

PROCEEDINGS

of the Union of Scientists - Ruse

Book 5
**Mathematics, Informatics and
Physics**

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RUSE

The Ruse Branch of the Union of Scientists in Bulgaria was founded in 1956. Its first Chairman was Prof. Stoyan Petrov. He was followed by Prof. Trifon Georgiev, Prof. Kolyo Vasilev, Prof. Georgi Popov, Prof. Mityo Kanev, Assoc. Prof. Boris Borisov, Prof. Emil Marinov. The individual members number nearly 300 recognized scientists from Ruse, organized in 13 scientific sections. There are several collective members too – organizations and companies from Ruse, known for their success in the field of science and higher education, or their applied research activities. The activities of the Union of Scientists – Ruse are numerous: scientific, educational and other humanitarian events directly related to hot issues in the development of Ruse region, including its infrastructure, environment, history and future development; commitment to the development of the scientific organizations in Ruse, the professional development and growth of the scientists and the protection of their individual rights.

The Union of Scientists – Ruse (US – Ruse) organizes publishing of scientific and popular informative literature, and since 1998 – the "Proceedings of the Union of Scientists- Ruse".

SERIES 5

"MATHEMATICS, INFORMATICS AND PHYSICS"

VOLUME 7

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MULTILANGUAGE AND MOBILE TRAINING OF PHYSICS WITH MOODLE

Svetlin Stoyanov, Galina Krumova

Angel Kanchev University of Ruse

Abstract: This work is an extension of the previous one and presents the results of research carried out by a team of the University of Ruse. It aims at developing of multilanguage multimedia materials in Physics.

Keywords: educational environment, mobile learning, multilanguage

RESEARCH ACTIVITIES

The main activities of the research are as follows:

1. Studying the possibilities of the tests module in MOODLE for inclusion of multimedia and multilanguage elements.
2. Developing of methodology for creation of multilanguage multimedia tests.
3. Tests verification in real conditions and collection of statistical information on their effectiveness.
4. Improving the accessibility of distance learning environment MOODLE.
5. Description of methodology for establishing the multilanguage multimedia test and preparation of guidelines for tests authors.

MAIN RESULTS

The educational environment based on MOODLE has greater accessibility and functionality to meet the needs of the learning process. The developed modules will improve the functionality of the environment and will increase the effectiveness of distance learning with it. The elaborated educational materials will facilitate the routine activities of lecturers and will be a premise for improvement and acceleration of the learning process. The following examples present some of the worked out multilanguage multimedia materials. Figure 1 displays the choice of language.

The screenshot shows a Moodle user profile page for 'Галина Крумова'. The 'General' tab is selected, and the 'Show Advanced' button is visible. The following fields are shown:

- Име*: Галина
- Фамилия*: Крумова
- Адрес за е-поща*: gal@ru.acad.bg
- Показване на електронни адреси: Скриване на адреса за всички
- Електронният адрес е активиран: Този адрес е активиран
- Град*: Ruse
- Избор на държава*: България
- Часови пояс: Сървърно време
- Предпочитан език: България (bg) (highlighted)
- Описание*: България (bg) / English (en)

Fig. 1. Language choice

The mobile learning is based on the platform MLE [1], which is a MOMO product [2] further development and is worked out within MOODLE. The elaborated quizzes and

course content may be used by a wide range of mobile devices and according to the results of the tests provided by the authors they are operating properly. Figure 2 shows the process of logging-in and getting access to the training platform via special software designed for a mobile phone Opera Mini.

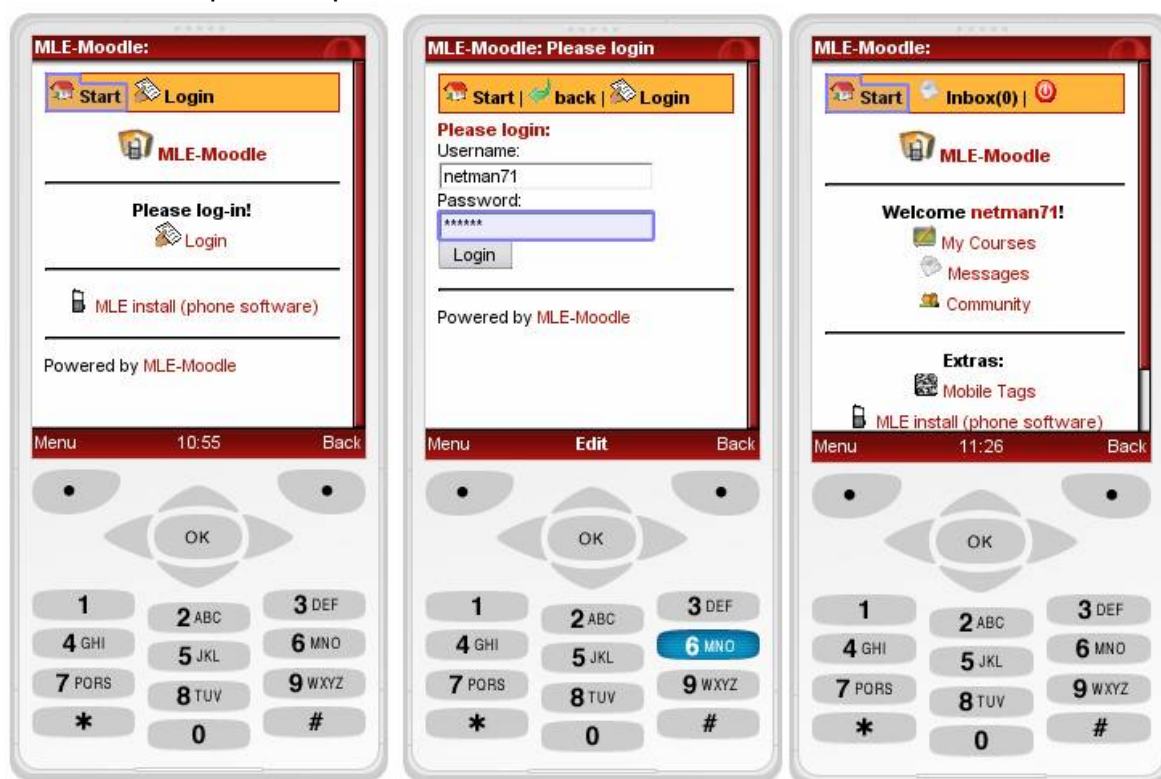


Fig. 2. Mobile learning-logging in and main page

The practical work with the platform shows a definite facility of use comparable to that of using a PC. The only trouble is related to the introduction of long text strings. The voice identification and the wide spreading of mobile phones with touch screen at the lower price range (up to 100 euros) solve this problem.

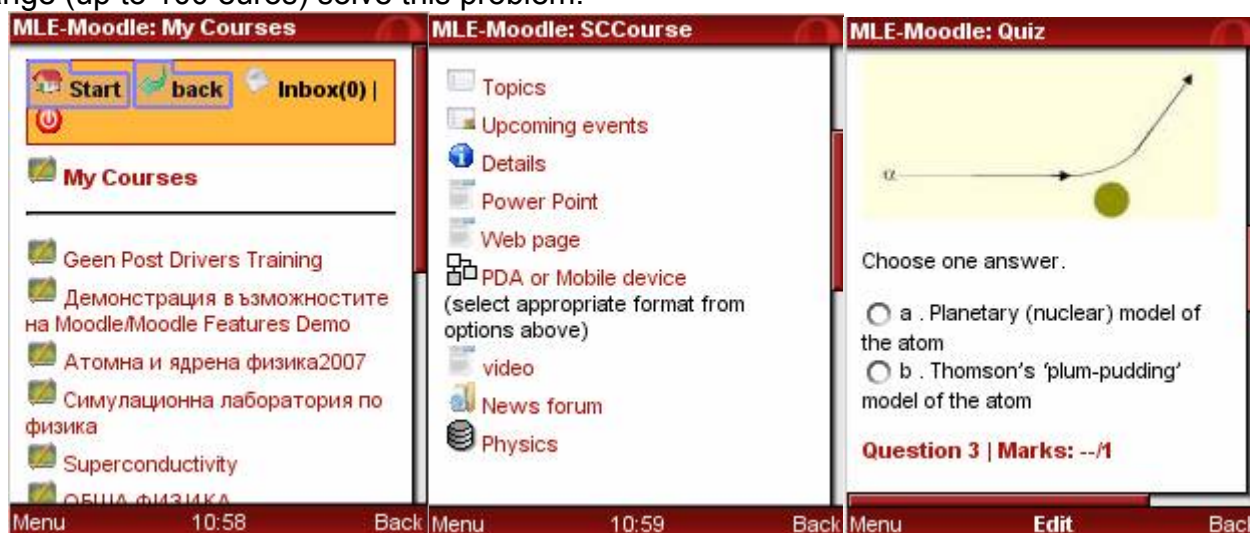


Fig. 3. Mobile learning-available courses and Nuclear Physics quiz

While the experiments are carried out, the elaborated teaching materials are available in original, in the form of Web pages and options for mobile devices (Fig. 3). The developed tests are operating properly in one version on all types of devices.

The visualization of the particular multimedia elements causes problems in the case of inappropriate size and format. The work of the group is directed at the resolution of these problems. The goal is the transformation of the multimedia elements to a format and size suitable for any specific device or family of devices with similar characteristics to be done automatically without human intervention.

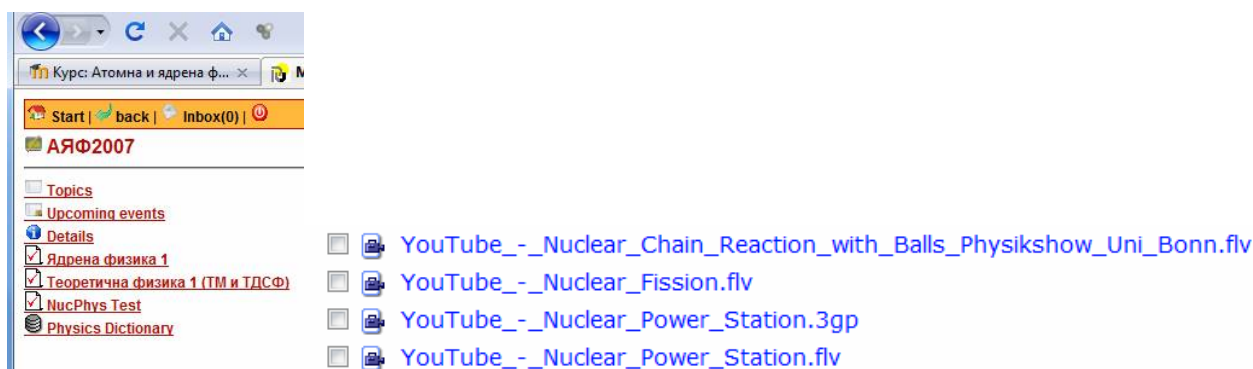


Fig. 4. Physics dictionary in MOODLE with video materials

The studies of the team revealed that the FLV and 3GP video formats (Fig. 4) are suitable for most devices. The first tests are conducted on the basis of the developed by the group multimedia Dictionary of Physics – see the example shown in Figure 4.

Figure 5 displays one of the Nuclear Physics quiz questions. It is designed by insertion of an interesting video clip which may be started by the student as many times as he likes. The choice of the correct answer depends on the associative thinking ability.

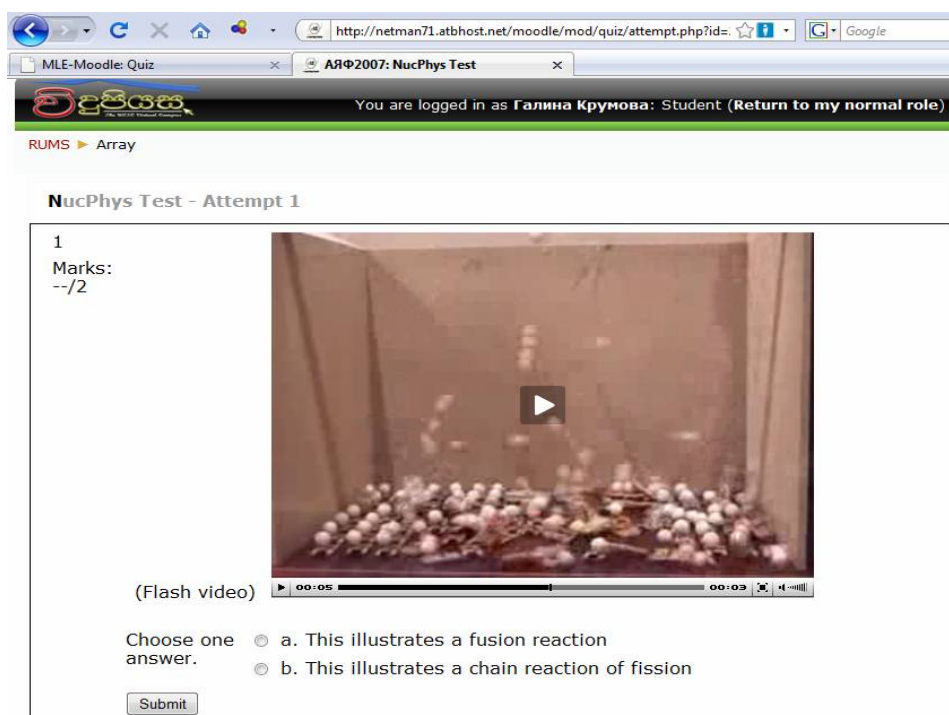


Fig. 5. Nuclear Physics quiz using video materials

The described results are a stage of the research work on the project 09-FEEEA-10 of the Scientific research fund at the University of Ruse. The authors continue to work on the problems outlined in this article. The future results will be published in subsequent articles.

REFERENCES

- [1] Mobile Learning Engine (MLE) – <http://mle.sourceforge.net>.
[2] Mobile Moodle (MOMO) – <http://www.mobilemoodle.org/momo18>.

CONTACT ADDRESSES

Assist. Prof. Svetlin Stoyanov
Department of Telecommunications
FEEEA
Angel Kanchev University of Ruse
Ruse - 7017
Bulgaria
Tel.: (+359 82) 888 842
E-mail: netman71@uni-ruse.bg

Assoc. Prof. Galina Krumova, PhD
Department of Physics
FEEEA
Angel Kanchev University of Ruse
Ruse - 7017
Bulgaria
Tel.: (+359 82) 888 215
E-mail: gal@uni-ruse.bg

МНОГОЕЗИКОВО И МОБИЛНО ОБУЧЕНИЕ ПО ФИЗИКА СЪС СРЕДСТВАТА НА СРЕДА ЗА ОБУЧЕНИЕ MOODLE

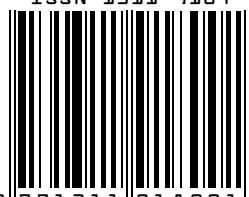
Светлин Стоянов, Галина Крумова

Русенски университет „Ангел Кънчев”

Резюме: Тази работа е продължение на предходната и представя резултатите от изследванията на екип от Русенския университет. Тя има за задача да представи разработените демонстрационни многоезикови мултимедийни материали по физика.

Ключови думи: среди за обучение, мобилно обучение, многоезиковост.

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