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SOME ASPECTS OF INFORMATION COMPETENCE OF ENGINEERING AND HUMANITIES STUDENTS

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Abstract. The paper is devoted to the problem of students' information competence. As an example, the authors analyzed data from surveys of students of two universities, Socio-Pedagogical and Technical, in Volgograd, Russia. This article examines data of surveys of students about self-assessment of their IT skills, purposes of the use of personal computers, and the most popular among students Internet services. Based on the data obtained in the course of interviewing of students and control of solving diagnostic tasks, the authors has formulated preferred methods of formation of information competence and conclusions about the features of the structure of information competence of students of humanities and technical specialties.

Keywords: information competence; students; information technologies in education; higher education in Russia.

Introduction

Digital information and communication technologies are an important part of the modern educational process, and one of the main objectives of this process is to form the information competence of students. Information competence is defined as "the ability to find, evaluate, use, and communicate information in all of its various formats" [1] or "the fusing or the integration of library literacy, computer literacy, media literacy, technological literacy, ethics, critical thinking, and communication skills" [1]. According to this approach, information competence can be seen as a set of the following core competencies:

1. Formulate and state a research question, problem or issue not only within the conceptual framework of the discipline, but also in a manner that enable them to readily understand and cooperatively engage in the search.
2. Determine the information requirements for a research question, problem or issue in order to formulate a search strategy that will use a variety of resources.
3. Locate and retrieve relevant information, in all its various formats, using, when appropriate, technological tools.
4. Organize information in a manner that permits analysis, evaluation, synthesis and understanding.
5. Create and communicate information effectively using various media.
6. Understand the ethical, legal and socio-political issues surrounding information.
7. Understand the techniques, points of view and practices employed in the presentation of information from all sources [2].

It's also very important the ability to "Use the technological tools for accessing information" and "Communicate using a variety of information technologies" [1].

Information competence is especially important for future teachers. It is therefore necessary to design a technique of forming and diagnosing the information competence of pedagogical universities students. But how can we measure the changes in the level of information competence?

Method

First we need to determine the initial level of core competencies, the components of information competence, of the students. To do this, we offer to the students on the first lesson some practical tests and questionnaire. Since 2010, we have been examining the initial level of information competence of the Volgograd State Socio-Pedagogical University (VSSPU) students, Faculty of History and Law. At the same time we have been examining the Volgograd State Technical University (VSTU) students, Faculty of Computer Science. Thus, we can compare the structure and level of initial information competence, depending on the curriculum chosen by the student. The working hypothesis: the entry level of the IT-students information competence is higher than the entry level of the students in the humanities, and its structure is more diverse. The questionnaires were offered to the First-year Bachelor's Degrees students.

Results and interpretation

The following table shows the number of students who answered questionnaires.

Table 1

	2010	2011	2012	2013	2014	2015
VSSPU	53	75	75	75	85	65
VSTU	75	60	56	67	75	70

The main purpose of the survey was to determine the degree of technological and exploratory components development and orientation of the students' information competence. To identify the level of the information competence technological component there were prepared the following questions: availability of personal computer (including tablet); what is it usually used for; and the students' self-assessment of their IT-skills.

The level of "computerization" turned out to be one hundred percent of the freshmen students both VSTU and VGSPU.

Students self-assessment of their IT-skills was carried out on a scale from 0 (no skills) to 4 (proficiency). The summarized results are presented in Table 2.

Table 2:

Students self-assessment of their IT-skills

	0		1		2		3		4	
	VSSPU	VSTU	VSSPU	VSTU	VSSPU	VSTU	VSSPU	VSTU	VSSPU	VSTU
2010	0%	0%	11%	9%	40%	27%	34%	41%	15%	23%
2011	11%	0%	11%	7%	27%	25%	47%	42%	4%	26%
2012	3%	0%	5%	0%	35%	20%	47%	48%	10%	32%
2013	4%	0%	9%	1%	39%	19%	40%	45%	8%	35%
2014	0%	0%	8%	4%	38%	20%	44%	47%	10%	29%
2015	0%	0%	10%	5%	40%	20%	35%	45%	15%	30%

We expected that the results of the VSTU students' self-assessment will be higher than those of their colleagues from VGSPU. This assumption was confirmed only in a part: in fact, among the students of VSTU there were a higher proportion of those who set themselves the highest score, and none of them assess their skills by zero score. However, the average level of the self-esteem was higher among the students in the humanities from VSSPU. Probably, the computer science students more adequately assess their knowledge in the field of information and communication technologies, compared with the Faculty of History students. This assumption was confirmed by the results of the further control of the students' skills in the learning process.

The structure of students' information competence was determined by questions about the purposes of using their PC or tablets (Table 3) and about the purposes of browsing Internet (Table 4). The data are indicated as a percentage of the respondents' number. Each respondent could select several answers, so the total amount is more than 100 %.

Table 3

Use of personal computers by students

	Work in a text editor		Programs on the basic specialty		Internet		Games and entertainment	
	VSSPU	VSTU	VSSPU	VSTU	VSSPU	VSTU	VSSPU	VSTU
2010	77 %	71 %	68 %	95 %	83 %	87 %	57 %	60 %
2011	79 %	70 %	67 %	97 %	83 %	94 %	56 %	65 %
2012	79 %	72 %	68 %	100 %	85 %	100 %	56 %	66 %
2013	79 %	75 %	68 %	97 %	89 %	100 %	54 %	60 %
2014	78 %	75 %	66 %	100 %	94 %	100 %	58 %	67 %
2015	80 %	85 %	65 %	100 %	100 %	100 %	60 %	70 %

Table 4

The demand by students of various Internet services

	E-mail		Instant messaging systems		Social networks		Entertainment		Searching for educational information by specialty	
	VSSPU	VSTU	VSSPU	VSTU	VSSPU	VSTU	VSSPU	VSTU	VSSPU	VSTU
2010	70 %	72 %	53 %	52 %	60 %	66 %	58 %	60 %	30 %	40 %
2011	83 %	90 %	48 %	50 %	72 %	75 %	60 %	60 %	35 %	50 %
2012	87 %	100 %	52 %	75 %	80 %	80 %	60%	66 %	40 %	50 %
2013	80 %	97 %	60 %	90 %	88 %	90 %	65 %	85 %	40 %	57 %
2014	72 %	100 %	75 %	95 %	95 %	100 %	68 %	88 %	46 %	60 %
2015	67 %	95 %	80 %	95 %	100 %	100 %	70 %	90 %	45 %	60 %

The data of the questionnaires were supplemented and refined in the course of monitoring the level of the students' information competence. To monitor the technological component of the students' information competence, we offered to them the exercises in a variety of software products, including previously unknown for the students. To monitor the searching component of the students' information competence, we used the system of the following exercises:

- Search Internet for the information on a given topic and its annotated overview;
- Elementary statistical analysis of digital data in spreadsheets;
- Work with electronic maps and historical timelines;
- Search and analysis of information in databases;
- Creating pages in a social network or a small Internet-site on a given topic.

Analysis of the survey data and monitoring of the practical exercises implementation has shown that:

- Students both IT and humanities are sufficiently proficient in information communication and entertainment technology;
- They exhibit relatively high social activity in the virtual world, and are in line with today's fashion trends;
- Most of them are able to actively absorb new information, interpret it and apply in practice, at least in part of the training activities.

Therefore, studying of basic computer skills, that was common in the early 2000s, has lost its relevance. At the same time the level of the searching component of the students' information competence initially is low, and the motivation of its increase is weak or absent. The majority of students believe, that, if necessary, it is possible to easily find any usable information "in Internet", and they do not see the need to learn the special methods of working in the search engines and the methods of the information analysis. About 80% of the students are completely satisfied with the search results, which were presented on the first page of a search query. Most students consider Wikipedia is the most trustworthy source of information. Only 15–20 % of the Faculty of History and Law students and 20–25 % of the Faculty of Computer Science students use other sources to supplement or check Wikipedia. Annotation of the information resources on a given topic for most students at first time is a mere formality, which reduced to copying of resources description from a searching engine. 75 % of the Faculty of History and Law students and, up to 95% of the Faculty of Computer Science students do not indicate a link to the source of information without a special reminder of the teacher.

Conclusion

On the basis of these data, it is possible to develop a "road map" and methods of forming the students' information competence. In particular, it is necessary to simulate in the classroom situation, the use of information technologies in professional work of the historian – researcher and teacher. Students are required to act in such situations as much as possible on their own, but with a constant unobtrusive control of the teacher. The task of the teacher is to suggest to the students the ways to search for information, but not links to the sources; methods of solving problems, but not ready-made recipes.

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