

On the Formation of Student's E-portfolio

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Abstract. Using a technology of portfolio in higher education contributes to realisation student-centered education. Long-term researches in the field of quality and competence-oriented approach to education, which are conducted by the authors, allowed to develop and test two approaches to formation of student's e-portfolio: with using hypertext technology based on cloud storages and e-Learning System Moodle. These approaches, their advantages and disadvantages are analyzed in this article. The authors suggest issues for further consideration.

Keywords: cloud storage, electronic information-educational environment, e-portfolio, Moodle.

I. INTRODUCTION

The student must be an active subject of the educational process, his motivated and interested participation in the educational process is necessary for effective implementation of the educational program [1], [2]. One of the ways for motivating students to personality-oriented education is a technology of portfolio which will demonstrate the personal and professional growth of the student in the learning process.

Numerous works of European, American and Russian researchers are devoted to using portfolio in education, including e-portfolio [3]-[12]. J.A. Arter, V. Spandel, and R. Culham note: "Portfolios are scarcely a new concept, but renewed interest, fueled by the portfolio's perceived promise for both improving assessment and motivating and involving students in their own learning, has recently increased their visibility and use" [3].

The purpose of this article is to compare the of approaches to forming a student's e-portfolio using hypertext technology based on cloud storages and e-Learning System Moodle based on an analysis of the experience accumulated by the staff of Laboratory of quality problems of higher education (the authors of the article).

To achieve the goal, the following tasks were set:

1. To identify the available approaches to the formation of e-portfolio based on the analysis of publications of researchers.
2. To analyze the experience of the authors in forming an e-portfolio using hypertext technology based on cloud storages.
3. To analyze the experience of the authors in forming an e-portfolio using e-Learning System Moodle.
4. Compare the opportunities and limitations of these approaches, draw conclusions.

The structure of the article is the following: in the second part the authors describe the portfolio technology and tools for its formation. The experience of e-portfolio's formation is described in Sections 3 and 4. The comparative analysis of the used tools is presented in Section 5 and conclusions are provided in the last section.

II. BASES OF RESEARCH

The work of G. Lorenzo and J. Ittelson [4] gives an overview of the using e-portfolios in higher education, describes types of e-portfolio, particularly student e-portfolio, which reflects students' achievements during their studies. This kind of e-portfolio is covered in this article. E-portfolio is both a collection of works and a reflective learning tool.

The purpose of the portfolio's creation is to present the documented results of the training and other forms of student activities, to trace his individual progress in the learning process, to evaluate educational achievements and to supplement results of traditional forms of education quality control. The portfolio stimulates active and conscious attitude of the student to the process and the results of training, self-assessment. Portfolio reflects social activity and intellectual progress of the student. The process of portfolio creation promotes for rising of student self-esteem, development of motivation for lifelong learning [5].

The most modern and easy for using form of e-portfolios is online portfolio, which assumes placing information on the Internet.

E-portfolio (online portfolio) is an organized (structured) collection of personal results of educational and extra-curricular activities with using web technologies (including student's work, certificates, diplomas, testimonials, reviews, assessment), in which provided quick access.

Online portfolio usually involves:

- selection, organizing, convenient placement of achievements of users;
- storage of results of student performance in digital format in the form of text, graphics, sound files, video, etc.;
- updating of content, managing it using the appropriate software;
- possibility to share your portfolio or sections with other users.

Doing this e-portfolio provides access to personal results, regardless of the place of work or study, in order to avoid wasting of time and effort for repeated collection and submission of the same information for different purposes [5].

Various tools can be used to create and manage e-portfolio:

- content management systems, including website builders (Google Sites, uCoz.ru, Wix, Weebly, Jimdo, etc.), specialized designers sites for portfolio (4portfolio.ru, Mahara, etc.), e-Learning System, for example, the Moodle;
- hypertext technology (including cloud storage, for example, Google Drive, or Yandex Drive);
- multimedia HTML-tools (for example, Macromedia Dreamweaver, Microsoft Office SharePoint Designer, Aptana Studio).

Each group tools makes certain demands to the user's information competence. It is preferable to use the tools that do not require much time, financial and other costs for their implementation, and do not require extensive training.

III. MATERIALS AND METHODS

The first version of the e-portfolio – a portfolio of competencies based on cloud storage.

Since 2011, first-year students of the Faculty of Physics and Mathematics of the Pskov State University in the number of 30 people have started formation of e-portfolios of competencies. The purpose of this portfolio is self-assessment and confirmation of the level of formation of competences according to the educational standard.

The authors have created a template student e-portfolio based on online table. Each student posted documents in a cloud storage (on Google Drive, or Yandex Drive), systematizing them by type of activity or another. When filling out the e-portfolio, each student conducted self-esteem of formation his or her competence, exhibited score from 1 to 5, reflecting, in his or her opinion, the level of formation of a competence, self-esteem confirmed commentary and links to documents [5], [6].

The authors note the positive aspects of formation of e-portfolio based on cloud storage:

- place on the university server is not required;
- student self-structuring documents, creating folders system;
- student fully own his portfolio, he can use it after graduation to represent it to the employer.

However, it should be noted that there are some problems in working with this type of e-portfolio:

- each student must have an account in one of cloud storage to accommodate his portfolio;
- if you don't provide the template of e-portfolio for students, in a result you can get unstructured portfolio;
- design of this portfolio is very limited.

The second version of the e-portfolio – a portfolio based on e-Learning System.

In connection with the adoption of new educational standards, prescribing the formation of e-portfolio based on electronic information-educational environment of high school, in 2016 the authors decided to form an e-portfolio at University e-Learning System <http://do.pskgu.ru/> (Moodle).

Moodle contains a block of «Exabis E-Portfolio», which provides a place for student to store the files, and the ability to form different versions of the e-portfolio of downloaded files.

The authors determined the structure of e-portfolio according to the type of student activity (teaching, research, cultural, artistic, social, sporting and vocational). Students collect documents that confirm the results of their activity in their e-portfolio, and distribute them into folders corresponding to the types of activities.

At the end of each year of studying, students form a new version of the e-portfolio by choosing from the downloaded files the most important documents to illustrate their achievements. This makes it possible to trace the dynamics of the learning outcomes achieved.

Figure 1 shows a fragment of the section "Research activities" e-portfolio of the student.

The positive side of this approach to formation of e-portfolio, in our opinion, is the ability to develop rapidly different types of e-portfolios. However, the creation of e-portfolio at Moodle has several drawbacks. Plugin Exabis E-Portfolio does not provide for automatic placement in its portfolio of work performed in Moodle, as well as the placement of teachers' evaluations and reviews of its work. In addition, there are no tools to monitor and analyse the process of filling the e-portfolio.



Fig. 1. The fragment of the section "Research activities" e-portfolio of the student

IV. RESULTS AND DISCUSSION

The experience of formation of student e-portfolio has allowed to perform a comparative analysis of tools for e-portfolio according to some important options. The results are shown in Table I.

Table I.
 Comparative analysis of tools for e-portfolio

OPTIONS	CLOUD STORAGE	MOODLE
Necessity of the place on the university server for storage portfolio	Not required	Is required
The need for technical support, maintenance	Not required	Is required
Portfolio owner	Student fully owns his portfolio which can be used after graduation to	Portfolio is in electronic information-educational

	represent the employer	environment of high school
The possibility of other users to access to the e-portfolio	It is possible to open access including specific users, but we need to know their e-mail	It is possible to open access including specific users registered in moodle
The capacity of the personal document repository	The capacity of personal document repository is limited to 15-20 gb	The capacity of personal document repository is limited by administrator
The possibility to other users to comment portfolio or some documents	It's possible if the document is open for comment	It's possible
Availability of opportunities for students to interact with the teacher within the system	It's not possible	It's possible
Design portfolio	There are no limitations and templates	Design is limited by moodle tools

Table 1 shows the differences of the instruments used. Systems have identical options:

- they provide an opportunity to structure a document repository, download documents in various formats, links to other resources;
- in these systems it's impossible for teacher to see the whole repository, only documents which are presented in the e-portfolio can be seen.

Thus, each instrument for the formation of e-portfolio has advantages, allowing to choose the most suitable. At the same time, the using of any kind of e-portfolio requires consulting support for students, both technical and contentful.

V. CONCLUSIONS

The experience gained by the authors has shown that e-portfolio is a way to reflect personal students' achievements in a variety of activities: learning, research, social, professional, etc. It is an effective form of self-presentation and self-evaluation of the results of the student activity.

The article [13] presents the results of a questionnaire on the quality of the university's electronic information-educational environment of 17 graduate students, conducted in 2015. The results showed that the most important for the students functions of the university's electronic information-educational environment are: information support (100%) and the opportunity of forming an e-portfolio (83%). The students could express their satisfaction with the choice of one of the answers: "fully satisfied", "partially satisfied", "not satisfied", "difficult to answer". The students noted that they were fully satisfied with the opportunities to form an e-portfolio (83%), partially satisfied (11%), dissatisfied (6%).

There are various tools for formation of the student's e-portfolio. Each of the instruments which have been used by the authors has its own advantages and disadvantages. Each of them does not satisfy all the needs of users. The selection of tools for student e-portfolio requires further research.

The experience allows us to formulate the following questions:

What system for e-portfolio needs the least resources?

What system for e-portfolio is most convenient for the users and less demanding to their ICT competencies?

How to provide the security of personal information?

Should the e-portfolio be kept in university after graduation?

Should the list of required documents be prescribed for placement in the portfolio?

Should be controlled the process of formation of e-portfolio?

Should the portfolio be evaluated? Where and how this evaluation will be considered?

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