Lessons from and for a Change in Education through ICT

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Abstract - Summary:

Implementing the e-fit-21 agenda, Austria's strategy to modernize the educational system, several unforeseen challenges appeared along the way. This paper summarizes the e-fit-21 agenda and points out three main trends that were observed and are partly surprising. Not only is the nature of the content taught in school going to change, also the pedagogical approach and the social interaction, which seem to be having a greater impact that ever. Discussing the changes in the field of education, changes that regard the society as a whole have to be taken into account as well since the transformation of the web itself seems to be leading towards a paradigm shift in terms of the image of the society. The concept of the network society and learning and teaching approaches with new values like citizenship are having a major influence on how students and teachers interact on a daily basis. Social relations and the cultural change in the network society are brought into the classroom by using ICT tools that are being used on a daily basis outside school. This creates tensions for all stakeholders of an education system. The reduction of complexity in traditional teaching approaches might have to expanded by turning the attention to real life aspects as well as the actual use of ICT by juveniles, bearing risks that come with it in mind.

Key Words: *learning in the network society, e-learning, student-centred vs. teacher-centred, social interaction, paradigm shift, cultural change, reduction of complexity, e-fit-21 agenda*

Introduction:

Trying to keep up with the changes in our society and the challenges resulting from them, Austria's government officials initiated a program to find appropriate solutions when it comes to adapting the educational system. Consequently, the efit-21 agenda was launched a year ago to formulate the strategical approach to implement changes in the educational system bearing the requirements of the modern society in mind. ICT in education seemed and still seems to play a major role in the process of change. However, not everything can be done by implementing ICT in the classroom. Pedagogical approaches, content taught and the student's behavior play a much more important role than one would assume. The following paper recaptures the e-fit-21 agenda and then adresses lessons and new challenges that were brought up during the implementation. Having experienced

changes on several levels, new questions about the content taught, the social interaction in and outside the school, the role of both teacher and students, the participation and the challenges for teachers in a new environment ought to be discussed. Thereby new insights are going to be added to a picture, one thought of having about the use of e-material in school. Finally, the question on how we look at the society is arisen and a possible answer will be provided by lessons Austria has made.

The e-fit-21 agenda:

Having described the e-fit-21 agenda in last year‘s paper, I am going to summarize its main targets to put the lessons learned in perspective and thereby provide insights to a process that seems to be inevitable.

1. The first main goal is to enhance the quality of teaching and learning by focusing mainly on the quality of using and sharing the content. This is done by both, improving the content portals which are available for teachers throughout Austria as well as European platforms and by enhancing the content itself by keeping it up to date and enriching it by new pedagogical approaches teachers find helping them in the classroom (e-fit-21, 2010). Trying to keep up with new developments, the Federal Ministry of Education is participating and initiating a huge number of both, international and national projects and initiatives - 32 to be exact (http://www.virtuelleschule.at, October 16th 2011). Believing that the exchange of experience is a fruitful way to enhance the quality of the educational system in school and on the adult level is shown by that.
2. The second target is to teach digital competences by raising the awareness of the necessity of digital skills for pupils and adults. Bearing in mind that changes in that area are happening constantly, an appropriate teachers training and further training in order to create and spread out current pedagogical approaches is inevitable. Examples for that are the EPICT, an IT-certifcate for teachers, and the virtual pedagogical academia. Over 50 per cent of the Austrian teachers have participated at least once in a further training concentrating on the ICT use in class but remembering that changes in that area are happening constantly, this number has got to increase (e-fit-21, 2010).
3. The third objective is to enhance the success of our students on the labour market (e-fit-21, 2010). International studies such as the IDC-study in 2009 (Kolding et al., 2009) show the necessity of teaching appropriate digital skills. The strategy mentioned job related skills which should be taught but considering the fast development in this area, it will be a real challenge to teach those job related skills students are going to need in a ten years time. However, implementing educational standards for practical computer science, industrial certificates and of course the ECDL are well meant steps in the right direction.
4. The fourth goal is to enhance the effiency of the organisation structure of the system itself and modernize it in a sustainable way. Using ICT to have a powerful yet efficient administration, E-Government applications featuring multifunctional services will lead to a modern infrastructure

at all levels possible. This starts on the basic level with the introduction of the edu.card for students, a federal state teachers-controlling-database, the statistic-datawarehouse and the ELAK in subordinated departments (e-fit-21, 2010).

5. The fith objective will play a major role in the analysis later on in this paper. It is about the integration of the society itself. Bearing in mind, that still not everyone is connected to the net or some sort of network, certain service opportunities are not going to available for some parts of the society. Removing all barriers concerning the use of ICT, the social integration - e-inclusion - should be improved. A successful yet modern media pedagogy has to include a critical and reflecting handling of the media by juveniles and integrating Facebook, Twitter or other forms of social media is an inevitable step helping students to understand the importance of it (e-fit-21, 2010).
6. The sixth target is to boost art and culture via new media. Digitalizing art artefacts in a database, future generations could get in touch with it without any barriers which should help to strengthen Austria‘s position in culture and creativity. Debating medial art could be enhanced by using web 2.0 applications (e-fit-21, 2010).

Developed to boost e-learning concepts and the use of ICT in the educational system on a wider range, one has to think about the consequences and lessons that are left to be learned from it.

Lessons and Trends:

Introducing ICT tools in the classroom, the traditional teaching approach, which is a teacher-centred approach, is broadened by actively engaging students to research a specific content and learn about a topic by working together in groups. This student-centred approach brings a lot more autonomy to the way content is taught in the classroom. Considering this fact, one can define teaching approaches by the quality content is learned. One can distinguish not only between the teacher-centred and the student-centred approach but also between two main ways of getting in touch with the content that is part of the curriculum.

First, the traditional approach of teaching a familiar, pre-approved content, which is safe but at the same time a reduction of the reality students face outside the school. Teaching that way, the content is structured hierarchically and reduces the complexity of everyday‘s life to a simple form. Getting in touch with this teaching approach, students often question the sense of the content before them. In essence, the traditional teaching approach is trying to bring a - and that is important - fixed quantity of content to the pupils. Assuming that the teacher knows everything about that fixed quantity, this teaching approach is structured hierarchically and there is not an exchange of knowledge between the students and the teacher. Worse, the participation in class as well as the interest will drop eventually. Thinking, that e-learning is the only solution to that problem, one gets disappointed by the fact, that e-learning is just another way of teaching a fixed quantity of content, only this time, the content is electronically available. Bearing these aspects in mind, e-learning will

not change the way of education as long as the teaching approach and the content behind it remain the same.

The second approach is the often quoted student-centred approach where students explore, research and acquire knowledge on their own with the teacher in an assisting role. Researching on their own, the content students get in touch with is less safe and not always familiar to the teacher. That way the hierarchy is flat and the teacher and the students interact in a very intersting way pedagogically speaking. Instead of getting to know a reduced picture of the reality, students and teachers are confronted with real data. In the modern society, both people and content are not structured hierarchically, but networked which increases the chances for participation. The key question is: Is the content to be taught about to change and are new values and skills becoming more important? Bearing in mind that the way people interact and communicate is differently compared to 20 years ago, there is evidence to support the fact that within a networked system, values like citizenship are becoming more important and the knowledge about it part of the basic competences for the 21st century. If you need proof for that development, ask how many of your students are participating in some kind of social network.

At this point I would like to replace the term *e-learning* by the term *learning in the network society* (Medosch, 2011), because it reflects the situation nowadays a lot more accurately. Bringing up this term and implementing ICT on a wider scale, what are the trends and lessons Austria is experiencing?

Trend # 1 - The nature of the content:

By participating in some kind of network, informal learning strategies by students are increasing and the line between school work and private life is diminishing. Thinking that this should help to integrate the use of ICT in school more easily, one has to face several challenges. One, the useage of ICT at home is very different to the one in school. Two, how much of the private use of ICT by students can be integrated by the teacher in class? And finally, how is the teacher going to communicate via new media with his students, bearing mind that the hierarchy on the web is pretty flat?

The question on how the teacher should handle the thin line between private and school use of ICT is unanswered and ought to be answered in the next five years. Considering that the use of the media in private life and in school are very different from one another, the role of the content is becoming a more important one. For example the way a teacher uses a youtube-video is lot different from the approach students have towards youtube. Searching for a specific video, students watch a lot more videos along the way. Cutting this process finding material in school creates a tension between the students‘ reality and the teacher‘s teaching approach. Worstly, this is leading to a drop of attention and interest. This reflects directly on the first goal in the e-fit-21 agenda. Enhancing the quality of the content used in school is not only about the content per se, but also about the way this

content is acquired. Bringing in a little of the students‘ approach towards new media is going to enrich the content and the attention for it.

Trend # 2 - New pedagogy for new competences:

Participating and communicating via new media, the assessment of the teacher in particular and the school as whole do not take place in school anymore. The communication about problems and the assessment by both, parents and students are transfered into the virtual environment and is therefore becoming a lot faster. Not waiting for actions to be taken if needed, the stakeholders of the educational system - parents, students, . . . - initiate actions through new media, which represents a kind of basic democracy and the school itself is becoming part of a network rather than being a closed system. Preparing its students for the life outside a closed system like the school, the main challenge from a teaching perspective is to teach soft skills in order to enable students to move in the virtual environment, which means that soft skills are more important than ever. Understanding the necessity of soft skills should be underlined by the fact that the virtual environment is not a reality of its own but part of our actual reality. Being in a digital or networked environment just means that the form of communication changed.

This trend directly adresses the second objective of the e-fit-21 agenda, where the importance of digital competences is an important aspect. On the teachers‘ side, this means that the teacher training ought to be changed or adapted in order to meet those requirements which is going to be difficult, bearing in mind that the experiences in this field are quite new and pedagogical concepts need time to develop. However, the image of today‘s society as a networked one is going to effect the teaching approaches in the future and therefore the teacher training and further training.

Another aspect to this trend are the pedagogical approaches that need to be improved to maximize the outcome of every lesson. Living in the digital age, new media have become part of everyone‘s life but the life of young people in particular. Being aware of the changing circumstances in this regard, Austria is participating in a major four-year project co-funded by the European Commission to design the classroom of the future - iTEC. Not only technical standards are being tackled but first and foremost pedagogical scenarios that could be applied in the future are being testet throughout Europe (http://itec.eun.org, October 16th 2011). The Federal Ministry of Education and its Partner, the European Network for Innovative Schools Austria (http://www.enis.at), are participating to design and test those scenarios and to get a glimpse into the future. Each of the tested scenarios are using a student-centred approach and by testing them with different content - the scenario per se is basically a suggestion on how content can be brought to students - the results should point out the needs for the design of a future classroom. Bearing that in mind, it is important to stress the fact that it is not the primary objective to foresee the future, but to enable it by testing various possible developments and therefore to be ready for them. As for the content side of the future development, the Federal Ministry of Education as well as a number of innovative teachers are participating in a European project called InGenious/ECB (http://www.ingenious-science.eu, October 16th 2011)

where the specific challenge of making the field of mathematics, science and technology more appealing to students is handled. Major European Companies designed educational content for the classroom use and 150 teachers should test whether they are useful or not. Bearing in mind, that by the year 2014 384 000 people are missing on the labour market in this particular field, a participation in this project is directly referring to the third main target of the e-fit-21 agenda, believing that a closer partnership between the educational system and the industry is bringing new incentives.

Considering the second trend explained above, the assessment of those initiatives is going to be very directly. The main stakeholders such as the parents, the students, the government officials and the schools themselves will respond very directly. Adressing that, the partners in both projects created a virtual environment to exchange experiences a lot faster and to react to current changes more directly.

Trend # 3 - Social media for social interaction:

The third trend which is going to be described in this paper will reflect on the fith strategical objective of the e-fit-21 agenda and will tackle the questions of integration and communication in the network society. Trying to find out which effects the use of social media has, a vocational school in Bruck a.d. Leitha in Austria started a project to investigate how students use facebook in both their private and school environments. Looking at the results, one can be astonished to find out that the interaction between students in a digital social environment is in fact more social. The students tend to help one another more through new social media than they do in school, an experience quite a few teachers told me about. Being less competitive in a digital environment and helping out more than in school, the effects of social media on the development of soft skills should not be underestimated und teachers should be aware of that. A truly challenging task would be to transfer it to the classroom which, again, brings us to new pedagogical skills that are going to be needed to handle these kinds of interactions.

Thinking however, that the usage of social media is going to solve the problem of participation, one is going to get disappointed. As it is for the real life, the participation of students through new media is very different. Quite a lot of them are participating in social and school activities but even more are not. Asking on how to find a solution to this problem, some teachers suggested a rather agressive approach implementing two aspects of which one is pretty obvious. One, to create an engaging classroom environment and therefore support interaction in a new ways. This is one of the main goals of iTEC, which has been described earlier in this paper. Two, to let students honestly assess the teacher through new media. The experiment of the vocational school in Bruck a.d. Leitha shows that the participation increases dramatically through that measure. Basically the integration of the IT tools that are used by juveniles increase the attention and the interest of the students in a natural way because one is not introducing them to something new, but just using what is already there. Teaching the importance of participation and reflection on the behavior on the web seem to

be the most important factors of a successful e-inclusion which is the foundation of a proper participation in the network society, especially when it comes to citizenship, which is about to be redefined through the web, bearing the recent development in the arabic world in mind.

Conclusion:

As the web itself changed over the years, so did the requirements for the educational system and the nature of interaction. In the early years, the web 1.0 was all about linking information and the challenge was and still is, to find the information that is most valuable to the indivdual, reflect on it and put it in editorial order, which is a very difficult task to teach but at least the information presented itself in a more hierarchical nature. Changing from web 1.0 to web 2.0, not only became the linking of information less important but more importantly, now people are linked as well and there is not a hierarchical structure anymore, which requires more responsibility from the students for putting both, content and people in order because the hierarchical structure now is flattened. As for the teachers, those changes have a greater impact than considered at first. Not only will they have to bear a different kind of social interaction in mind, but also the quality of the content taught in school is changing from a fixed quantity of knowledge to a more open approach where the relation between the individual, the information and other individuals is becoming more important. Ideally, ICT becomes a tool that is not going to be recognized as such during this process.

Having talked about the advantages of the recent development, the disadvantages are as important. Making use of the IT tools juveniles already use in their daily lifes, one is intruding in their private sphere and as for educational results and learning, it is very important that students still have a secure space where they can learn and do mistakes without being sanctioned immediately. Also, one has to reflect on the increasing commercialization of students through web 2.0 applications. Social relations and the cultural change in the network society really add to a paradigm shift where the question of trust as a reduction of the complexity - to speak through Niklas Luhmann - are becoming the main challenges for preparing students for the real life and teachers cannot ignore this development.

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