deeply as the industrial revolution”. Today it takes a great effort to understand how disturbing this period was for the people who actually lived through it. We are accustomed to technical change, but have never experienced a deep technological revolution. Our ways of thinking and acting have been shaped by the late industrial societies of the twentieth century. We are, except for the very young, people with industrial habits and responses.

The industrial revolution meant a transition from agricultural to mechanized production. The digital revolution means a transition from material to intellectual production. Instead of steel, we process symbols. We create texts, performances and learning events rather than cars, clothes and buildings. The new society has been called many things: post-industrial, post-modern, information or network society – but none of these labels have been generally accepted. The first two labels have no content of their own. The term information is too static – it does not reflect the interactivity and productivity involved. Network society is more appropriate: the digital revolution facilitates horizontal interaction between equals.
Manuel Castells (2001), author of *The Information Age trilogy*, states, “The network society itself is, in fact, the social structure which is characteristic of what people had been calling for years the information society or post-industrial society. … a society where the key social structures and activities are organized around electronically processed information networks. “But it is the term knowledge society – and its economic counterpart – that are gaining ground. A quick Google search (April 12, 2009) shows that “information society” remains the most widely used term on the web as a whole. But “knowledge” is clearly catching up. If we restrict the search to the last year only, the favored economic term is now knowledge rather than information:

- information economy: 61 thousand hits,
- knowledge economy: 188 thousand.

**Education 2.0**

The relationship between networks and knowledge production is clear. Hierarchies based on command and control is not functional in a web-based environment. The purpose of traditional bureaucracies is to standardize production. But digital economies take care of standardization without human intervention. Repetitive processes can be analyzed, programmed and handed over to computers. Humans are not needed on assembly lines anymore, but in labs, workshops and learning centers. Innovation, creativity and design are no longer a prelude to production. To understand the new economy, we must treat innovation and learning as the core of production.

This conclusion is not a result of conceptual analysis or a matter of personal choice. I did my university studies in the 1960s, while the old academic tradition remained strong. I respect and enjoy the search for knowledge as a goal in itself. But we cannot understand the role of universities and colleges in knowledge societies if we use their role in late industrial societies as the norm. What the OECD (2008) has to say is brutally instrumental:

“tertiary education is a major driver of economic competitiveness in an increasingly knowledge-driven global economy. ... The imperative for countries is to raise higher-level employment skills, to sustain a globally competitive research base and to improve knowledge”.

The transition from industrial to digital production started in the sixties, with large-scale applications of computers in research, business and military affairs. Libraries were among the early users. A second phase began in the early nineties, with the invention and rapid dissemination of the World Wide Web. A third phase – symbolized by the term Web 2.0 – started about five years ago:

“Web 2.0 refers to a perceived second generation of web development and design .... According to Tim O’Reilly: – Web 2.0 is the business revolution in the computer industry caused by the move to the Internet as a platform, and an attempt to understand the rules for success on that new platform.” [Wikipedia, Web 2.0].

What happens to learning and teaching under the new circumstances? What can educators and librarians do? We believe that Web 2.0 represents an educational revolution as well as a business revolution. To rephrase O’Reilly: Education 2.0 is the learning and teaching revolution caused by the move to the Internet as a platform. Libraries, schools and universities are knowledge institutions. In the knowledge economy, they become production rather than service units. In this perspective, library education is both a case of and an investment in knowledge production. If that is true we must change both the content and the organization of teaching and learning.
The case of LATINA

In this paper, I present LATINA as a case of Education 2.0 – with Norway as a context. LATINA, which stands for “Learning and Teaching in a Digital World”, is both a concept and a training course. As a concept, it represents a learning environment that combines intensive pedagogical work in small groups with full and constant use of web-based tools and media. The LATINA course was developed by a small group of e-learning enthusiasts at Oslo University College and first given as a three week summer course in 2008. Both course and concept have strong library components. The three persons in the development team have a background in librarianship as well as in teaching and adult education. The course facilities are located within the OUC Learning Center, which unites the library and the audio-visual support section of the College.

LATINA is a learning environment where we use the web – rather than paper – as an educational platform. LATINA is an attempt to understand the rules for success on that new platform. On the web, we introduce LATINA as follows:

- Digital technology is transforming the way we learn and the way we teach.
- Traditional education takes place in a closed physical and social space, with limited technical resources, and with a single person in charge.
- In countries where web access is widespread, teaching and learning can take many other forms.

Seen from the outside, LATINA may look like a technological or a tool-oriented course. But this is a misperception. LATINA is not about tools, but about learning and teaching. We focus on the pedagogical texts, events and presentations you can produce with the tools. We have deliberately chosen tools that are available – free of charge – to everybody on the web. Since the tools will be new to most participants, we must provide some instruction in their use. But that is normal in all subjects. Carpentry is not about drills and handsaws, but the tools must be mastered. The goal of cookery classes is savory meals, not the techniques of cooking. But students must still learn to create an omelet without cremating the eggs.

- Digital education requires a technical infrastructure. But technology by itself is not enough.
- The new technical possibilities must be understood, embraced and developed. Good teachers use books, classrooms, blackboards and chalk effectively.
- In LATINA we approach digital tools in the same spirit.

The deep relationship between technology and teaching is often forgotten. People who teach more theoretical subjects tend to take traditional technologies for granted. Anything electrical or digital is technology. But blackboards and chalk, pencils and notebooks, textbooks and marking pens are just things. The objects we use in our daily lives only become visible as technical tools when technologies change. People who participate in the change, have to master the new digital tools before they can use them in learning and teaching. People that just observe the change, tend to notice the struggle with tools rather than the teaching. Teachers that innovate may be labeled technology freaks. Their educational views can then be safely disregarded.

Most teachers are conservative in terms of their practices. They want small change rather than big change; reform rather than revolution. Most of them will accept digital technologies – like word processors, email and PowerPoint – that support their current way of teaching. But they will not accept that digital technology is transforming the way we learn and the way we teach. They will not commit themselves to radical change. There is a proper way of teaching and learning which should not be challenged. In the conservative view, PCs are seen as
advanced notebooks that hardly affect the organization of teaching [Græsli 2009]. This means that professional debate on the role of the web in education must be avoided. Only those who accept the consensus are taken seriously.

Our web introduction is also a warning. Students must be ready to work in non-traditional ways. Both the concept and the course are based on the need for “big change”. We express that through the distinction between superficial and deep learning:

- We stress creative learning and challenging teaching.
- Superficial learning is accumulation – or more of the same.
- Deep learning is different. We are committed to change – and ask the participants to go beyond their current skills and conceptual models

As teachers we believe – from experience – that deep change is possible. But it requires a supportive environment. In our case students are asked to work with a variety of new digital production tools from the moment the course starts. We do not spend much time introducing each tool – just sufficient to get started on doing something. We also expect the participants to try to solve problems they meet on their own – or with some help from their peers – before they call for the instructor. Many students find this challenging. Library students are often perfectionists. They are accustomed to slow and detailed guidance, step by step, to avoid mistakes.

We believe in learning by trial and error – which requires lots of mistakes in order to succeed. A real expert, the Danish physicist Niels Bohr said, is “someone who has made all the mistakes it is possible to make in a very narrow field”. This does not mean a low level of support. The hours students and instructors actually spend together are a precious commodity. When people are struggling with new tools in class, we try to offer a student to staff ratio of 4 to 1. We want to combine steep learning curves with rapid climbing. After a tool has been (barely) mastered, participants are asked to work with them outside class – and to present the results on their blogs and in class. Complex digital skills erode quickly unless they are used on a regular basis.

**Material conditions**

At Oslo University College we now have wireless access throughout the building. In the LATINA course the Learning Centre has equipped every participant with a portable computer. The teacher’s PC is of course connected to a video projector. Our class room has a smartboard as well as a whiteboard. All course materials are published on a local WordPress blog platform. All students have been introduced to blogging and have created their own WordPress blogs. We work in a digital environment where WordPress is integrated with the Google platform. We use Google Search, Google Reader, Google Translate, Google Docs and Picasa – locally and on the web. Both students and teachers now have easy access to cell phones and digital cameras – usually included in the phones. For more demanding work with sound and video we can draw on the equipment and the helpful technical staff of our audio-visual centre. At the same time we have access to all the resources of the web.

This rich material environment is new. The tools allow new forms of teaching and learning. In the old system, teaching meant transfer of knowledge from teacher to student. Learning was reproduction. In the new environment, we are surrounded by knowledge. Here learning means to undertake original production – and teaching means to support the production process. LATINA depends on digital technology. But its purpose is to explore
practical ways of teaching and learning – in an environment where we can take universal access to digital tools and texts for granted.

At my college all teachers who wanted to do so could publish to the web ten years ago. The teaching staff had access to computers in their offices. Those who wanted web publishing tools could also get the necessary software installed. The ICT section provided at least some technical support. Only a few classrooms had overhead projectors, but teachers who required them, could usually manage. Students were less favored. They could access the web through computer stations in the library or the computer lab. Many had home access as well. But we could not assume that all students had regular access. Nor could they write to the web. Publishing software like FrontPage and Dreamweaver was quite expensive.

Today, both the technical and the economic barriers have vanished. The newest generation of cheap portable computers cost less than a fancy cell phone. Simple and powerful tools for web publishing are available free of charge. Blogger, WordPress, Google Docs, flickr, SlideShare and many other services offer free storage of web documents in various formats. Scarcity is no longer a problem. The barriers that remain are social and cultural.

In her LATINA blog, one of our participants – a teacher from Norway – wrote: “The presentations and discussion about the future of the library, the searching and the web 3.0 makes me think … learning environments and the ways of teaching and learning will have to change dramatically. Young people are already so used to the internet as a great information “location”, and in the future, paper books used in schools and universities will be rare. ... I find it fruitful to use computers in my lessons, but in the OUC [Oslo University College] mostly all the auditories and classrooms are furnished for the old “teacher talks to students”—way of teaching and learning.”

As a teacher of librarians and library students I turned from paper to the web about ten years ago. This implied a small change in technical tools – and a big change in attitude. In terms of writing, I simply replaced Word by FrontPage. Since FrontPage was designed to emulate an ordinary word processor, the basic transition was relatively easy. Publishing to the web required some additional skills – which could be mastered in twenty to thirty hours. The big change was psychological rather than technical. On the web everything I write is visible – at once – unless I decide to hide it. This causes a fundamental change in the relationship between the text and the writer.

“Once the files are on the web, we find ourselves in a different working environment. ... Writing has always had a double nature: deeply individual and deeply collective at the same time. But when we write on paper, the collective nature of writing is hidden. Paper is inherently private. … The web, on the contrary, is essentially a collective medium. When we write to the web, we must struggle to avoid being read” [Høivik 2004].

When we ask our students to blog, we ask them to expose themselves. In traditional teaching students write for and get feedback from the teacher. On the open web they are visible to each other and also to anybody who might care to “drop in”. Since normal blogs include comment buttons, they may – in principle – also get written responses from surprising corners. It rarely happens, of course. Web based courses do not attract lots of visitors from the outside. But the possibility is always there.

As a teacher I find it very useful to read the ideas of people in their tentative and formative stage. I use my own blogs to talk to myself in public and like to follow people who are doing the same in my professional field. Starting to write for the world may be scary. I say to the students: relax. Use the blogs to explore ideas and to share good stuff you discover. From blogs people don’t expect polish and perfection. If somebody should criticize you for releasing unfinished work, they don’t understand the medium. Write every day, if possible.
Blogs straddle the division between the private and the public sphere. We are accustomed to treat publication as something special – and private as the normal state of affairs. With blogs, Twitter, flickr and other social tools it is the other way around. Web publication is the default rather than the exception. This does not mean to abandon privacy. The public/private boundary is one of the important structures in our life-worlds. But blogs shift the boundary. We should ask our students to protect their essential privacy. But there is much to share that can increase understanding and support learning. In LATINA we ask students to reflect on what they have learnt – which includes what they learn from each other.

Another participant, a library student from Spain, wrote: “Web 3.0, I like very much some of the ideas from [a student]’s presentation. … I remember the first website that I did. Was on 1998, I think, and my brother of 13 years old help me. I did it using html code, very very boring, and some guides from internet and uploading in a free space that use my page to put advertisements. That website worked, now you could see it because is still working. Later write became easy and easy with the blogs. With the social network I feel integrated in my community of friends, and also academic.” The world in which our younger students live is not the world of their older teachers. There is a “gap between the students, who have been raised in a digitalized world, and the teachers, who have not” [Græsli 2009, transl. TH].

### Changing roles

We treat LATINA as an OER – an Open Educational Resource. This means that we put all materials created for – and during – the course on the open web. Creative Commons is our default license. Others are invited to remix, improve and redistribute. In the knowledge economy, knowledge is both a result of – and an input to production. When we look at knowledge as a productive input, we are far from academic culture, where knowledge is seen as a value in itself. The peer-reviewed article and the published monograph are its final products. The new production perspective also differs from that of the craftsman, whose knowledge – which is manifested as practical skills – is traditional, experiential and often non-verbal.

LATINA is an international course and draws participants from different countries, cultures and professional backgrounds. This means that the class is much more heterogeneous – in terms of age, language and computer skills – than is usually the case in regular programs of study. Industrial societies tend to standardize their teaching. The ideal class consists of similar students, with the same levels of skill, who move forward at the same deliberate speed – like a Prussian army on the move. Such synchronization makes teaching easier, no doubt, but will hardly work under digital conditions. The new economy demands innovative individuals and groups. In post-industrial countries the demand for labor shifts from replaceable factory and office workers to creative persons and to teams that combine deep and different skills.

We define LATINA as a course for students, teachers and librarians that want to develop their educational skills on the World Wide Web. The course is aimed equally at those who teach and at those who learn. In digital environments, in fact, the line between the two is often blurred. The knowledge economy challenges the autonomy of the academic sector by linking knowledge to production. Education 2.0 undermines the status of the teacher by removing the distinction between teacher and learner.

In LATINA we invite all participants to explore the learning possibilities of the web in a concrete, practical, group-oriented social setting. We define this as a collective undertaking. The LATINA staff is responsible for
design and infrastructure, for the introduction of new tools and concepts, for practical support and guidance, and for day to day management of the course. But we require participants to take an active part in production, presentation and feedback from Day One. During the first week of the course they learn to operate some basic digital tools: blogs, gmail, Google Search, Google Docs, Google Translate, Wikipedia. During the second week they add audio-visual tools and produce small learning modules, in the form of digital stories and educational triggers. During the third week they present their own 30 minute learning events in class, supported by multimedial materials produced with the new tools.

**Multilingual learning and teaching**

In LATINA English is our common working language. This does not mean that everybody is a fluent English speaker or writer. International students from Europe generally have a good working knowledge of the language. Participants from Asia, Africa or Latin America represent more of a challenge. We ask for a statement or a proficiency test, but still face a great variety.

Study programs that last several months or years can include some language training. In a three week course, that is not feasible. But since the course is web-based, we have an alternative. Since our class room is equipped with an interactive whiteboard, most presentation and discussion includes the web as a partner. The parallel use of written and oral communication – which often includes sound and pictures as well – helps people with limited English understand what goes on. During discussions we try to illustrate important points with materials from the web. The old show and tell principle is still valid. Since all teaching materials are available on the web, students may go back and consult them during and after class. They depend less on their master's voice.

Since the training is production oriented, students spend much time creating multimedial texts. Sometimes they work in groups and sometimes individually, side by side. In either case it is easy for them to consult and assist each other. When they share a language other than English, they will use this for communication. Lectures and plenary discussions take place in English, but much of the time the air buzzes with different languages: Chinese and Arabic, Spanish and Norwegian.

We see this as a strength of web based learning. We are also exploring additional linguistic possibilities. Wikipedia is one of the most popular web sites in the world. In LATINA we favor Wikipedia as a lexical source because it covers many different languages. Students who are less familiar with English can use versions in their native language, or another language they know well, as a reference source. They may also use other versions to help them understand the English text. Since inter-language links are built into the Wikipedia structure, it is very easy to shift between languages. Occasionally, we also ask students to compare different versions and to explain why they differ.

Combining Wikipedia with Google Translate opens additional possibilities. In LATINA we find that real-time translation of educational materials can help teachers present new topics to multilingual classes. Students can also use translation tools to explore texts they find it hard to understand in English – and to translate documents and notes from their own language into rough English. At the moment we have just started to investigate these three possibilities, but we are quite exited about the new pedagogical opportunities. All LATINA web pages have been equipped with a translation button.
By integrating real-time translation (Google), parallel versions (Wikipedia) and other multilingual tools in our educational designs we believe teachers and students can learn to work effectively in more diverse environments than before. Translation tools are likely to improve. During the next decade I expect functional recognition and translation of speech to be added. As the world becomes more intensely global, the demand for multilingual education and communication will grow. Advanced language technology and large-scale multicultural projects will be part of the response. And both teachers and librarians will be needed.

The pattern of change

In digital matters, North America has always been a few years ahead of Europe. Those who follow American bloggers are keenly aware of the time lag. The discussions we conduct and the issues we struggle with in Northern Europe today, appeared in the United States a couple of years ago. The struggles are likely to repeat themselves as country after country achieves the material conditions for web-based learning and teaching. The debates to come are quite predictable. This does not mean that we can skip them. Teachers and institutions tend to be occupied with their immediate tasks. A few individuals may prepare themselves for the future before it knocks on the door. But universities and colleges are, like all other institutions, poorly equipped for big change.

Norway has, however, taken some major steps in that direction. The new national Plan of Studies (2008) for Norwegian schools puts great emphasis on five basic skills: (1) to express oneself orally; (2) to express oneself in writing; (3) to read; (4) to calculate (“basic math”); and (5) to use digital tools. The Plan also specifies what the use of digital tools implies in the various subjects.

- Being able to use digital tools in social studies means being able to search for information, explore websites, critically assess sources, exercise netiquette and select relevant information on topics in the subject.
- Being able to use digital tools in the natural science subject means being able to use such tools for exploration, measurement, visualisation, simulation, registration, documentation and publication when performing experiments and fieldwork.

Any librarian would recognize the skills mentioned under social studies. Searching for information, exploring websites, assessing sources, selecting relevant information and knowing about privacy protection and copyright belong to the basic skills of digital librarianship. But why stop with information? The Plan asks schools to use digital tools for all kinds of production, presentation and communication: preparing, presenting and publishing multimedia products; communicating and cooperating across schools and countries; photography, scanning and animation; visualization, simulation and games.

The web as platform

Teaching is moving – slowly – from paper to digital technology. Print on paper defines one type of learning environment. The read/write web defines another. Already the web offers a vast range of resources for study, experimentation and exploration. Web tools allow students and teachers to produce new materials continuously. In the digital environment many traditional ways of working lose their purpose. They must be phased out – to give space and time for the new. This is a matter of big change.
Today our teaching and learning environments are divided. In the traditional area, work goes on as before. In the digital area, new ways of working are tried out. But they remain marginal. There is no transfer of practices from the periphery to the core. The institution only changes when computers and web access are available everywhere and at any time and learners, teachers, planners and leaders accept and build on the web as a platform. Our task today, as teachers, as librarians and as teachers of librarians, is to make the transition from industrial to digital education without too much pain and trouble.

References


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