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PRINCIPLES OF INTEGRATION OF ELECTRONIC EDUCATIONAL SYSTEMS INTO THE EDUCATIONAL PROGRAM OF A UNIVERSITY

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Integration processes in higher professional education have now become one of the priority objects of scientific interest of researchers in the field of pedagogy, theory and methods of education. With the accumulation of research experience in this issue, the range of meanings of the concept of "integration" in education is expanding, the number of approaches to the study of integration processes is growing, and the number of concepts and methods of integrative training at a university is increasing.

Until recently, integration processes in the higher education system were considered by researchers as follows:

а) integration as an integrative whole, including a synthesis of procedural and resulting components of integration;

б) integration as a process;

в) integration as a result, reflecting the moment of fixation of a certain "product" obtained during the integrative process [1].

In recent years, the problem of integrating e-learning courses and technologies into educational programs at all levels of training has become particularly relevant. Currently, universities are actively using various teaching methods that involve the use of electronic technologies, for example:

-**E-learning** - a wide range of applications and processes designed for learning via electronic means, which includes, among others, the concepts of online learning, Web-based training, and computer-based training;

-**Cloud Based Learning** - a permanent, publicly accessible, scalable network of computers designed for e-learning - from online classes in accredited universities to small training modules, which are usually used by companies/enterprises to improve staff skills;

Systems for organizing the educational process based on the electronic educational environment are widely used, in particular:

-**MOOC** - massive open online courses. This term refers to a network class designed to support a large number of participants. As a rule, students watch video lectures and communicate with teachers and other participants in online forums. MOOCs require students to take online tests that can be automatically graded and/or complete peer-reviewed assignments. Some MOOCs use a combination of these assessment tools;

-Virtual classroom - an online educational environment that can be accessed through a portal or software.

A number of approaches to organizing the learning process have also been developed and are being put into practice, the most common of which are:

-Synchronous/asynchronous learning. Synchronous learning requires students and teachers to be online at the same time. Lectures, discussions and presentations are held at specific times. Asynchronous learning involves teachers providing students with materials, lectures, tests and assignments that can be accessed at any time. In this case, students can be set a time interval during which they need to connect to the course;

-Blended learning, which combines face-to-face classroom teaching methods with computer-based activities;

An inverted classroom, when lectures and practical classes take place online or in an electronic educational environment, and homework is done in the classroom.

Management systems for organizational and content aspects of the educational process are used, for example:

-Learning management system (LMS) - software application or web technology used to plan, implement and evaluate the learning process. Typically, a learning management system provides the teacher with the ability to create and deliver content, monitor student participation, and evaluate student performance. A learning management system can also provide learners with the opportunity to use interactive features such as topic discussions, video conferencing, and discussion forums;

-Course management system (CMS) - a set of tools that allows the teacher to create online course content and publish it on the Internet without the need to work with HTML or other programming languages.

A set of such systems - the most common of which is the MOODLE system - is designated by the term **Virtual Learning Environment (VLE)**.

However, despite the abundance of technological capabilities, experience in working in a virtual learning environment, as well as with e-learning tools, allows us to judge their insufficient integration into the educational process of universities. E-courses are often used to study specific topics, complete independent work only, or replace classroom training. At the same time, the main content of the course, as a rule, is implemented in a traditional classroom mode, and work in a virtual educational environment is considered by both teachers and students, at best, as auxiliary or additional, and at worst, “divorced” from the main content of the discipline, having a formal character.

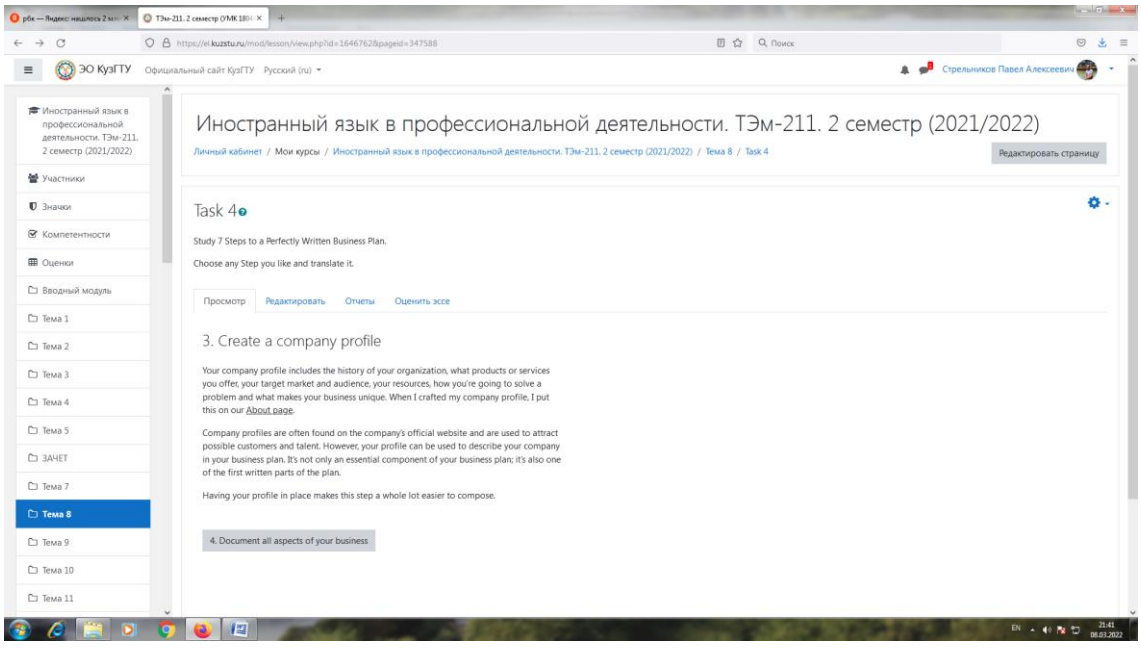
We believe that in order to solve the problem of integrating electronic content with classroom work - when these two elements will have equal value and organically complement each other - one should turn to the fundamental provisions describing the processes of educational integration [2].

Researchers have described the following main patterns of integration processes in education: - interdependence of integration and disintegration, - organic unity of the whole and its parts, - inextricable connection between process and result.

These patterns make it possible to formulate the key principles for integrating e-learning components into an educational program originally developed for the traditional classroom training.

The principle of recreating disintegrated integrity. Integration of the electronic component into the educational program does not provide for the study in the electronic system of certain content that is not studied in the classroom. In other words, in order for electronic content to be valuable both from the point of view of motivation and from the point of view of content, the same topic must be mastered by students both in the classroom and in the electronic educational system. Attempts to "separate" topics into different formats most often lead to their division into "main" and "minor", which negatively affects the quality of students' mastery of topics.

The principle of organic complementarity. Work in the electronic educational system should imply the impossibility of completing the presented tasks in classroom mode. That is, specific teaching methods for electronic educational systems should be developed and applied, different from those used in the classroom. This approach eliminates the "duplication" of classroom and electronic work, and also encourages students to use electronic educational systems, since "debts" accumulated in the electronic environment cannot be compensated in the classroom. It is important that the requirements for mastering the discipline should require students to complete both tasks in the electronic educational system and in the classroom.



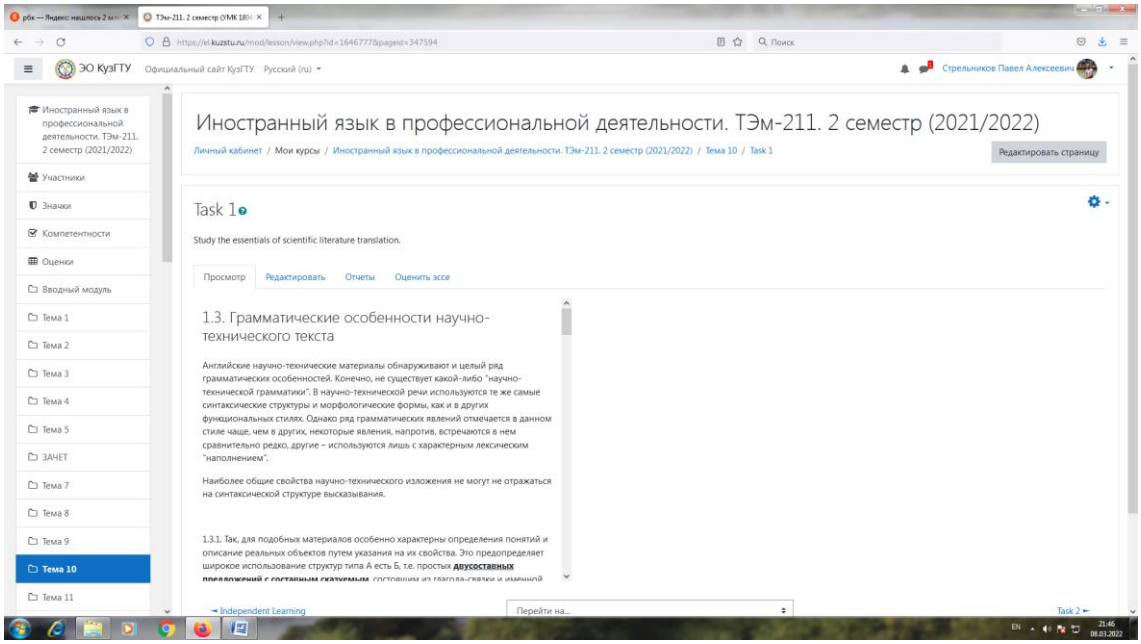
The principle of objective-conditioned unity of process and result. The integration of the electronic educational system into the educational program has a dual character, being both an objective and a way to achieve this objective. That is, the goal of using an electronic educational system is not only to master the discipline, but to master the competence to use this system. In other words, the student must not only study the material presented in the electronic educational system, but

also master independent learning skills that cannot be mastered in the classroom. Accordingly, work in the electronic educational system should involve students mastering new forms of presentation of material, new algorithms for completing tasks, that is, carry a certain element of methodological novelty in comparison with classroom work.

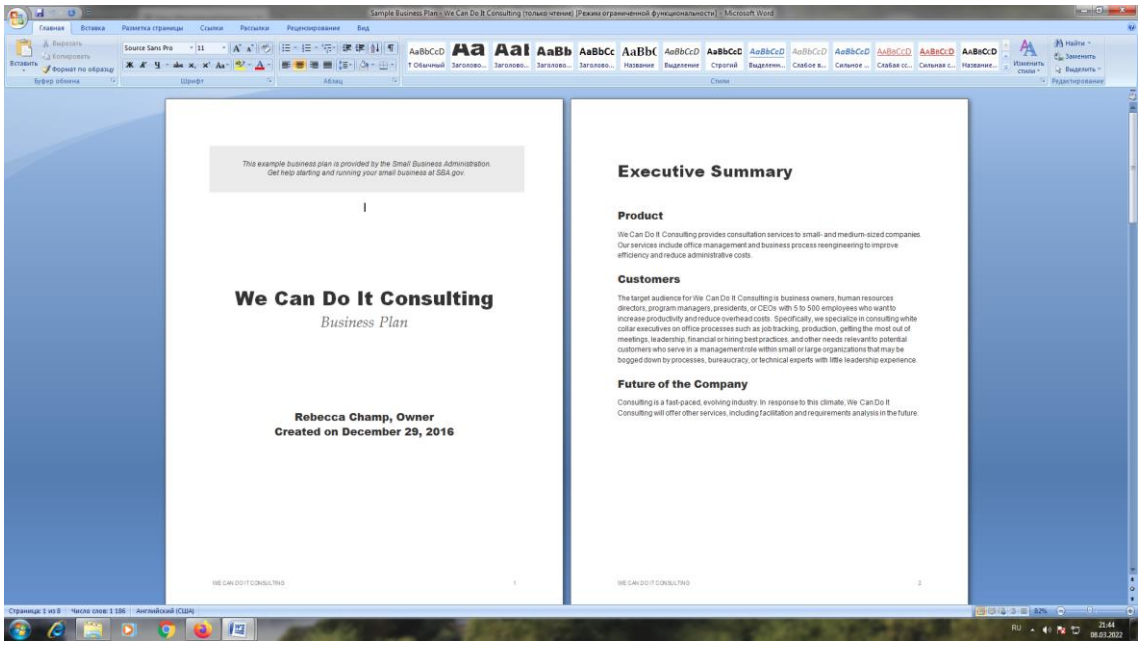
Let's consider the structure and content of the course "Foreign Language in Professional Activities" for master's students, which was developed based on the principles of integration described above and the principles formulated [3, 4, 5].

Each topic consists of

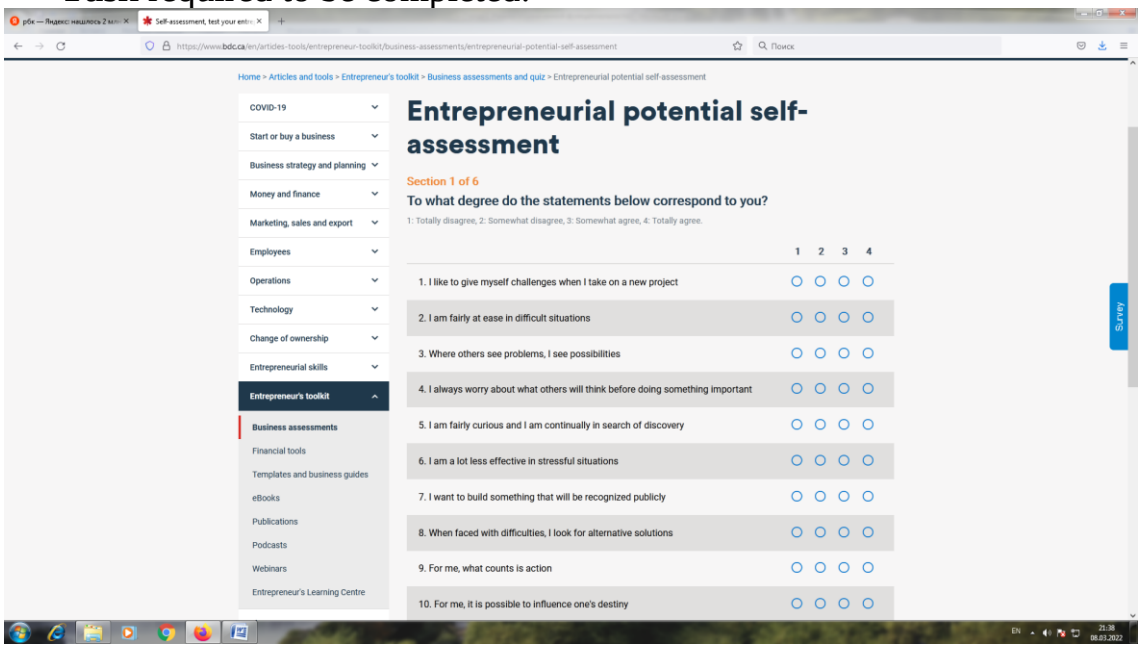
- theoretical material for study and explanation - **Independent Learning**:



- additional information and sources that allow applying an individual approach to students, dosing the volume of material for mastering **- Supplementary Information**:

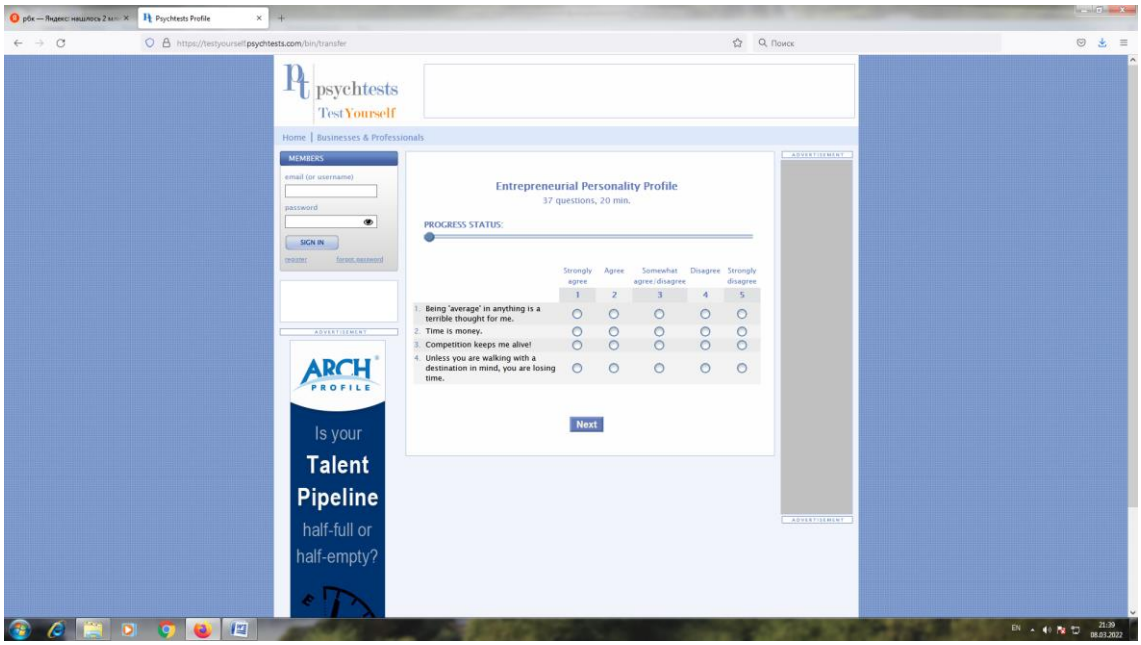


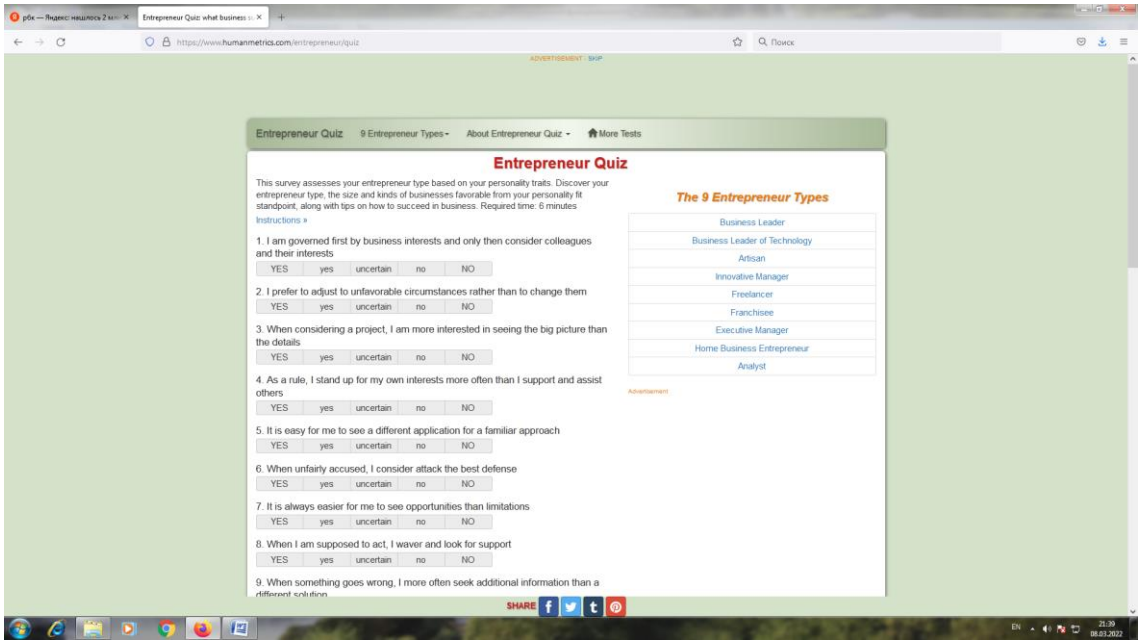
- **Task** required to be completed:



It is important that

- the theoretical material does not duplicate the information presented in the classroom lesson, but only complements it, being a continuation of the lecture;
- tasks that need to be completed in the electronic system involve the use of knowledge and skills acquired during the previous classroom lesson;
- the theoretical material presented in the electronic system will form the basis for the work in the next classroom session;
- to receive a grade, the student must complete both tasks in the EOS and test tasks in the classroom;
- completing tasks involves using links to third-party sites, on each of which the algorithm for completing the task is original and requires the student to independently understand the technology for performing the work and obtaining the result.





Thus, we can state that the application of the principles of integration of electronic educational systems into the educational program made it possible to organically supplement the classroom training process with electronic content, as evidenced by the successful mastery of the discipline by students at the experimental stage: the course was tested in the 2020/2021 academic year when the group completed 98% of tasks in the electronic educational system, 92% of classroom attendance and successful certification with an “excellent” rating of 9 out of 10 students.

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