

# Modeling of physical education in the e-learning system for the physical culture discipline

Artem Rayzikh\*, Andrey Rayzikh  
Udmurt State University, 426034, Izhevsk, Russia

**Abstract.** At the present dynamic development of education, distance learning is increasingly popular due to its mobility and a variety of different information. There are certain difficulties in organizing the educational process using electronic educational resources. The article describes the modeling of the physical education process in non-sports institutes of Udmurt State University. The developed e-learning system at the University based on the Moodle platform allowed us to simulate the process of physical education and create an e-learning course based on it. The training course has a block system for organizing the physical education model. Using the e-learning system in the educational process of higher education allows to modernize the process of students' physical education non-sports institutions, and lay a solid foundation for further self-education. This material is useful for University teachers who have an electronic educational environment.

## 1 Introduction

With the information revolution, Internet takes one of the leading places in our lives. The modern learning process is impossible to imagine without computers and Internet. This was a prompt to the modernization of the education system and distance learning. It became widespread among young people and among older people as well. Every year, interest in distance education is growing. During the formation of a single global and information space this form of education meets the needs of the time [2,6,9].

The use of distance learning technologies in the higher education system become relevant at the present time. In the order of the Ministry of education and science of the Russian Federation dated 23.08.2017 No. 816 "on approval of the Procedure for the use of e-learning and distance learning technologies by organizations engaged in educational activities in the implementation of educational programs" indicates that organizations independently determine the procedure for providing educational and methodological assistance to students. They independently determine the ratio of the classes volume, through direct interaction of the teacher with the student, including the use of e-learning, distance learning technologies [1,5].

The process of using digital technologies at the current level of society development involves a digital transformation of the main functions in the activity. That means the transition to new digital operational and business models in production and management. The digital transformation in education means the full restructuring of the educational process. It includes methods and means of teaching, changes in the competency model, the semantic model of curriculum, changing approaches to the evaluation of teachers, as well as digital management of routine processes in the school: personnel accounting, management, teaching load, financial management, document management. The considerable attention is paid to updating the model of the educational process based on the use of modern digital information technologies. They cover almost all aspects of this process, such as goals, content, means and methods of training, and organizational forms of their implementation [4, 8].

There is a particular need to use reliable and flexible education management systems that could be used in traditional, distance and mixed form of learning. The use of distance learning technologies becomes an integral part of the education system. One of the most well-known and widespread systems is LMS Moodle (Modular Object-Oriented Dynamic Learning Environment). It becomes popular among teachers all over the world. It is free and its technical capabilities and characteristics are superior to commercial LMS. Currently, the LMS Moodle system is used for distance learning in many of the world's largest universities. The program was translated into more than 100 languages, including Russian [Moodle] [3,7,9].

## 2 Methods and materials

When writing the article, we used the following research methods: analysis of scientific and methodological literature, generalization of the foreign authors experience who use the electronic educational environment for distance learning, study of the popular social networks specifics.

---

\* Corresponding author: rayzikh@gmail.com

### 3 Results and discussion

Modeling gave us the opportunity to create an e-learning course for Udmurt State University students of non-sports institutes, to determine its consistent structure and content of the educational process in the discipline "Physical culture".

In September 1, 2016, Udmurt state University launched a modern and improved e-learning system based on the Moodle platform, which has the following advantages:

- availability of the mobile version;
- "friendly" user interface;
- wide range of features;
- automatic updating of the user profile with data from the IIAS (IIAS-electronic student diary);
- automatic enrollment of students for courses via the link in the IIAS.

We studied the usability of the interface of two of the most popular social services: (Facebook and V Kontakte). After that we attempted to create a model of physical education and implement an electronic training course on physical education for students of non-sports institutes.

The pedagogical model of physical education includes five blocks: home-news, introduction, self-control block, organizational block, and evaluation and performance block.

Let's look at the main content and tasks of each block.

Home-news the main block used for posting entries with news updates. Entries include descriptions of tasks from other blocks using a text "anchor" for easy using of the physical education model.

The introduction includes a brief description of the e-course with attached recommended literature (Fig. 1).

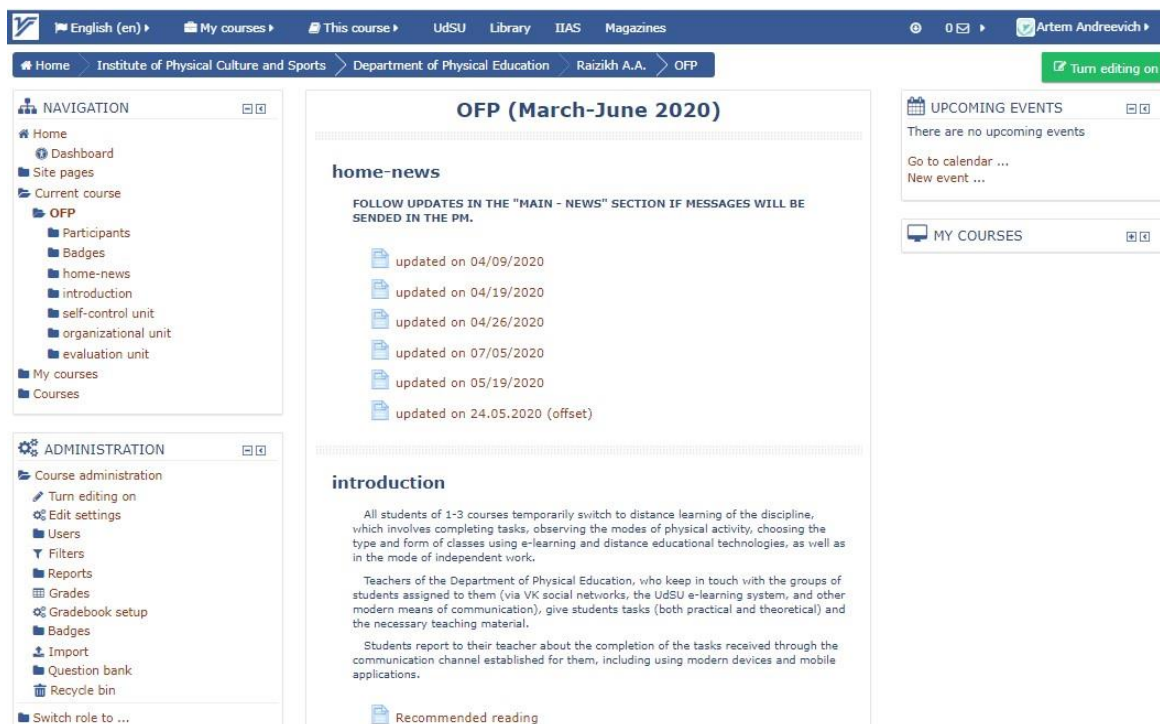
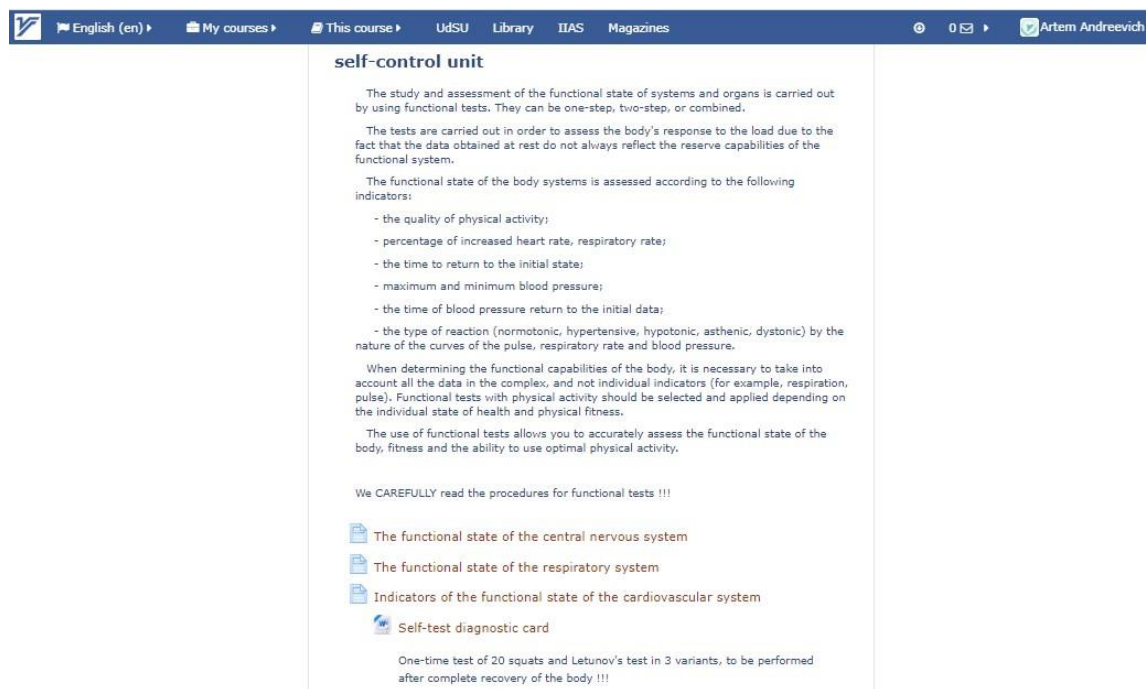


Fig. 1. Home-news and introduction of the physical education model



**Fig. 2.** Self-monitoring unit of the physical education model

The self-monitoring unit is aimed at assessing the functional state of the central, respiratory and cardiovascular systems of the body (Fig. 2). By using functional tests and entering their results in a specially developed "diagnostic self-monitoring map" (Table 1).

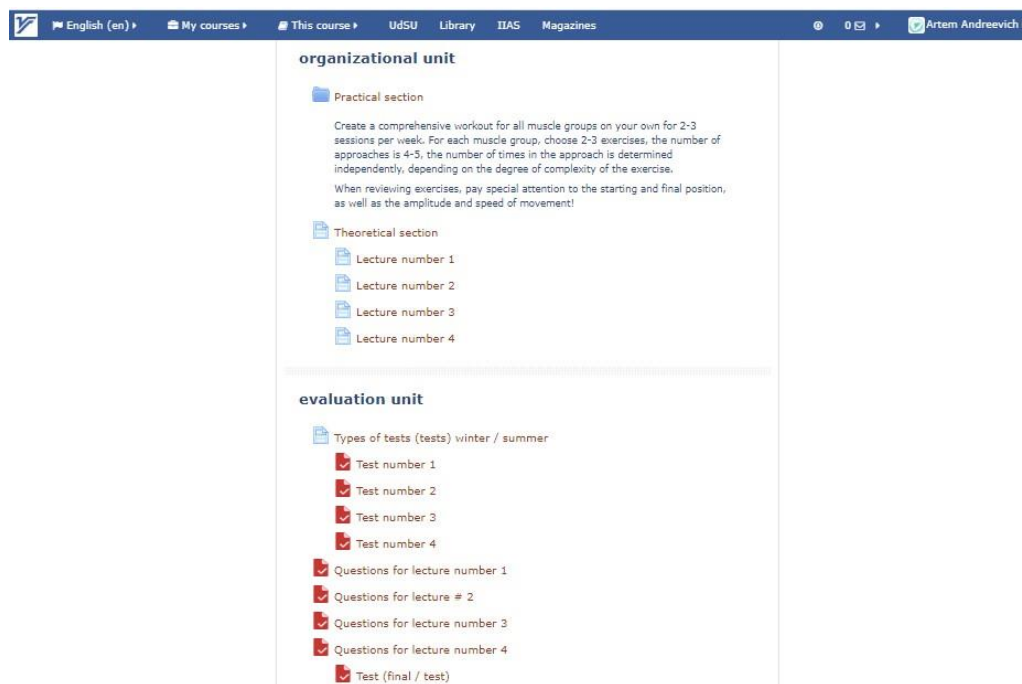
**Table 1.** Self-monitoring diagnostic card

<b>Name (in full):</b>					
<b>Institute:</b>					
<b>Course:</b>					
<b>Functional state of the central nervous system</b>					
<i>Tapping test (number of points)</i>					
1st square ( )	2 <sup>nd</sup> square ( )	3d square ( )	4 <sup>th</sup> square ( )		
<b>Functional state of the respiratory system</b>					
<i>Test Shtange</i> ( )		<i>sample Ghencea</i> ( )			
<b>Functional state of the cardiovascular system</b>				Functional state of the cardiovascular system	
<i>Kerdo Index</i> ( )	<i>Coefficient of blood circulation economization</i> ( )	<i>Orthostatic test</i> ( )	<i>Clinostatic test</i> ( )		
<i>One-step test of 20 squats</i> ( )					
<b>Letunov test</b>					
1st option (pulse): Before ( ) After 1 min. ( ) 2 min ( ) 3 min. ( )	2 <sup>nd</sup> option (pulse): Before ( ) After 1 min ( ) 2 min. ( ) 3 min ( )	3d option (pulse) Before ( ) After 1 min. ( ) 2 min ( ) 3 min ( )			

The organizational block includes theoretical and practical sections.ions.

The theoretical section includes a lecture material for self-study and subsequent assessment. The practical section consists of video files with physical exercises for all muscle groups at home.

The evaluation and performance block includes a description of the regulatory requirements for the level of physical fitness by type of test and control of theoretical knowledge (Fig. 3).



**Fig.3.** Organizational and evaluative-effective blocks of the physical education model

## 4 Conclusions

Analysis of special literature, as well as practical use of modeling the process of physical education in the e-learning system for students of non-sports institutes of Udmurt state University is appropriate and effective.

Modeling of an electronic training course for students of non-sports institutes in the discipline of physical culture allowed structurally ordering the educational process and complementing the traditional forms of physical education.

## References

1. A.R. Bikmullina, E.V. Fazleeva, *Izvestiya Tulsu. Physical Culture. Sport*, **3** (2020). URL: <https://cyberleninka.ru/article/n/primenenie-distantionnyh-obrazovatelnyh-tehnologiy-po-disttsiplinam-fizicheskaya-kultura-i-elektivnye-kursy-po-fizicheskoy-kulture-i>
2. G.G. Blokhovtsova, T.L. Malikova, A.A. Simonenko, *New science: strategies and vectors of development*, **118**, 89-92 (2016)
3. L.M. Mukhametshin, L.L. Salekhova, M.M. Mukhametshina, *Vestnik TSUHE*, **2(56)** (2019). URL: <https://cyberleninka.ru/article/n/ispolzovanie-sistemy-lms-moodle-v-sovremennom-obrazovatelnom-protse> (accessed: 09.09.2020).
4. P.K. Petrov, *Modern problems of science and education*, **3** (2020). URL: <http://science-education.ru/ru/article/view?id=29916> (accessed: 08.09.2020).
5. Order of the Ministry of education and science of the Russian Federation No. 816 dated 23.08.2017. URL: <https://base.garant.ru/71770012/>
6. Y. Aljaraideh, K. Al Bataineh, *International Education Studies*, **12(5)**, 99–108 (2019). doi:10.5539/ies.v12n5p99.
7. C. Chung, L.A. Babin, *Developments in Marketing Science: Proceedings of the Academy of Marketing Science. Springer, Cham* (2017). URL: [https://doi.org/10.1007/978-3-319-50008-9\\_182](https://doi.org/10.1007/978-3-319-50008-9_182).
8. E.-M. Glade, *Magazin Erwachsenenbildung.at*, **11**, 30 (2017). URN: urn:nbn:de:0111-pedocs-128953
9. A.S. Kuznetsov, Z.M. Kuznetsova, *Russian Journal of Physical Education and Sport*, **14(4)**, 5-7 (2019). DOI: 10.14526/2070-4798-2019-14-4-5-7