Master's Degree Program for Applied Informatics in Education Majoring in Instructional Design and Distance Learning

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Keywords: Elearning, Distance Learning, Instructional Design, Educational Programmes, Applied Informatics, Pedagogy.

Abstract: The presentation will cover the context and development of higher education professional educational programme for Applied Informatics in Education which was created to answer the challengers of new ICTs rich educational environment. The program was initiated to train the specialists for emerging eLearning sphere having integrated competences in Technology, Pedagogy and Organization. The paper outlines the process of setting the educational programme goals, building the specialists professional portrait, target audience, learning content selection and structuring, used educational technologies for training and future development perspectives.

1 INTRODUCTION

It is a well-known fact that modern information and education environment is characterized by new type of resources, new groups of users and new types of interaction.

But as any other educational system (traditional incl.) at any level of education and in any subject area, any information and education environment of concrete learning process requires first of all projection of its model, expertize of its components, analysis, software choice or\and development for, secondly, further realization in learning and teaching.

Moreover both stages require work of certain groups of experts. The project stage: course developer, instructional (learning) designer, and realization stage: teacher, tutor and system administrator.

So, for the effective functioning of this new environment we need to rely on new professionals who have integrated professional competences in both stages of educational system building and who can assist teachers who are rather strange with the new environment and technicians who are rather far from pedagogical process.

The objects of professional activities of such specialists in modern ICTs-rich educational environment are all components of learning process as a system realized by specific means of ICTs. They are learner and groups of learners, teacher, learning content, and learning activities (processes) based on new pedagogical and information technologies used for learning.

2 BACKGROUND

Training and professional development of teachers for ICTs in education is carried out in Russia by several institutions in the frameworks of several programmes of all Russia informatization, education including:

Programmes of life long education (MSU, Yakutsk State University, University of People's Friendship, Moscow Pedagogical State University, and many others);

Programmes of in-service training (Institutes and Centers of In-service Training of Teachers);

Professional net communities (Russian Educational Portal, Russian Internet Pedagogical Council, Creative Teachers' Network, Omsk Educational Portal, Perm City Portal, NetCommunity of EFL teachers and others).

If the requirements for professional competence of modern teachers and system administrator as a

supporter of ICTs learning process are rather developed in Russian education, and profession of tutor (coordinator) is realized in the system of post diploma courses and in-service training, the profession of instructional designer is hardly understood in Russian professional education in its triad: whome, what and how to teach.

The practice shows that usually its the teachers who do all the job for eLearning – develop and design courses, support and facilitate learning. But the practice shows as as well that its impossible to impose all the competences and responsibilities for the innovative learning process on them due to the age and lack of time. They need professional support for that. And this job can be realized by Instructional designers or so called specialists in ICTs in education.

Nowadays the Instructional design profession is critical for the growing e-learning and labour market. Instructional designers require deep understanding of educational processes and knowledge of change agentry to help transform the current academic systems into effective e-learning approaches. They should have not only organizational skills but also an ability to quickly integrate different knowledge from a wide range of fields including Pedagogy, Law, Computer Science and ICTs, Psychophysiology, Ergonomics, Marketing, Sociology, Cross-cultural Communication, Information Security, and Quality Assessment.

Moreover, training of IT-competent specialists in ICTs in education is more efficient and realized by some educational institutions not only in contact but at a distance. In this respect some best examples were studied and are mentioned here:

- Post-Bachelor, Master and Doctorate Degree in Distance Education, Post Bachelor on Educational Technologies, Instructional Design – (e.g. Athabasca University, Canada)
- Master Degree in Innovation, Doctorate Degree in E-Learning - (e.g. Leicester University, UK)
- Distant Courses for Teachers and Instructors Professional Development – (e.g. Universitat Oberta Catalunya, Spain).

The mostly needed specialists for modern information and education environment are the specialists of 2 levels. Russia currently needs two types of eLearning professionals. The first group are teachers, tutors and academic coordinators that can be trained for using ICTs as a part of current training programs in Education by introducing various elective courses. But to train professionals of the second group, instructional designers and media specialists for distant education, special undergraduate and postgraduate programs should be developed and deployed. This would include programs in ICTs in Education, Instructional Design, Distance Education, and Multimedia Production.

3 DISCUSSION

The first attempt to respond to this pressing need in Russia was made 2 years ago (2009) at MESI (www.mesi.ru) when the Chair of Applied Informatics in Education developed and introduced a new Master's Degree Program in Distance Education. Thus, students of Applied Informatics can choose a set of profile and elective courses to major in Instructional Design and Distance Learning.

As Applied Informatics today is used in different spheres and there is a need for ICTs advanced professionals in education, economics, management and other spheres, the decision was taken to construct the program on the basis of "Applied Informatics". But the applicants can be any Bachelor or Specialist Degree fellows, majoring in Management, Law, Education and ICTs. So, thought being not limited the applicants should have the basic professional ICTs skills and understand the process of creating information systems, to be able to construct private and corporate networks of integrated knowledge.

All these taken into consideration, the competence portrait of a specialist was formed by extracting certain sets of knowledge from necessary subject areas that are needed to work with professional objects: learning content, teacher, student and activities.

Thus, for example, Master on the profile of "Applied informatics in Education" (Distance Education) is a specialist in the field of design, development and organization of systems of distance learning at various levels of education and fields of knowledge.

Learning at the Master's degree program presupposes an in-depth study of the disciplines in the following areas:
modern pedagogical technologies of distance learning;

- psychology of the net pedagogical communication;
- design of educational systems and resources;

- instructional design technologies in distance learning;
- legal issues of distance learning;
- distance learning quality ensuring, monitoring and evaluation;
- information security of distance learning;
- fundamentals of scientific and research activity;
- basics of adult learning.

Master's degree student in the educational profile will obtain the following competencies:

- analysis, evaluation and forecast of the main trends of ICTs' application in education;
- analysis, assessment, design, development, implementation, evaluation of the effectiveness of the systems of distance learning in terms of pedagogy, technology and organization;
- study, analysis, classification and selection of information technologies and tendencies of their development for the solution of applied problems of distance learning;
- analysis, systematization, the selection and design of electronic educational resources for distance learning and many others.

Training at specialization "Applied Informatics in Education"(Bachelor of ICTs in Education) implies in-depth study of disciplines in the following areas:

- Modern educational and pedagogical systems in the information society
- Theory and techniques of training and education on the basis of information technologies
- Information technologies and systems in education
- Basics of pedagogical communication
- The creation, management and quality assessment of educational systems and environments
- Educational and copyright law in Internet.

Spheres of professional activities:

- Design and project
- Industry and technology;
- Organization and administration;
- Analysis and Research.

Bachelor of profile "Applied Informatics in Education" is a specialist in the field of eLearning, competent in the integrated use of pedagogical and information technologies in the educational process at different levels of education and for different subject areas, which obtains the abilities and skills in:

- Educational technologies
- Instructional design
- Analysis, development and organization of educational systems.

Methods and technologies of management and evaluation of information and educational technologies, learning resources and environments.

The perspectives of development of competent model at each programme level are seen in the introducing the greater range of profiles for different specialist in eLearning (e.g. majoring in Educational Law or Educational Technologies or Educational Project Management). Besides working with main vendors in the field of eLearning in assessment profile textbooks and in teaching specific elective courses are very crucial for the success of the educational programme in the market. Of course, one of the main goals of upgrading course content is to provide environment to build and assess it in professional networks (incl. international) by using open resources and inviting famous specialists in the field of eLearning.

So, all these authentic courses are aimed at training specialists competent in classifying, analysis, evaluation, development of e-learning recourses and adapting systems for different knowledge areas and education levels. As this urgent demand for skilled professionals is met, we anticipate an on-going need to update skills and pedagogies as technology platforms change, as e-learning evolves to mobile learning, and as the impact of learning analytics is felt on distance learning approaches for the future. Thus, new approaches to education require re-thinking the systems and skills for creating and sustaining change. And that can be done on net community based approach.

Training of such kind of specialists requires maximum realization of "learning by doing" approach. Both modern ICTs used in the University (eCampus, Adobe Connect Pro) and open educational resources and services (Google Docs, Wiki, Moodle) that are professional tools for the future graduates of the programme, provide opportunity for that.

Thus, a networked curriculum is built and implemented by the international team for MESI Master's Degree educational programme in question.

As it was already mentioned, this educational programme is very specific as, primarily, it is new to Russian educational context in the times of e-

learning economic sector being formed and demand for this kind of specialists being stronger felt that ever before, and, secondly, because the educational aims are at the same time the learning content and methods used by professors for postgraduate students as they should learn the profession by doing.

That is why the concept of student centered approach and constructivism, problem-based, project–based approaches and activity methods were chosen to both build integrated course curriculum and activities, and to teach and learn the course content.

As stated above the programme is a blend of core Computer Science courses and 10 specialized courses in modern educational technologies covering: the basics of distance learning, computer learning systems, legal issues of e-learning, pedagogy, basics of distance learning course creation, psychology of Internet communications, security of e-learning systems, and some others. Being lacked in specialists in this unique sphere the university was and is strongly interested in sharing this knowledge with those who are involved in similar projects and discuss the basic competences for instructional designers and the ways of selecting and training professionals for this role. In our case the course developers were the leading specialists in the field both from Russia (e.g. Kazan Federal University Professor in Legal Issues of Distance Learning and Information Security, Moscow specialists) and abroad (e.g. leading Canadian specialist in Instructional Design from Athabasca University).

Following the main educational tendencies and demands of the course curriculum not only the content is developed in cooperation with leading specialists of the subject area, but the students are involved in online seminars and lectures delivered by foreign professors (from Finland, UK, the Netherlands, Canada) thanks to MESI technical facilities (e-Campus, Adobe Connect Pro and so on), joint time and territory spread small group work, individual practical work with instruments and tools for development electronic educational resources.

Master's Degree Programme for Applied Informatics in Education majoring in Instructional Design was developed in 2009 and 11 students defended their Master's dissertation since that time carrying out projects for the real educational institutions and companies which undertake e-learning initiatives. All these final projects are coordinated by their employers' representatives and developed and assessed in the professional nets.

They touched upon distance education systems development for educational institutions and corporations, content development for distance education (e.g. Google in teaching and learning, a DL Course on the Russian Language), research of ICT potential in education (Google, MindMaps, E-portfolios, Screencasts, etc.), systems of assessing quality in eLearning, etc.

This academic year students present, discuss and carry out their final papers in cooperation with other students of the same programme from Athabasca University (Canada) with the consultancy of Russian and Canadian specialists. ICT instruments (e.g. MESI Information Center of Disciplines and e-Campus) allow building small net communities of students around each course in cooperation with a teacher, foreign expert and a vendor representative.

Thus, for example the professor of the chair and scientific consultant of the department is Doctor Griff Richards, professor of University of Athabasca (Canada). Professor Richards carries both lectures for the students of the department (Basics of Instructional Design) and research seminar "Research Seminar in ICTs in Education" on the basics of research and development and project work for the staff and students of the department in English (See Fig.1).
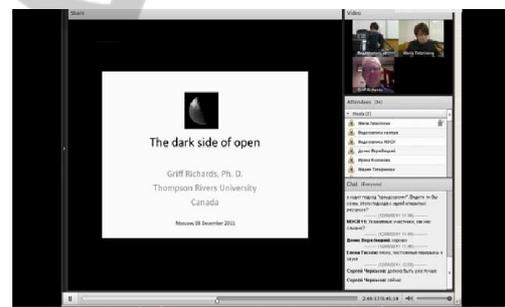

Figure 1: Online lecture of Prof. Richards from Canadian Athabasca University for the Master Degree students majoring in Applied Informatics in Education, delivered in Adobe Connect Pro.

Professor Zuev V.I., being a vice rector for information and distance learning technologies, is a unique specialist in Kazan Unstitute of Social and Humanitarian Sciences in Legal Issues of eLearning, Information Security of eLearning. Last two years Prof Zuev. teaches at the department of Applied Informatics in Education lecturing three core courses on the basis of modular system and blended learning, i.e. a week face-to face course is supported by students' project team work (see Fig. 2), as well as by his webinars (See Fig.3). Prof. Zuev is a scientific supervisor for a joint master's degree

dissertation carried by a student from MESI and a student from Kazan. This year the successful joint dissertation defence was carried.
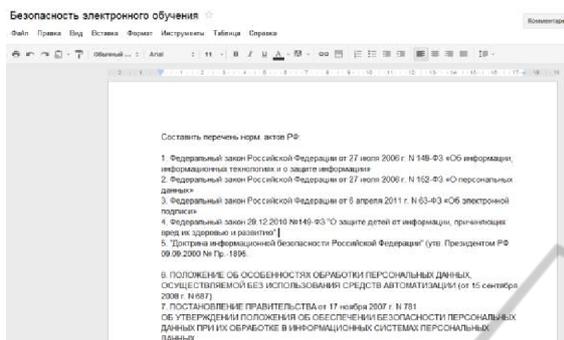

Figure 2: Google Docs used by Prof. Zuev (Kazan) for team work of students of MESI department (Moscow) in Information Security of eLearning.
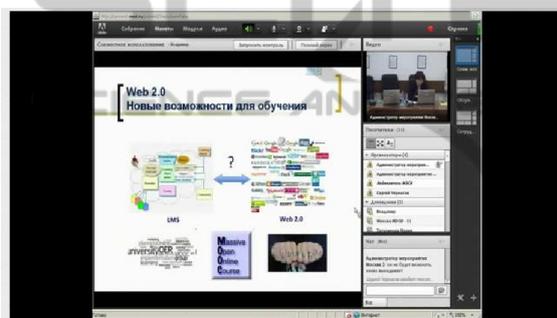
Figure 3: Webinar of Prof. Zuev carried for Master's Degree students majoring in Applied Informatics in Education in Adobe Connect Pro.

4 CONCLUSIONS

The initiative was welcomed by Russian educators and it stimulated introduction of this program in other Russian universities. New program profiles started to be developed. The program was quick scanned by E-xcellence, Quality Assurance in eLearning (EADTU) and achieved the label of Associates in Quality.

Priority perspectives of the department lie in both academic staff and students mobility, and educational programme mobility in Instructional (learning) design based in ICTs what is connected with attracting leading specialists of the field and eLearning vendor's representatives for teaching at the programme profile courses, providing opportunities for joint degree programmes realization in Russian and abroad in the field, international joint research and thesis defence.

Besides one if the leading priorities are focussed on programme content development for distance training and quality assessment (Virtual Chair on ICTs in Education), customized learning paths design, on-demand corporate training and partnership of business and education that can upgrade trained competences and provide professional growth for the students.

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