Using adaptive technology in graduate education environment with limited computer support

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Abstract
The article presents a description of the adaptive technology used at the Graduate School of Volgograd State University under conditions of fragmentary computer networks in Russia. This technology is put into practice at Volgograd State University for providing persistent development of key competences, abilities and practical skills of specialists in the situation of transitive economy.

INTRODUCTION

The changing situation in the Russian labor market is stipulated by the emergence of new manufacturing structure and technologies which can't but modify requirements to employees' competences and skills. This process is very rapid and painful.

Under these circumstances the educational market should not only offer information transfer, but also ensure processing and transformation of information to knowledge. That is why the main objective of graduate educators is to form demand in continuous knowledge update with the help of appropriate educational technologies. For this purpose adaptive educational technology is used at Volgograd State University.

By the adaptive technology we mean a set of traditional and networked computer infrastructures that offer opportunities for graduate students to continuously update, process and apply information and knowledge in real-life situations. The design of any adaptive technology is based on the use of competence approach, whose main principles are:

- individual development of skills and self-instruction methods;
- creativity;
- collaborate learning;
- application of information technologies.

The application of the above principles to concrete learning environments of graduate programs allow students to act adequately in situations of uncertainty (LEBEDEV, 2004, 18-19).

COMMUNICATION ISSUES

The development of adaptive graduate education technologies with the help of ICT facilitates the establishment of a special networked communicative environment within a higher education institution and beyond. This, in its turn, provokes organizational change in the learning process as well as in the institutional and inter-institutional relationships. As a result of the change professional skills acquired by graduate students modify: preserving national skills, we add global knowledge to them.

Information communication network is a maintenance base of the adaptive technology. At present Russian higher education network is fragmentary, the main reason for this being low income level of the population.

There are two levels in the Volgograd State University network: the first level is the university Intranet that connects classrooms, departments, schools, libraries and organizational management within the University. The second level consists of computer classrooms that are located in our regional branches and linked with the main campus through the Internet.

Students in these branches get in-service training without leaving their residential areas. This reduces their transportation costs and raises their education standard. They also have the opportunity to use Internet resources, stay in touch with lecturers and scientific supervisors, get and receive information about course requirements, etc. in synchronous and asynchronous modes.

The University Intranet also has the program frame E-learning Shell (*eLSe)* at the students' disposal: they may use it for retrieving study and methodology materials, fulfilling professors' assignments, self-testing, etc. *ElSe* has proved to be a powerful instrument for the adaptive technology objectives: it provides the organization of interactive learning with sufficient amount of e-training and methodological support both in face–to face and interactive e-learning modes (http://www.volsu.ru).

Organized communication among a greater number of graduate users of computer technologies develops their software awareness and facilitates exchange of ideas in disciplines of their choice. It also creates a collective action atmosphere among the students, who become more tolerant and respectful to each other's preferences. The institutionalization of collaborative learning methods via ICT in graduate education environment is performed through virtual research forums, seminars and conferences.

EUROPEAN EXPERIENCE

This evolution of distance education in Volgograd State as well as in many Russian universities is indispensable from the use of European universities' experience in the creation of distance education (FARRELL, 1999). The European education centers were the first to use combined methods of teaching, such as printed, audio and video lectures, Web materials, multimedia for presentations. They also hire part-time instructors to teach specific courses.

The adaptive technologies that we are now applying at the VolSU graduate school, were originated at Open University Business School (OUBS). They include the support of distance learning programs via the following learning mix**:** textual course materials, BBC produced audio and video materials, computer-mediated and Internet conferencing, assessed tutor-marked assignments and projects, face-to-face tutorials, day and residential schools, local self-help groups, end-of-course examinations, ongoing tutor support (GRAY, 1999).

The integration of the above rich variety of forms into our graduate study programs will require effort and time on the part of both faculty and the specialists of the Center of Information Communication Technologies. Nevertheless we are planning the next stage in the development of distance education programs which will be the transition from fragmentary use of ICT to the formation of a single distance learning environment based on the experience and standards of European education centers.

SOFTWARE PLATFORM FOR ADAPTIVE TECHNOLOGY

The software learning platform that Volgograd State University has been using for several years is now being adapted to graduate programs needs. It includes tools for creating training materials, assignments, tests, recommendations for conducting research, writing and submitting articles and other research products. Lecturers can place and renew sources for independent research and suggest situational themes for discussion on the forum. They can also direct written recommendations to the students.

The most important methodological element of the adaptive technology is independent search for additional information in the Internet. It forms and consolidates students' time-management, communicative and creative competences.

Using the *eLSe* program, teachers and students may also:

- Add notes during a class;
- Change syllabi and course content;
- Enter and revise information of any item on the menu;
- Create multiple choice and fill in the blank tests;
- Receive feedback;
- Connect with authors of different pieces of information;
- Publish lectures, assignments and workshops in PDF, HTM, DOC or TXT format.
- There is also a pedagogical forum that the Graduate School uses for students and teachers to:
- Announce and post topics of mutual interest on the forum;
- Reply to topics in the forum;
- Read replies to other users' views and announcements;
- Edit posts in the forum;
- Upload documents and published texts on the server in TXT format (DUDINA, MESHCHERYAKOVA, 2004, 466-467).

INSTITUTIONAL MECHANISM FOR ADAPTIVE TECHNOLOGY

Institutional mechanism of graduate education at Volgograd State University includes: formulating the aim and objectives, objects and subjects, methods and instruments as well as restrictions for the subjects' behavior, and preferences that they would like to realize (LEBEDEVA, 2002, 91-94).

1. The aim of the adaptive technology is formulation, development, modification and transformation of individual competence, giving students more decision making opportunities through a wider choice of methods for solving learning problems.
2. The objectives are achieved through the development of critical thinking and self instruction skills, creativity and application of ICT to the learning and research processes.
3. The objects of the adaptive technology are graduate students who are eager to make a successful career and who are responsible for their activities and experiencing the necessity of innovations.
4. The subjects of the graduate learning institutional mechanism are professors, lecturers, consultants, instructors and assistants.
5. The mechanism combines conventional discursive methods of teaching and learning (lectures, seminars and tutorials) and the so-called passive methods of learning (sets of texts, tests, assignments and glossaries) with advantages of the new delivery media, such as information audio, video, CD and DVD resources as well as online learning at interdistrict computer centers.
6. Restrictive rules of behavior include the terms of testing, doing written assignments and going in for individual exams.
7. Preferences that graduate students realize contain the development of their cognitiveness, ability to identify contradictions and make decisions in conditions of information asymmetry.

LIMITATION OF ADAPTIVE TECHNOLOGY USE

The use of the adaptive technology is restricted to graduate students' fields of activities, their cognitive abilities, motivations and task complexity, as well as to a lecturer's professional competence and methodological flexibility. The interaction between concrete graduate students and their lecturers and supervisors is a continuous process that forms a specific face-to-face and virtual learning environment.

The complexity of the realization of the institutional mechanism in the learning environment is caused by the contradictory relationship between the university management, faculty, students and staff. The main reasons of these contradictions are conservative thinking, the absence of normative base, the shortage of modern computer appliances, catering for collecting new knowledge but not for the development of professional competences.

For effective functioning of the technology it is necessary to support steady links and relationships between the university administrators and faculty. In Russia personification of relationships is very strong and very often there is no direct link between educational level and career growth. That's why with the formation and development of communicative, cognitive and other skills, the demand for appropriate corporative culture and social responsibility in universities is very high (BOGOLYUBOV, 2004, 18-19).

There is also a problem of accepting innovative ideas. Changes of stereotypes in educational methodology, workload redistribution for preparing teaching materials does not always correspond to lecturers' interests. As a rule this time consuming work is just the faculty initiative and responsibility.

The University management is trying to comply with the changing needs and interests of graduate students and faculty, but its plans are often restricted by the prescriptions of the Ministry of Higher Education and official regional educational authorities.

Nevertheless, the Graduate School faculty at Volgograd State believe that providing more training opportunities for employees is a strategically important task for the regional economy development. The use of the adaptive technology gives the opportunity to cushion some difficulties of the transitive period, when the need for new educational methods can't be fully met because of the shortage of necessary computer tools. In this situation the use of adaptive technology provides:

1) increase in graduate education enrollments and its quality enhancement;

2) individualization and intellectualization of educational methods;

3) interactive and cognitive nature of student activities;

4) individual approach to managing learning complexity and time.

CONCLUSION

The application of the adaptive technology to graduate studies in Russia reflects transitional processes in educational sphere. It combines traditional and innovative educational methods and promotes new educational approaches to meet the needs of graduate students and create opportunities for the solution of communicative, organizational, moral and other problems on the basis of professional universalism.

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The role of personality, gender and interaction in a cooperative and in a computer supported collaborative learning task

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Abstract

A total of 62 subjects of an Italian school, from the 4th and the 5th elementary school level (about 9, 10 and 11 years old), participated in a study investigating the effects of personality, gender and two cooperative learning tasks in children interactive behaviours. In our study we have considered two particular forms of cooperative learning: collaborative peer learning and computer supported collaborative peer learning. In the first task, children, working in pairs, had access to one computer. The independent variables were the personality (extrovert, introvert and mediovert), the gender of the couples (male, female and mixed couples), and the type of the task (hypertext and questionnaire), a repeated measure's factor. The dependent variables were the percentage of the time of the different interactive behaviours. Results have shown that personality clearly influence the way in which students interact when they work in pairs.

COOPERATIVE AND COMPUTER LEARNING

Cooperative learning is one of the most remarkable and fertile areas of theory, research, and practice in education. Cooperative learning exists when students work together to accomplish shared learning goals (Johnson & Johnson, 1999). Cooperative Learning refers to a set of instructional methods in which students are encouraged or required to work together on academic tasks (Slavin, 1987). Further, cooperative learning is not only a