PILOT IMPLEMENTATION OF GENEXIS TESTING SYSTEM IN SLOVAKIA

Miroslav Michalko, František Jakab
Computer Networks Laboratory, Department of Computers and Informatics, FEEI, Technical University in Košice, Slovakia
Letná 9, 042 00 Košice, Slovakia, phone: +421 55 602 7080
e-mail: {miroslav.michalko, frantisek.jakab}@tuke.sk

Abstract. There are many tools for testing of students' knowledge level available at the market. Teachers commonly use systems like Moodle to create tests with pre-defined questions and answers. Student could receive bundle of questions from existing database. But only a minimum of software testing systems offers creation of unlimited number of new tasks using one or more formulas. GENEXIS is modern, flexible and easy to use tool for teaching, training and testing of students in various topics. Its features make this software tool excellent for mathematics, physics and chemistry. This article deals with GENEXIS features and presents its pilot implementation in Slovakia.

Keywords: testing, training, e-learning, education, GENEXIS

1. INTRODUCTION

One of the most time consuming tasks for teacher is verification of student knowledge level. Recently market offers wide variety of tools for testing which allows to test student in real time and to show final score. But these systems do not offer generation of new tasks based on pre-defined mathematic formulas and are not able to display personalised recommended step by step solution. Due to these reasons Latvian company Data Pro Grupa started to develop powerful tool for training and testing of students preferably in mathematics, physics and chemistry, topics where such a tools were missing. GENEXIS provides complex bundle of features like creation of new tests, creation of exams and online evaluation in real time statistics to teacher.

GENEXIS is not only the tool for testing. It offers also possibility to teach and explain how to solve tasks. System offers possibility to show step by step solutions using texts, pictures, animations, videos and formulas. GENEXIS also offers printing feature in case there is no possibility to do online testing. Task generation is one of the most powerful option offered by this system. Teacher is able to add into system new task with varying input parameters. These parameters could be texts, images and input values defined as range or pre-defined set of data. After relations and formulas are set student could receive almost unlimited of tasks based on one pattern.

GENEXIS system is tested in Slovakia thanks to financial support by Leonardo Da Vinci programme in cooperation with other partners from EU countries. This article partially maps process of software evaluation in Slovakia on five selected secondary vocational schools. Authors hope that this tool is really one of the best testing system available at the market. Preliminary testing results shows that teachers really likes it because its saves their time and helps to improve teaching process itself.

2. GENEXIS FEATURES

GENEXIS is complex software solution which offers complete bundle of features required by teacher in order to teach, test and evaluate student knowledge level. In task creation process it is possible to insert texts, images, videos (even embedded from Internet) and mathematical formulas. Editor allows to simply add new variables with specified range of allowed values. Every student could receive different numbers as values [Fig. 1], different texts but there is one principle behind. This is hidden to student and helps to teacher make as many exams as needed in a student class.
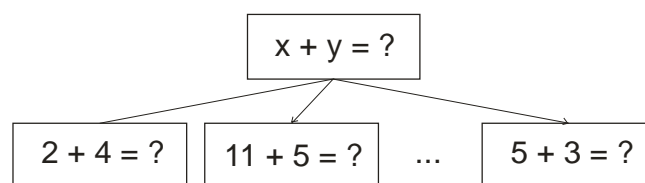

Fig. 1. Task generation process

Creation of task is simple thanks to user friendly interface, even when there are so many options offered. GENEXIS offers not only definition of task but also provides place for step by step solution for students. This is extra added value of this system, so it could be used not only as testing tool but also educational source. Depends only on teacher if access to tasks is set to be allowed only during exam time period or any time students want to study. Solution steps are linked to given tasks, so numbers and texts are recent to every learner.

After task is created into system teacher is allowed to share it with other colleagues. This functionality helps to create large database within very short time period. Tasks could be created in specific folders representing subject, subtopic, depends on teacher will. System also supports

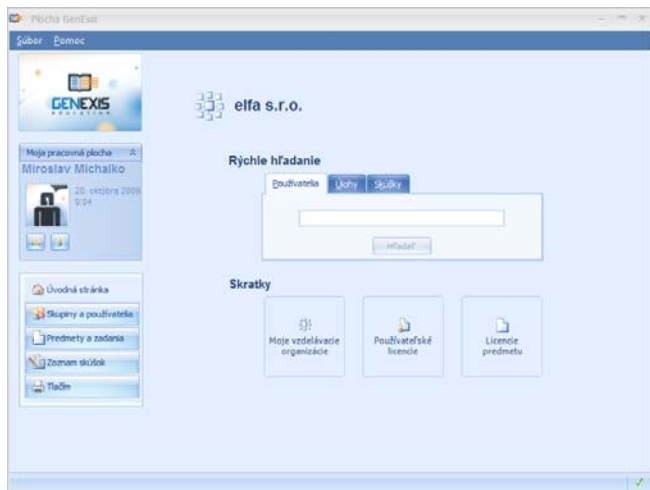sharing of whole folders, not only within institution but also between schools.

Fig. 2. Home screen in Slovak language

During implementation phase in Slovakia hundred of tasks were created and shared to other system users. Tasks cover algebra, geometry and physics for vocational schools. Figure 3 shows widow where step by step solution presents to student how given task should be solved. All formulas presents given tasks in a way that teacher wants to present and teach students.
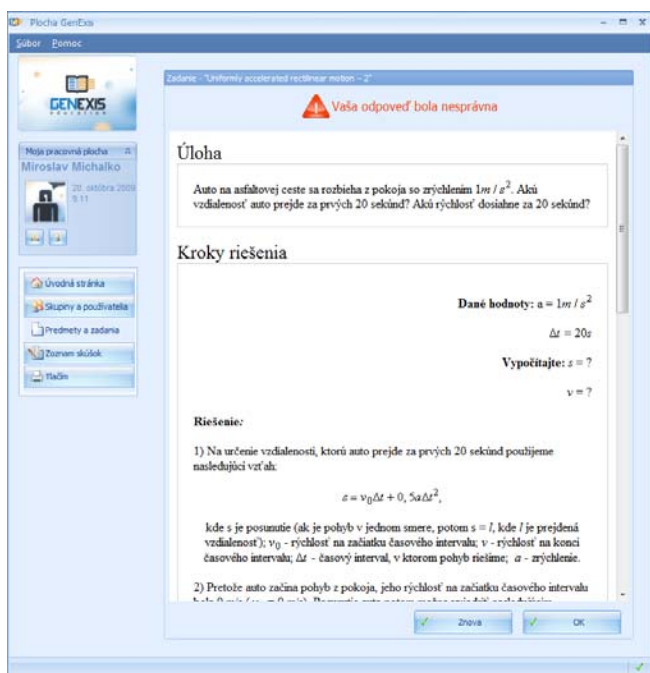

Fig. 3. Step by step solution window

GENEXIS also allows printing of exams with pre-defined group of tasks. It helps to teacher to test students in case there are no computers in a class. Every exam printed contains unique number identifying specific test and teacher will have printed list of answers for fast check and evaluation. Results for teacher could be printed also with detailed solution what helps to find place where mistake

was done. During printing wizard there is also possibility to leave empty space for student to solve given tasks.

Whole GENEXIS system is using simple wizards which allow really fast and simple task creation. Also adding of user accounts and student management is easy process with almost no time overhead. Figure 4 shows task editor interface.
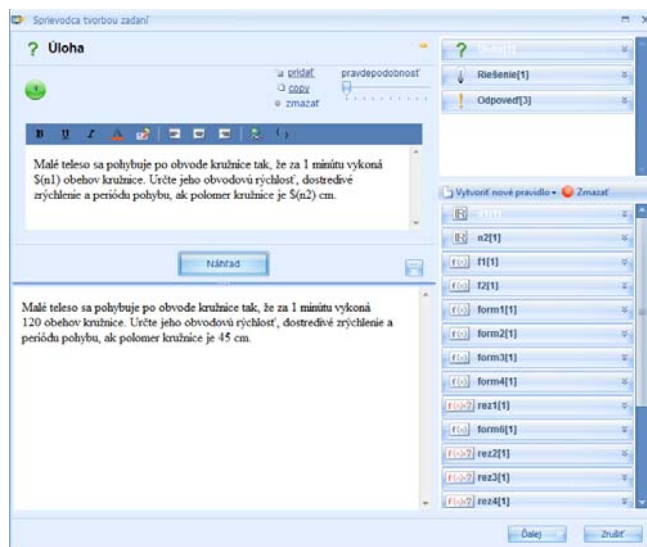

Fig. 4. Task editor

Rapid development of this application helps to solve problems in a fast way. This could be proven by experience of Slovakian schools involved in the project. Translation of user interface was also fast and clear process.

3. SLOVAKIAN SCHOOLS INVOLVED

Thanks to financial support of Leonardo da Vinci programme there was a possibility to involve five schools from Slovakia to testing process. All vocational school are leading in innovation of education in its region. Following schools were selected:

- Specialized secondary school technical (Michalovce)
- Secondary electrotechnical school (Košice)
- Specialized secondary school Ostrovskeho (Košice)
- Secondary vocational electrotechnical school (Prešov)
- Private specialized secondary school (Poprad)

Schools are allowed to use fully functional GENEXIS system in teaching process with students. Based on feedbacks provided by teachers they welcomed this application very much. It's because there were no tools available for testing of more complex tasks with multiple variation in mathematics and physics. In compare to Moodle there was much simpler way to create exams for many students in class. Also step by step solutions were used as teaching material for home study. Students appreciated fast test evaluation. Teachers appreciated variability of tests what in many cases eliminated cheating.

Function of printing [Fig. 5] was used many times because teaching of mathematics and physics in Slovakia is still not in a room equipped with computers.
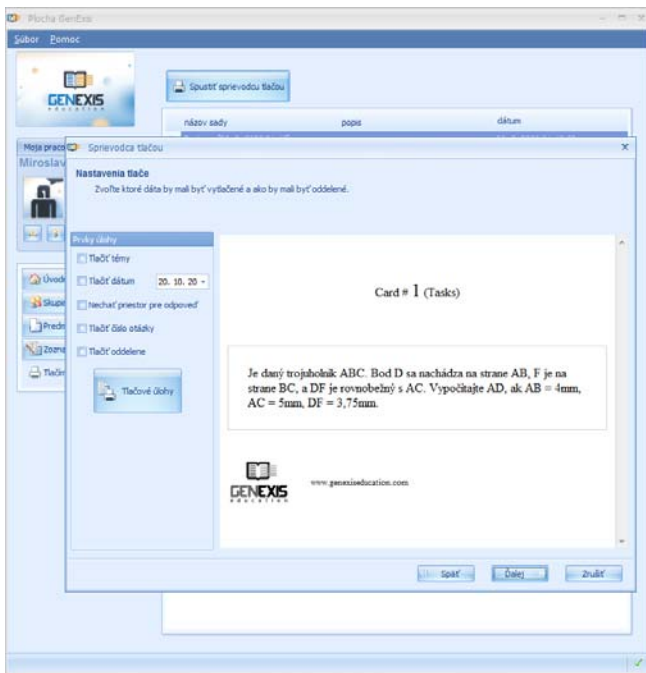

Fig. 5. Printing wizard

Six active school teachers at involved schools were working with the system for seven months. General system convenience is shown in Fig. 6. There were generally no negative feedbacks.
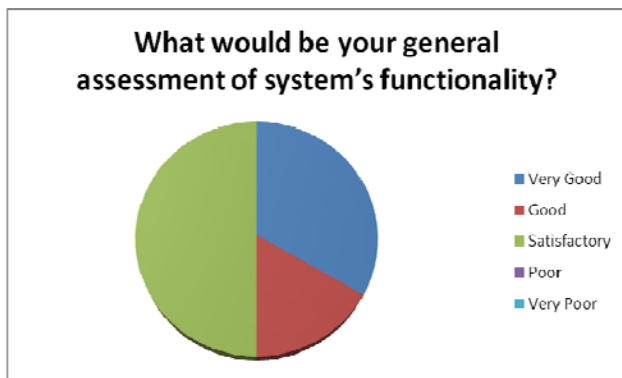

Fig. 6. General system functionality

GENEXIS is developed specifically for teachers with their help. During project realisation teachers were able to submit comments and requests directly to developers. This cooperation allowed rapid evolvement and improved functionality. But there is still some work to be done in improving user interface. As shows in Fig. 7 there were no negative responses.
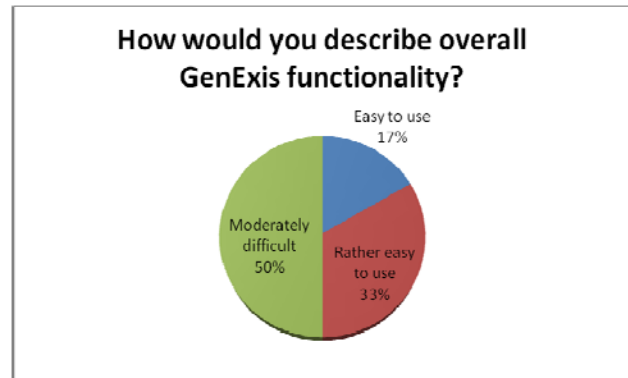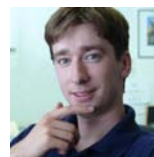

Fig. 7. Overall GENEXIS functionality

GENEXIS is planned to be implemented on wider network of schools in order to help in education process. Skill based learning using this system is attractive and effective way of teaching and also saves a lot of time.

5. CONCLUSION

GENEXIS is powerful tool provided to teachers and students. The system provides automatic generation of tasks based pre-defined criteria what brings a lot of benefits. Teachers are able to create challenging exams in a minute, makes learning process efficient and attractive; students can meet the challenge to solve prepared tasks. As show preliminary testing in Slovakia this tool is very welcomed and has a chance to become daily used tool in schools. Tool is now ready to be downloaded and tested by everyone at official project website.

THE AUTHOR(S)

Miroslav Michalko is internal PhD student at Technical University of Kosice. His research activities are related to streaming, mobile multimedia technology and web services. He is responsible for Videoserver platform development as project manager and member of video@lab team at Computer Networks Laboratory.
You can contact him at miroslav.michalko@tuke.sk.

Frantisek Jakab was born in 1959. He received the MSc. degree in Systemotechnic engineering from the St. Petersburg Electrotechnical Institute (Russia) in 1984 and the PhD. degree in 2005. He is employed as an assistant professor at the Dept. of Computers and Informatics, Technical university of Kosice. He is a head of the Computer Engineering Group and Computer Networks Laboratory. His research interests include projecting of computer network, modelling, simulation and network management, QoS, intelligent tutoring systems. He is a coordinator of the Cisco Networking Academy Program for the Slovak Republic and head of the Application Section of the Communication

Technology Forum Association in Slovak Republic (www.ctf.sk).
You can contact him at frantisek.jakab@tuke.sk.

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APPENDIX – FURTHER INFORMATION

Application is available to download at official project web page: http://www.genexiseducation.com/