Expectations and Outcomes
of Interregional IT Training for Teachers

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Abstract. The experience gained in performing the sequence of Joint European Projects sponsored by EU TEMPUS Program in the field of IT further education of teachers in Ukraine, Tajikistan and Uzbekistan is summarised. The international consortia headed by Leipzig University of Applied Sciences involves, besides partner country institutions, Universities from Germany, Sweden, Italy, Poland and Slovak Republic. The consortia have been working as a well organized team successfully establishing a collaborative network for IT training. The Polish project Interkl@sa served as a sample for the project Inter-Collegia which was the first one in this package of school-oriented projects. Thereafter the network of schools patronised by the University of Kyiv-Mohyla Academy has been extended to comprise special schools for visually impaired students. Consequently the network went over borders involving further rather distant countries.

1   Introduction

The success of the whole educational process at a university highly depends on the quality of the secondary education. In fact the level of digital literacy of school graduates is nowadays especially crucial in estimating their ability for easy integration into the new educational environment. The gap between a secondary school and a university still remains considerable with a tendency to grow. The key factor here is digital divide which put back on the road to progress not only the particular schools but also the regions or even the entire countries.

Taking into account the exceptional importance of the quality of higher education for countries which aim is to be integrated into the world information society, the University of Kyiv-Mohyla Academy (UKMA) in cooperation with Leipzig University of Applied Sciences elaborated and implemented a long term program for enhancing the usage of information technology on a secondary school level. A sequence of large scale projects has been launched in order to create an infrastructure and establish a know-how transfer in the field of using information technology in educational

process in which participate either UKMA as an institution or its professors as experts.

Sponsorship of the European Commission granted through the TEMPUS Program allowed to gather the competent and purposeful consortia which unite educational and public institutions and individual experts from 9 countries.

1.1   Varieties of Digital Divide

Digital divide is a product of unequal access to information and communication technology by some members of society. In [1] Cuneo distinguished the different perspectives of digital divide a great deal of which are connected to education. At least four out of the dozen indicated barriers may be removed with educational efforts and corresponding changes in educational environment. This environment cannot consist of the equipment alone, although it is very important, but also consists of human resources involved in educational process, namely teachers.

That is quite obvious that only very young teachers who graduated in last few years have a chance to be sufficiently qualified in information technology. The majority of the teachers does not possess the necessary educational background and thus has gerontologic problems suffering from the lack of previous experience, or even may have psychological problems which reveal themselves as fear or technophobia. Not removed in time educational barriers retarding teachers are immediately reproduced in their students who receive less knowledge and practical training than more lucky ones in better conditions. Therefore the importance of further education of teachers is the top priority.

The aspects of digital divide stated above are those of human origin. Some others are of the demographic, geographic, economic or social nature. Experience of developed countries shows that networking and Internet connecting removes many of these barriers. Table 1 extracted from [5] illustrates the current state and the tendency shown in this century for the countries under consideration.

Table 1. Internet access and tendency of its development (version updated on November 30, 2007)

State	Population	Internet users	%Population (Penetration)	%Usage growth (2000-2007)
Sweden	9 031 088	6 981 200	77,3	72,5
Germany	82 400 996	53 240 115	64,6	121,8
Italy	58 147 733	33 143 152	57,0	151,1
Slovakia	5 447 502	2 500 000	45,9	284,6
Poland	38 518 241	11 400 000	29,6	307,1
Ukraine	46 299 862	5 545 000	12,0	2 672,5
Uzbekistan	27 780 059	1 745 000	6,3	23 166,7
Tajikistan	7 076 598	19 500	0,3	875,0

To some respect the tendencies in development of local Internet access are more important than the current number of Internet users. Starting with 200 000 Internet users in 2000 Ukraine ran up to more than 5,5 million users in 2007. An average per

year growth comprises almost 1 000 000 users. Fig. 1 shows graphically the growth of Ukrainian Internet in 2000-2007 and provides a rough estimation for 2008. If the tendency remains unchanged we can expect the Internet penetration to go up to 20%.
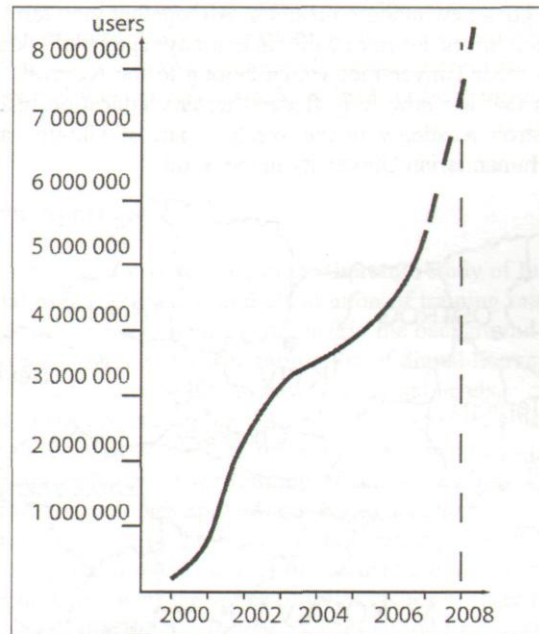

Fig. 1. The growth of Internet users in Ukraine for 2000-2007 with estimation for

Regarding other partner countries we can assume that the development in Uzbekistan, though rather poor at the moment, looks quite reasonable and promising. The main concern makes Tajikistan, its development is insufficient and some additional efforts, such as applying for subsistence to the Global Digital Solidarity Fund, should be taken [2].

In fact, there are some basic educational criteria which serve for reducing digital divide. These are basic access to computers, Internet access, and IT technology related skills which should be gained with a well balanced and precisely planed training in IT technology. The last is particularly important in the former Soviet Union, because many middle aged teachers can remember ugly efforts of previous regime to enforce computerisation in the country. Thus all steps should be very well calculated to counterpoise implicit unintentional resistance of school teachers.

1.2   The Kyiv-Mohyla Network

The National University of Kyiv-Mohyla Academy is an old institution reestablished in 1991 after Ukrainian independency. Continuing the tradition of the old Kyiv-Mohyla Academy and making a reality of the concept of continuous education.

UKMA patronises educational institutions especially secondary schools since the very beginning of its re-foundation. According to this tradition a school supported by UKMA has been referred to as a collegium. The old name "collegium" has been restored to life and got a new modern meaning. All together they form the Kyiv-Mohyla Network which comprises dozen of collegia in many regions of Ukraine (Fig. 2).

There are two other Universities which belong to the Network. These are former UKMA branches that are now fully-fledged tertiary education institutions: National University of Ostroh Academy in the Western part of Ukraine and Petro Mohyla Mykolaiv State Humanitarian University in the South.

Fig. 2. The Kyiv-Mohyla Network on the map of Ukraine

Being geographically distributed this consortium is able to spread a message of information technology in schools all over the country. And the message in fact has been spread. As soon as the first activities started, two Ukrainian public associations: *The Window to the World* and *Ukrainian Librarian Association* proclaimed their readiness to join the movement towards needs of special schools for visually impaired people. The list of barrier removers stated in the previous subsection has been completed with one more item known as adaptive technologies.

2 The InterCollegia Project

The Kyiv-Mohyla network forms an ideal background for institutional building of collegia which are integrated into a common body together with three participating universities. Two Polish institutions Fundacja Edukacji Ekonomicznej (Foundation for Economic Education) and Nicolaus Copernicus University in Toruri took the re-

sponsibility to transfer Interklasa [4] experience to Ukraine. Leipzig University of Applied Sciences acted as a contractor for a TEMPUS Joint International Project with a run time 2005-2008 *Interregional IT-Training Courses for Kyiv-Mohyla Collegia Network (InterCollegia)* [3]. The main objective of the project was to develop a creative framework for training teaching staff of Kyiv-Mohyla collegia in order to improve their teaching skills in active online multimedia environment and promote them to *master trainers* and thus *multipliers* able to lead forthcoming training on their regional level.

2.1   InterCollegia Approach

The first year of the project was devoted to the thorough study of Interklassa approach in reducing digital divide in Poland and elaboration of training materials for training the Ukrainian teachers. The problems mentioned in the background chapter have been subsequently solved with a step-by-step promotion of digital literacy and competence. The project contributed to their solution on wide regional levels.

The main aim of the project can be defined as two specific objectives which have been achieved during the course of the project. These specific objectives are: development of a concept and content for training of school teaching staff in information and communication technologies applied to school education and a pilot implementation of the two-level concept of the teaching staff training. The first level consists of selecting and training the limited number of teachers from each of the participating schools. The second consists of the series of trainings for a larger number of teachers held by the educators, who are the former trainees of the first stage. These educators are normally referred to as *master trainers.*

Two master trainers (one teacher of computer sciences and one of another subject) had been selected from each collegium for training at UKMA during the second year of the project. This training had the duration of a year and was distributed into three training sessions, each of one week time, with a massive virtual collaboration between the sessions within the master trainer team. The main objective of this approach was to prove that not only University academic staff but ordinary school teachers are able to use and teach information technology effectively.

The core training events have been running simultaneously at three universities during the last project year. The training sessions were delivered by master trainers with the support of university academic staff three times, during the autumn, winter and spring vacations. Each time the same team of master trainers trained a new group of trainees. From session to session skills of master trainers rose and in the course of the second session in winter 2008 it was ascertained that master trainers needed no more assistance and became able to act on their own.

The main objective of this distributed training was to persuade project stakeholders that not only the capital cities of the country but rather remote and small towns are able to use the advantages of Internet. Another important objective achieved within the InterCollegia approach is a local availability of master trainers, acting as project multipliers at their home schools. This exceeds the bounds of this project to the whole regions where collegia are located and is a powerful source of project sustainability. During the course of this project there were established the subject-oriented school

teachers' communities, which are working in teams, and are currently developing the online teaching resource collections.

2.2   Training Content

The content of training for master trainers followed direction of incensement of practical part of training from session to session following an ancient Chinese proverb: *1 hear and I forget. I see and I remember, I do and 1 understand.* The first training session consisted of three main and one introductory module:

- Introduction: IT in education, computer supported classes, e-learaing envi ronment.
- Module 1: Computer presentation in school.
- Module 2: Internet for education.
- Module 3: Multimedia tools.
- Home task: Development of computer presentation of their home collegia.

A sample of feedback after the first session: *1 extremely appreciate the opportunity to be a participant of the first session of the training seminars. 1 became familiar with a great deal of new and interesting information, which can be applied **in** the learning process. It is really nice that all of the lectures were supported by multimedia visualization materials. This made them more informative and more comprehensible. During the session we had not only lectures, but also the practical training. 1 think it would be a good idea to have even more practical trainings integrated, because our task is to gain new knowledge and to pass it to our colleagues in regions. I would also highly appreciate the introduction of the practical training in the field of multimedia in future seminars. Thank you for this training.*

The feedback proved the consistence of suggested approach in a sense that practical part of the training grew from session to session in accordance with the progress of master trainers. The second training session contains a large module devoted to self-paced training

- Module 1: Presentations of collegia prepared by master trainers between the sessions, evaluation and self-evaluation of presentations and their delivery.
- Module 2: Modern trends in information society.
- Module 3: Development of testing tools.
- Home task: Development of tests for selected special subjects.

The largest part of the third session was in fact based on self-paced approach

- Module 1: Deliver)' of lectures and testing tools developed by trainees.
- Module 2: Working in teams on planning the programs for next training ses sions which master trainers will deliver for themselves.
- Module 3: Modem multimedia communication tools.
- Home task: Development of electronic training materials for the forthcoming training during the last project year.

The main achievement of the project is the establishment of a regionally distributed working team of 20 master trainers able to prepare electronic training materials and to caiTv out trainings in information technology for their colleagues. This ability has

been evaluated and approved during the last project year in altogether 9 training sessions for more than 200 trainees from the Kyiv -Mohyla Network.

2.3   The Lessons of InterColIegia

The performance of the project has proved viability of the TEMPUS concept of institutional building especially for the case when non-academic institutions namely collegia have been naturally integrated into a working network connecting two main educational levels: secondary and tertiary.

A week for a training session is certainly not sufficient time. But in the case of training of master trainers it appeared extremely important to give trainees time to become aware of the new knowledge, to work on one's own and to communicate virtually as a team. That is why the distribution of the whole training into three timely distant from each other portions has justified our hopes.

In the case of concluding year we had a choice either to reduce the number of trainees repeating the three session approach or increase this number by inviting a separate new group of trainees each for a single session. We decided for the latter taking into account that trainees will be able to apply for assistance on side to each of the two master trainers after the training.

Another lesson is dealing with psychological and probably gerontologic factor. Master trainers found out that it was much more complicated to train teachers then pupils. That is why a team work of master trainers in practical classes needs a higher level of assistance. In our case five to six master trainers supervised a group of 20 to 25 trainees (average rate 4 trainees per a trainer), which turned out very positive.

One more lesson showed an inadvertence committed during the selection of trainees for the last year. The training would be more effective if trainees were distributed among sessions according to their level of IT competence. Then each of simultaneously running training session collected trainees of the same level: low, middle or high.

3   Conclusion: Sustainability

There are two dimensions of sustainability of the InterCollegia project. The first one deals with the Kyiv-Mohyla Network itself. In this direction the project created a solid basis for future collaboration having established personalised connections collegia to each university. Another source of sustainability depends on readiness expressed by master trainers to go on their trainings in the future on local basis as well as the readiness of university to organise complementary measures.

Another dimension of sustainability becomes apparent as a sequence of projects extending InterCollegia both in target group and geographical directions. Three other Joint European Projects currently running within the TEMPUS Program all headed by Leipzig University of Applied Sciences should be mentioned in this case.

The first of them is an EduVisIm project *Adaptive Information and Communication Technologies for Education of Visually Impaired Students in Ukraine* run in 2006-2009 with the objective to establish a creative framework for further training of

teachers working with blind and visually impaired students on the level of secondary schools. The candidates for master trainers selected from special school for visual impaired students have already shown during the first autumn training session in Kiev a high level of their interest and motivation. A big advantage of this session was that two sessions intrColegia and EduVislm were running simultaneously and beginners had got a possibility to meet more experienced colleagues from the Kyiv-Mohyla Network. Face to face exchange of experience, expectations and achievements were very useful for all participants.

The second project InerScan also run in 2006-2009 *International IT-Training Courses for ShifoCom Secondary Schools Academic Network* is aimed to adapt for local Tajik environment experience in increasing the level of digital and especially multimedia competences of teachers and to establish a creative framework for further training of teaching staff within the ShifoCOM Academic Network for improving their teaching skills towards active online multimedia environment.

The third project EU-TraCeFer is running 2007-2009 *European-Uzbek-Training Centre for Vocational Education Teachers in Ferghana* aims at effective improvement of professional skills of teachers of vocational colleges for reforms of vocational education due to the requirements of the labour market; and creation and organization of activities of the European-Uzbek Training Centre for Vocational College Teachers in Ferghana. In the course of the project, 225 teachers should improve their qualification in EU-TraCeFer.

Another advantage of this effective bundle of projects was a possibility for all stakeholders to meet each other in the course of Joint International Project Workshops which took place in Leipzig every year. These meetings united consortia of different projects into a single powerful international team, which proved its ability in productive collaboration and creativity for forthcoming promising projects and new achievements.

References

1. Cuneo C: Globalized and Localized Digital Divides Along the Information Highway: A Fragile Synthesis Across Bridges. Ramps, Cloverleaves, and Ladders. 33rd Annual Sorokin Lecture. University of Saskatchewan. Saskatoon, Canada (2002)
2. Fonds mondial de Solidarite Numerique, http : //www. digital-solidarity, org
3. Joint European Projects: Faculty of Informatics, University of Kyiv-Mohyla Academy, http://jep.ukma.kiev.ua
4. Polski Portal Edukacyjny Interklasa, http://www.interklasa.pl
5. World Internet Users and Population Stats, http://www.internetworldstats.com