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Russia

The Impact of Online Services on Developing Students’ Media Competence

Abstract

In this article, the authors describe their experience of introducing students to online services for developing electronic educational resources with multimedia content. The sample of research included pedagogical education students from different years of first degree (bachelor) studies. The article presents the results obtained in the Herzen State Pedagogical University of Russia. The authors developed an e-environment for a training module, with all the content and interaction algorithms. In the experiment, the authors measured various indicators of students’ media competence development: informational, perceptual, motivational, contact, and interpretation (based on A. V. Fedorov’s approach). After students had studied the proposed module, the analyses of their projects were made.

K e y w o r d s: e-learning resources, online services, multimedia, electronic information-educational environment, media competence

Introduction

Current research in the field of education highlights the role of media in the education environment that fosters students’ activities and facilitates competence development (Noskova, Yakovleva, Pavlova, & Smyrnova-Trybulska, 2015). Recent changes in education are closely connected with the introduction of social media in the learning process (Thoma, Hutchison, Johnson, D., Johnson, K., &

Stromer, 2017). In-service teachers and academic researchers investigate the questions of media literacy and the connection between students' engagement into media environment, their motivation (Zylka, Christoph, Kroehne, Hartig, & Goldhammer, 2015), and progress (Pounaki, Givi, & Fahimnia, 2017).

In Russia, modern federal state educational standards (FSES) of both secondary and higher education pay special attention to the high-tech educational environment. In the FSES of higher education, e.g., Bachelor of Education (44.03.01), one of the directions of pedagogical activity of the graduates is described as the formation of an educational environment with the use of ICTs to ensure the quality of education. This implies the necessity of certain competence for pre-service teachers that allow them to develop and enrich an electronic information educational environment with different multimedia educational resources.

During the pre-experimental stage of our research, we conducted a survey among 150 bachelor students – future teachers – in different courses and directions of study. The results demonstrate that 115 (–77%) respondents agree that it is necessary to explore the work with multimedia content in the framework of the educational programme. Students admit that they have the need and motivation. However, only 13 (–9%) agree that they can handle it on their own, or already have some skills of creating similar content, and 19 (–13%) do not require a focused study of this topic. The results indicate that most students are interested in the ability to develop and handle a variety of multimedia content, are ready to learn how to design it, but not always have the opportunity to do it by themselves (Simonova, & Ustiugova, 2015).

The creation of multimedia resources requires teachers' time, knowledge, and skills to use the applications for multimedia content creation. However, not all teachers possess the necessary competence and have enough time to prepare high-quality electronic resources by themselves. Currently, there are several approaches to solve this problem in Russia. Firstly, several resources databases have been created with the support of the state in order to help teachers and students. For example, the collection of digital educational resources (<http://school-collection.edu.ru/>), the single window access to information resources (<http://window.edu.ru/>), or the “More than a lesson” resource (<http://academy.mosmetod.ru/>) are widely used. Secondly, different companies are also developing and offering various resources for primary and secondary school (“CM-school” of “Cyril and Methodius” company, “Aclass,” “Universarium,” etc.). In addition, there are many web portals and communities where teachers share their best practices.

However, the use of ready-made e-learning resources is not always convenient for teachers who have their own view on organising resources that they intend to use in the classroom. Often there is a need to use only a fragment of a “ready-to-use” e-learning resource found in the Internet. To do this, a modern teacher should possess ICT tools that provide the ability both to edit e-learning resources and to create new ones, still devoting an acceptable amount of time

Background of Research

In the information society, the graduates of higher educational institutions need to know how to develop, evaluate, and implement electronic educational resources for enriching the information educational environment (Laptev & Noskova, 2016). This makes it necessary to improve the media competence of future teachers in the learning process (Fedorov & Levitskaya, 2017). The aim of our study is to provide students with media competence of such a level that will motivate them to create own multimedia resources comparable to similar “ready-to-use” resources.

What is a media competence? R. Kubey gives the following definition of media competence/media literacy based on the research of A. V. Fedorov on media competence: the ability to use, analyse, evaluate, and transmit messages in various forms (Kubey, 1997, p. 2). In this definition, we can see the relationship between media and media technology, when a person needs to work with information of various types and be ready to analyse and evaluate it. After the terminological analysis, A. V. Fedorov makes the conclusion that media competence more accurately defines the essence of the existing individual abilities to use, critically analyse, evaluate, and transfer media texts in various types, forms, and genres, to analyse complicated processes of media functioning in society (Fedorov & Levitskaya, 2017).

In our study, we propose to understand media competence of a teacher as willingness to create and edit multimedia educational resources that include graphics, animation, audio and video snippets, infographics, and text (Simonova & Ustiugova, 2015).

With the aim of developing media competence of bachelors of pedagogical education, we created an educational module “Network services for creating multimedia” (<http://multimedia-onlajn.mozello.ru>). The module, in fact, is an e-environment enabling future teachers to develop their own e-learning resources.

The module contains nine laboratory works (7 mandatory and 2 optional ones), which may be studied in any sequence, because each study focuses on one of the main types of multimedia content: graphics and infographics, audio, video, animation, and text documents. In the framework of the module, students also study files conversion and work with non-linear presentations. All practical works are accompanied by brief theoretical material on the relevant subject and finish with control test, aimed at identifying students' knowledge on the studied topic.

In the experimental work, the module was included in the contents of the courses “Introduction to Informatics” and “Workshop on solving problems” for the 1st year students of first-degree pedagogical education studies (future teachers of informatics) and in the course “Methods of using information technologies in teaching” for the 3rd year students. Students learned to create different types of multimedia content with the help of online services and to use this content for developing various electronic educational resources.

Instruments and Methods

The e-environment of the module is presented in the form of a website that contains instructional materials (theoretical materials, practical tasks, control test, auxiliary demonstration materials, and selection of useful links) and communication facilities, implemented through discussion group in a social network Vkontakte. The social network Vkontakte is one of the most popular social networks in Russia among today's youth. We chose this network as a mass communication channel for the reasons listed below.

1. Most of the students already have an account in this social network; therefore, they do not need to remember logins and passwords, which eliminates the possibility of loss of identification information.
2. The selected platform provides the ability to place educational materials required to study the module, but also makes it possible to provide feedback and communication between a teacher and students. It is very important to provide support for students who perform tasks remotely.
3. The interface of the social network Vkontakte is familiar to students, and it significantly reduces the process of students' adaptation to the environment of the module.
4. The opportunity to make reposts from other thematic groups on multimedia technologies promotes the use of multimedia and creates conditions for increasing the level of students' media competence.
5. Social network Vkontakte offers the evaluation tool ("I like"), which is popular among young people, with a value of 1-point approval of other users. This informal assessment tool can be a motivator, providing a situation of success for students and prompting to better work.

Control test to each laboratory work is implemented using Google Drive (Google Forms). To check the results of the control test, the plug-in Flubaroo is used. It is a simple and flexible free tool to check tasks, made in the form of a test. Google Drive stores all the results of control test, e-journals, and results of surveys conducted among the students as the input control to identify their level of media competence and existing knowledge on working with multimedia content.

56 students in 2015 and 2016 studied the described module. The observation shows that 51 (91%) students were willing to interact with the teacher using the proposed environment: all students studying the module "Network services for creating multimedia" joined the group and participated in the discussions organised during the learning process. The statistics of addressing the teacher through personal messages used in the social network shows that 37 (66%) students at least once entered into a personal dialogue with the teacher. The analysis of students' personal messages showed that all questions (731) sent via the social network could be divided into 4 categories:

- 1) the issues related to laboratory tests, services, etc. – 241 (33%) of all messages;
- 2) organisational issues (clarification of deadlines, questions on reports, etc.) – 98 (13.4%) of all messages;
- 3) messages with a request to check the work done after the deadline of delivery – 278 (38%); and
- 4) messages initiated by the teacher (comments on work, reminders about submission of works, etc.) – 113 (15.46%).

In the experiment, the increasing activity of student–teacher interactions was noted at the end of term, when approaching deadlines for papers and tests. Because the described environment is based on well-known platforms (Google.com, vk.com), students had access to the tasks and examples from their desktops, laptops, mobile devices, and tablets. However, most of the tasks were intended to be run using computers and laptops, because not all of the studied services have a mobile version and an interface that allows the same quality to perform certain operations on a mobile device as on a computer.

We describe a scenario of teaching students in the paradigm of blended learning, including practice in the classroom and online. In the first practical lesson, the students join the networking group of the module – “Media online.” They are acquainted with the structure of the website “Network services for creating multimedia.” All laboratory assignments have a modular form, so students may do them in any order. Before starting the practical part, students are encouraged to study a small theoretical introduction that accompanies each lab. Students mark the “start” and “finish” point for each service they use to determine the average time required to create the complete product (graphics, animation, video, infographic, audio file, etc.), and to correct the task complexity and quantity. After completion of practical tasks, students need to undertake a test. Questions of the test are aimed at checking the acquired knowledge. This is not a strict test, but it helps students to determine what they should pay attention to if the number of correct answers is below 70%

Data Analysis

The theoretical phase of the study – including the analysis of Internet sources, publications, and best teaching practices – showed that, in spite of the fact that media competence ideas have a relatively recent origin, many authors are offering a variety of design options and approaches to the estimation of media competence development levels.

Table 1.
Table of media competence levels

Indicator	Level	Level's description
Informative	high	knowledge of terminology and basic concepts of multimedia environment; knowledge of current multimedia technologies and tools
	medium	knowledge of basic technologies; knowledge of multimedia information types; knowledge of tools and resources for creating multimedia content
	low	the ability to understand possible ways of processing multimedia information
Perceptual	high	the ability to understand the author's position and purpose of creating multimedia content
	medium	the ability to perceive the author's intention and ideas, implemented with the help of multimedia tools
	low	the ability to perceive the main idea of the multimedia content, the emotional component of it
Interpretive	high	the ability to analyse and evaluate multimedia content including design, information, etc.; the ability to suggest ways of improving content
	medium	the ability to assess the quality of multimedia content, analysis of similar works
	low	lack of skills to analyse media content critically; the emotional perception of multimedia content
Motivational	high	willingness to independently learn technologies and tools for creating and editing multimedia content; pursuit to confirm own competence in the field of multimedia technology
	medium	the ability to learn technologies and tools for creating and editing multimedia content; lack of a creative component in the execution of project tasks
	low	lack of desire to create multimedia content independently for academic and professional purposes
Contact	high	daily contact with various types of multimedia content (viewing, creating, editing)
	medium	contacts with various types of media and media texts a few times a week
	low	contacts with various types of media and media texts no more than a few times a month, if necessary

Source: Own work.

We have chosen the approach proposed by A. V. Fedorov, who gives a set of indicators of media competence development: motivational, contact, informative, perceptive, interpretative/evaluative, practical and operational (activity), and creative (Fedorov, 2007). In the study, the approaches of the leading British media researchers – R. Kubey (1997), W. J. Potter (2001), and A. Silverblatt and E. M. Enright Eliceiri (1997) – were used. Three levels of development were proposed – “high,” “medium,” and “low.” We selected indicators presented in Table 1 and updated their content.

To determine the initial level of bachelor students' media competence development, we conducted a survey (years: 2015–2016). The diagram below (Figure 1) shows the results of a survey of 56 students studying the module “Network services for creating multimedia” in 2015 and 2016 (30 students in 2015 and 26 students in 2016). The data presented in the diagram was obtained by analysing the answers to certain questions of the incoming control that was offered to students before starting the module study. Questions were formulated in such a way that each response corresponded to a certain level of formation of one or another indicator of students' media competence. The diagram shows the averaged values.

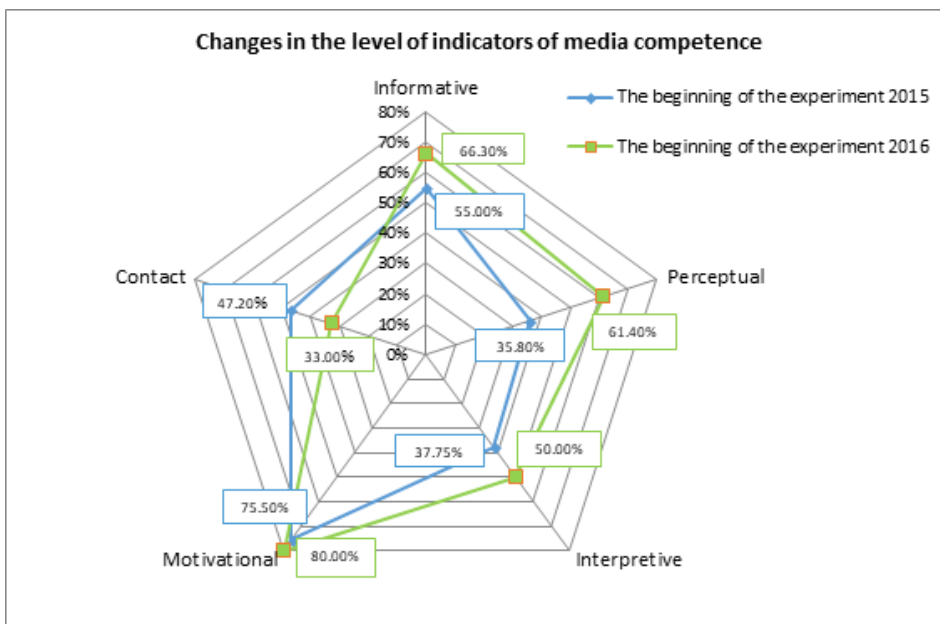


Figure 1. The results of the initial level of media competence evaluation for students (2015-16).

Source: Own work.

The following chart (Figure 2) shows that students of different ages and year of enrolment have almost the same motivational component development. The diagram does not show the results of such indicators as activity and creativity as their assessment at this stage of study is impossible.

Upon completion of training, in 2015, the following results were marked: students (30 people) have mostly a high level of information component (73%). Their perceptual component level is average (45%), interpretive and medium components levels are average (47%), motivational component level is high (80%), and contact medium component level is average (55%). The values of the levels are 0–40% – low level, 41–70% – average, 71–100% – high level (Figure 2). The presented results were obtained by analysing the individual projects of students made after studying the module “Network services for creating multimedia” and direct interviews with students. It should be noted that the results obtained do not pretend to be absolutely accurate; they are necessary for revealing the tendency of media competence development for bachelor students participating in the experiment, or determining the lack or absence of such competence.

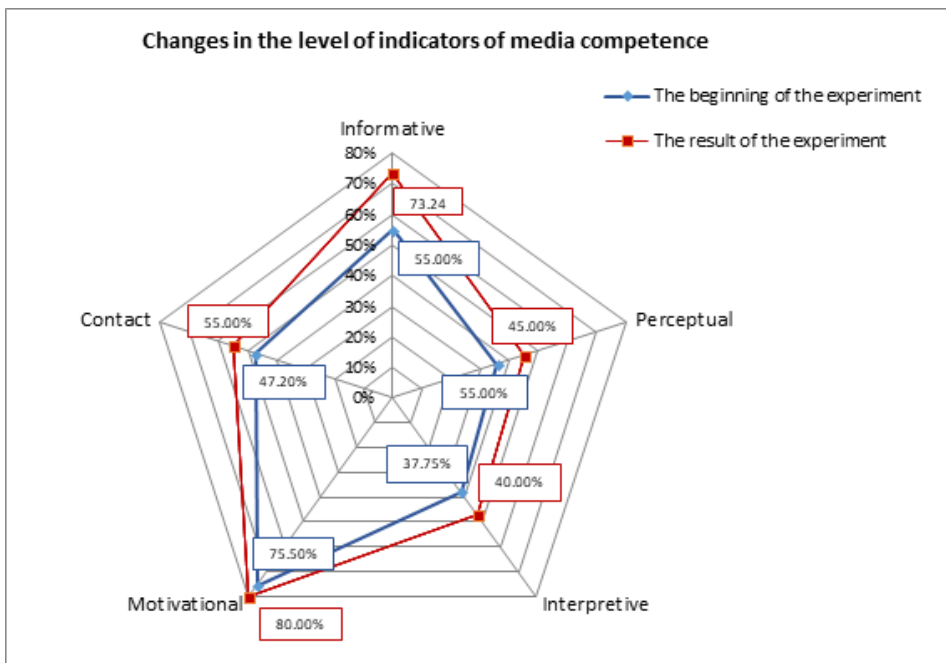


Figure 2. The results of students' media competence development (experimental group for 2015).

Source: Own work.

In 2016, when the module was studied by 26 students, we obtained the following results (Figure 3): information component level is high (70%), perceptual component level is average (64.92%), interpretation component level is medium (65.3%), motivational component level is high (83%), contact component level is average (48.3%).

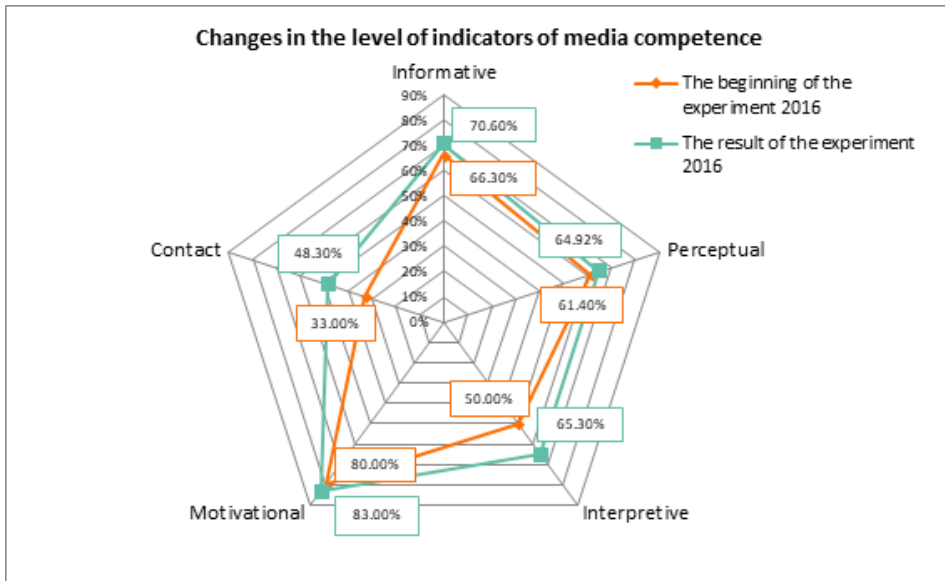


Figure 3. The results of students' media competence development (experimental group for 2016).

Source: Own work.

The diagrams show that students' indicators increased after studying the module.

Comparative Analysis of the Data for Two Academic Years

Statistics show that the students' initial level of the basic criteria does not differ much; however, the difference is clearly traced. We explain this by the fact that students have different basic training, the results are also affected by the initial level of students' motivation to perceive new information – their readiness to implement their creative abilities for the educational purposes. The information criterion tends to increase, indicating greater awareness among students about the possibilities of multimedia technologies and, primarily, their relevance in solving their everyday life problems: processing photos, posting audio and videos in online communities. Data shows that learning increases significantly the ability to analyse the content and to determine an author's intentions, while the emotional component of evaluation (like/dislike) fades into the background.

An important tool for the final evaluation is the fulfilment of the project tasks asking students to design their own e-learning resources that include graphics and infographics, animation, video, and audio (students may also mix sound and video). In the project, students can use non-linear presentations (Prezi) or a video. In the experiment, the presentations were placed in the cloud storage Prezi, and video files on the video hosting YouTube.

In our opinion, it is appropriate to propose the topic of the project tasks taking into account the stage of training in a pedagogical university. In the first year of study, the theme of the project can be linked with the interests of students in a particular field of knowledge and education. When discussing the choice of the topic, students describe the scope of their interests and, together with the teacher, develop a plan (structure) of a resource for presenting their project to other students. The teacher creates a set of process requirements (for using ICT tools) and content requirements. It makes it possible to define professional and pedagogical orientation of students and strengthen motivation for resource elaboration.

In the next stages of study (2–3 courses), it is advisable to offer students to make a resource in the field of the school course of Informatics. This allows them to get an idea about the structure of an electronic educational resource with the use of multimedia and to determine how much time is required for its development.

At the final stage, students present the project to the group. In addition, the projects are published in the e-environment. Teacher should encourage peer assessment and interaction (asking clarifying questions, etc.). Each project is assessed according to the requirements elaborated during group discussion. We should note that students give preference to projects that have novelty, game plot, and completeness of the topic. As examples of projects carried out during the study of the module, we can highlight the works of the first-year bachelor students of pedagogical education. The projects were developed on the topic “Measurement of information. The alphabetical approach.” Students who have completed the module received theoretical materials, the main requirements to the projects, as well as selected examples of e-learning resources from the Internet. After the fulfilment of the projects, students were asked to assess each other and to express their opinion on each project. Discussion and evaluation of projects were conducted in the e-environment, particularly in the networking group “Media online,” where students embed links to their e-learning resources. The projects were mainly shaped as websites, videos, and presentations.

Among students’ projects, we particularly distinguish works with the use of screen casting technology, with the addition of sound, video, and animation. Some students recorded the sound themselves and added various multimedia elements (graphics, infographics, and text). Such projects included not only well visualised and structured material, but also practical tasks to be completed after watching a video or a presentation.

Discussion

The analysis of projects on the theme “Measurement of information. The alphabetical approach,” made some time after students had completed the described module, showed a growth of students' creative media competence level compared to projects made during the study. Students acquired certain knowledge and skills after studying the module “Network services for creating multimedia,” so they showed their creativity and developed meaningful projects that could be included in their personal portfolios of future teachers.

Time was one of the indicators that we monitored: students were asked to mark “start” and “finish” of work with a particular service. As a result, we obtained an approximate time required to create a particular multimedia resource – images, movies, animation, electronic document, infographic. In addition, students noted the time required for the preparation of the final project and the project on “Measurement information. The alphabetical approach.” A survey of students who participated in the module showed that, on average, they need three hours to create a multimedia resource on a particular topic, including graphics, animation, video with audio, and infographics.

The experiment showed that the teacher in the developed e-environment should regularly provide advice and support (both in person and remotely), process test results, and validate and evaluate works and projects. Statistics show that 85% of students successfully correct errors when advised by the teacher, and 97% of students correct mistakes and inaccuracies in the labs (Simonova & Ustiugova, 2016).

Observations show that the time required for a teacher to facilitate students' work in the designed e-environment is approximately 3–4 hours per week. The obtained estimated time includes such processes as:

- assessment of tests,
- news aggregation for the group in the social network,
- answers to students' questions, and
- assessment of students' assignments (laboratory works).

Conclusion

The e-environment elaborated and described in the paper makes it possible for students to study and master various tools for their own multimedia content creation and development of their own e-learning resources, while requiring an average of about 3 hours per one resource. Moreover, the environment provides students'

interaction with each other and with the teacher through all the necessary conditions created. The module structure of laboratory works allows students to choose their own educational route within the course, and detailed instructions and theoretical blocks provide the possibility to study the module remotely. This e-environment gives a teacher the opportunity to monitor students' progress and performance in a timely manner, to point out mistakes, and to solve organisational issues.

It is necessary to invite students to explore new media, which are sufficiently simple to master, but allow for developing quality projects without consuming much time (Noskova, Pavlova, & Yakovleva, 2016). This supports the development of students' media competence, together with their ability to create multimedia content.

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Wpływ usług online na rozwój kompetencji medialnych u studentów

Streszczenie

W niniejszym artykule autorzy przedstawiają swoje doświadczenia związane z wykorzystywaniem przez studentów usług online do tworzenia zasobów edukacyjnych z komponentem multimedialnym. W badaniu uczestniczyli studenci różnych lat studiów pedagogicznych pierwszego stopnia. W artykule omówiono wyniki uzyskane w Rosyjskim Państwowym Uniwersytecie Pedagogicznym im. A.I. Hercena. Autorzy stworzyli specjalne środowisko e-learningowe dla modułu szkoleniowego. W czasie trwania eksperymentu opracowano wskaźniki mierzące rozwój kompetencji medialnych u studentów. Wykorzystując podejście A.V. Fedorova zbadano poziom pozyskiwania informacji, percepcji, motywacji, kontaktu i interpretacji. Analizie poddano prace studentów wykonane po zakończeniu pracy z modułem szkoleniowym.

Słowa kluczowe: zasoby e-learningowe, usługi online, multimedia, elektroniczne środowisko informacyjno-edukacyjne, kompetencja medialna

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Применение on-line сервисов для развития медиа компетенции студентов

Аннотация

В этой статье авторы описывают свой опыт обучения студентов использованию онлайн-сервисов для разработки электронных образовательных ресурсов с мультимедийным контентом. В выборку вошли бакалавры педагогического образования разных лет обучения. В статье представлены результаты, полученные в Российском государственном педагогическом университете им. А.И. Герцена. Авторы разработали электронную среду для учебного модуля со всеми алгоритмами содержания и взаимодействия. В эксперименте авторы измеряли различные показатели развития компетенции студентов: информационную, перцептивную, мотивационную, контактную и интерпретационную (на основе подхода А. В. Федорова). После того, как студенты изучили предложенный модуль, был проведен анализ их проектов.

Ключевые слова: электронные образовательные ресурсы, multimedia, онлайн сервисы, электронная информационно-образовательная среда, медиа компетентность

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El impacto de los servicios en línea en el desarrollo de la competencia mediática de los estudiantes

Resumen

En este artículo, los autores describen su experiencia al introducir a estudiantes a servicios en línea para desarrollar recursos educativos electrónicos con contenido multimedia. La muestra de investigación incluyó a estudiantes de educación pedagógica de diferentes años de estudio. El artículo presenta los resultados obtenidos en la Universidad Pedagógica Estatal Herzen de Rusia. Los autores desarrollaron un e-entorno para un módulo de capacitación, con todos los algoritmos de contenido e interacción. En el experimento, los autores midieron varios indicadores del desarrollo de la competencia de los medios de los estudiantes: informativo, perceptivo, motivacional, de contacto e interpretación (basado en el enfoque de A. V. Fedorov). Después de que los estudiantes hayan estudiado el módulo propuesto, se realizó el análisis de sus proyectos.

Palabras clave: recursos de e-learning, servicios en línea, multimedia, entorno de educación e información electrónica, competencia de medios