

Features of Using Digital and Online Resources by Students of Master's Degree in Pedagogy

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Abstract: Nowadays digital resources are one of the main infrastructure components of the modern educational process. These resources make it possible to realize the activity of students in the educational environment. They are the basis for integrating the potentials of formal, non-formal and informal education. The modern educational situation actualizes researches devoted to elucidating the prospects for the demand for digital resources by students. The purpose of this research is to identify the features of the use of digital and online resources, their quantitative and qualitative diversity as well as the reasons for their choice by students of pedagogical master's degree programmes. The leading research methods were questionnaires and analysis of the results of a focused group interview. It was found that students use digital resources not only in study (65%) but also in self-study (32%). These resources fully or partially match the profile of education. Students who receive pedagogical education prefer to use such resources as video tutorials and digital resources developed and recommended by university teachers. It is noted that the use of resources depends on the activity and independence of students determined by their willingness to set goals in learning and self-learning. It is concluded that it is necessary to develop a personalized model for embedding digital resources in the educational program for the masters of pedagogical education. Identification of the features of using digital resources and the reasons for students to choose them is important for teachers in terms of improving information content, developing various ways to master it based on the interaction of subjects of the educational process. The results of the research show the necessity of further high-quality studies to be based on the personal characteristics and preferences of students in choosing the forms of representing digital resources and to find optimal and effective ways to integrate formal, non-formal and informal education.

Keywords: *online resources, educational environment, pedagogical master's degree programme, students.*

I. INTRODUCTION

There are more and more educational offerings with the use of digital resources in the information society that can be integrated into specific educational programmes of universities based on the free choice of students. The objective reasons for this trend are: improvement of information technologies, digitalization of education. Modern information and technological support of the educational process involves the emergence of digital development zones in educational institutions [1, 2]. The demand for digital resources is explained not only by improving their quality, social significance but also by the development of network interaction methods [3].

In general, digital resources, which are information sources in digital form, are called the core of modern technologies in education [1, 4]. According to S.N. Vachkova [5] digital resources in education include not only educational resources in the Internet but also electronic textbooks, electronic libraries, electronic educational programmes. Based on this point of view we define online resources as an integral part of digital resources. We consider digital as well as open online

resources as components of the educational environment that perform an educational function.

The impact of digital resources is to adjust the learning process aimed at improving its quality. The maximum possible effects from the use of digital resources will be achieved in the conditions of the digital transformation of the educational process [6]. Educational offerings with the use of digital and open online resources are changing the model of knowledge creation, development of competences and the process of evaluating the achievements of students.

Digital resources can increase the effectiveness of the learning process through a combination of formal, non-formal and informal education [6, 7]. There is an opinion that the role of non-formal and informal education in the system of professional training of personnel is increasing in the context of expanding the information space [8, 9, 10]. On the other hand, the emergence of non-formal and informal learning is a direct consequence of the development of “new network information and communication technologies that overcome space-time boundaries which provide instant access to any information” [11].

Aspects of the digital transformation of education are discussed in connection with the possible impact on improving the individualization of education, improving the scientific-methodological and organizational support of the educational process. The motivational readiness of teachers to further develop these resources is also considered. A number of works discuss the requirements for the development of digital resources in education, where they (digital resources) are presented as an important component of the organization's innovative educational environment [1, 12, 13]. At the same time it is argued that so far there is no common structural approach to the creation of digital resources [3].

States that the roles of teacher and student change in the digital environment, pedagogical support of the educational process is provided with increasing students' independence and future graduates receive competitive advantages. The ability to involve educational content independently is important for the professional development of graduates. Self-selected students learning content, including the information (digital and online) resources, contributes to their professional and personal self-development. The priority is given to a “productive” user strategy of the use of educational content which is based on motivation to acquire knowledge, the formation of skills, self-development [14]. Students behave as subjects of professional development interacting productively with the application of these educational opportunities.

Along with a multifaceted consideration of the digitalization problem of modern education there are not enough research works containing information about the demand for digital resources by high school students, university students as subjects of educational relations. The issues of what kind of educational resources attract a modern student, including those with different training profiles, are poorly understood [14]. In this context the purpose of this research is to identify the features of using digital and online resources, their quantitative and qualitative diversity as well as the reasons for their choice by students of pedagogical master's degree programmes. Clarification of the features of using digital and online resources determines the solution to the problem of students' readiness to implement individualized (personified learning) education, the integration of formal, non-formal and informal education. Personification of learning with digital resources should take into account the needs of students, the motives that determine the choice of educational content.

II. RESEARCH METHODS

First and second year students of the pedagogical master's degree programmes of the Institute of Psychology and Education and the Institute of Philology and Intercultural Communication of Kazan Federal University took part in the empirical study (2019). The total number of students was 173 people. Questionnaires and focused group interviews were used as research methods.

A survey was carried out on the basis of the author's questionnaire consisting of 10 questions which helped to determine the variability and duration of the use of digital and online resources, their compliance with the education profile, motives and reasons for choosing resources. The survey did not provide verification of responses to the truth. The figures were processed using the methods of mathematical statistics.

Focus group is a group in-depth interview focused on the research problem. It involves the participants of the group voicing answers to questions posed by the facilitator. The questions include personal experience or attitudes of the participants [15]. We used this method as a group discussion by students of their experience in using digital and online resources for self-study and in implementation of learning tasks of formal education.

Research Stages

First of all, a theoretical analysis of the problem was carried out on the basis of consideration of philosophical, psychological and pedagogical scientific literature; the problem, purpose and research methods were determined; the empirical research plan was drawn up.

Then the questionnaire was conducted among students of pedagogical master's degree programmes. Based on the analysis of the results groups of students were identified for the subsequent organization of a focused group interview, questions were prepared and clarified for discussion within groups.

The next stage of our research was to determine the subjective data regarding the studied problem: how the students rate their experience in using digital and online resources, explain the presence of possible difficulties and describe the peculiarities of perception of educational material.

The combined use of questionnaires and group focused interview will allow us to further specify the aspects of the research problem and differentially approach its solution.

III. RESULTS

On the basis of the questionnaire in the first stage of research we have identified students of pedagogical master's degree who use digital and online resources. It was determined that the majority of students use such resources: 65% - in study, 32% - in self-study, and only 3% of respondents do not apply to them (Fig. 1).

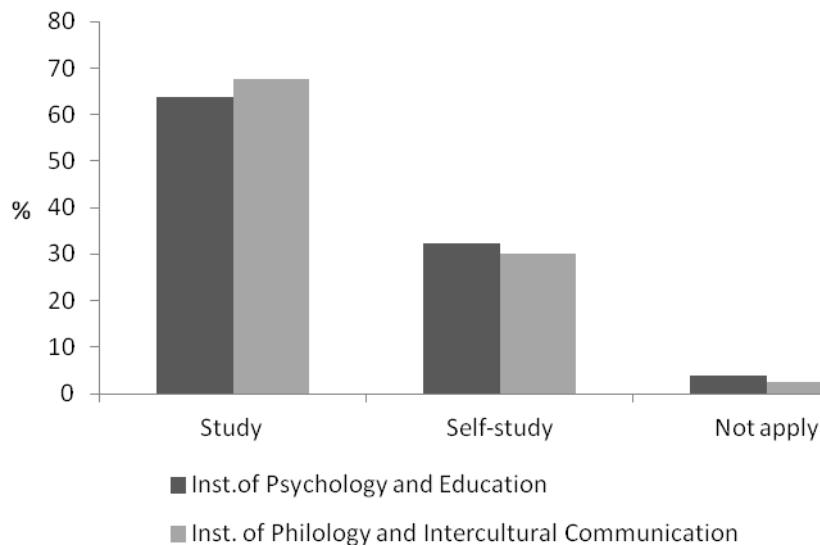


Figure 1. The use of digital and online resources by students of pedagogical master's degree programmes (% of respondents).

About a third of students use a variety of resources in study as well as self-study. There are no differences in the answers of students receiving pedagogical education in different institutes (Institute of Psychology and Education; Institute of Philology and Intercultural Communication) of Kazan Federal University (Fig. 1). The average age of these students is 24.3 and 23.9 years. The figure also shows that students of pedagogical master's degree use digital resources two times less in self-study than in study. Most students in a focused group interview in their responses to the question of how they assess the ratio of the use of digital and online resources in study and self-study processes pointed out the importance of a variety of information resources in study. It means that the results of the questionnaire and the focused group interview do not contradict each other.

Then we determined the quantitative and qualitative diversity of these resources by the number of choices made by students from the options in the questionnaire: digital educational resources (DERs) developed by university teachers, video tutorials on educational platforms and sites, massive open online courses (MOOCs), webinars.

It was found that most often students receiving pedagogical education turn to such resources as video lessons, DERs, webinars, MOOCs (in descending order) (Fig. 2). They called various educational sites among other options.

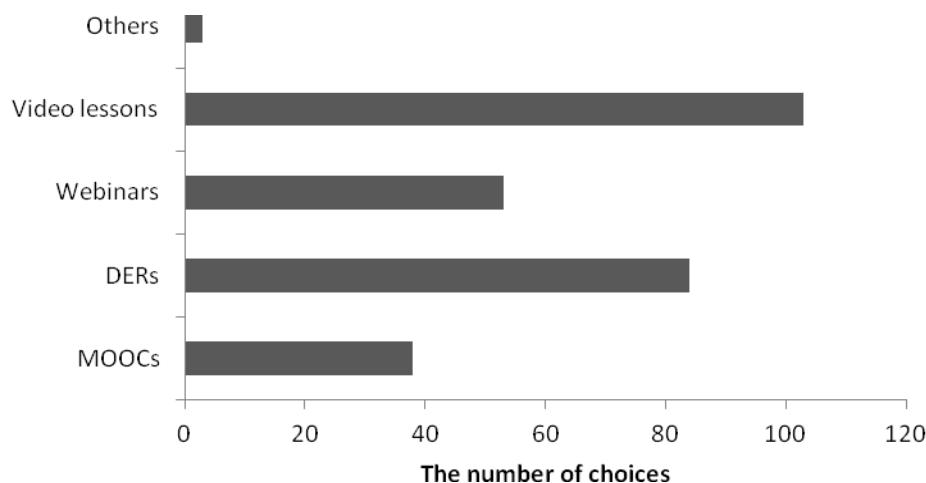


Figure 2. The quantitative and qualitative diversity of digital and online resources used by students of pedagogical master's degree.

In a focused group interview students also named digital educational resources (DERs) developed by university teachers and video tutorials on educational platforms and sites as preferred resources. In their opinion, such resources should be brief, informative and illustrated.

Digital resources preferred by students of both institutes correspond fully or partially to the profile of education: among students of the Institute of Psychology and Education (90%), among students of the Institute of Philology and Intercultural Communication (95%). However, if the total sample of students is divided into groups, in one of which digital resources are used in study, and in the other – in self-study, we get slightly different results (Table 1).

Table 1. Conformity of digital and online resources used by students in study and self-study with the education profile (% of the number of respondents)

Variants	Conformity with the education profile		
	«Yes»	«No»	«Not always» (partially)
In study	60,1	1,4	38,5
In self-study	22	19	59

It is obvious that conformity with the education profile is confirmed in most cases (60,1%) among students who use digital resources mainly in study (Table 1). In another group of students using digital and online resources in self-study the number of answers indicating conformity with the profile of education is reduced by almost three times (22%). At the same time, the number of students in this group who do not connect their digital resources with the education profile is significantly increasing (19%) (Table 1). Quite a number of students in both groups (38.5 and 59%) believe that the resources they use partially correspond to the profile of their studies. In our opinion, the results show the legitimacy of dividing students using digital and online resources into designated groups: students who use these resources in study and students who turn to these

resources for self-study.

It should be noted that our respondents are "advanced" users of digital resources and most of them are using them for more than 3 years (Table 2).

Table 2. Duration of using digital and online resources by students (% of the number of respondents)

Variants	Up to 1 year	2 years	3 years and more
In study	7,8	31,4	60,8
In self-study	15,6	13,3	71,2

This duration of the use of digital resources is predominant for students of both groups: in study (60,8%), in self-study (71,2%) (Table 2). It means that students started using a variety of digital resources at least at the first stage of higher education (bachelor's degree).

In a focused group interview students mentioned the constant need to access digital resources for self-learning and self-development responding to a similar question about the duration of the use of them. The duration of the use of these resources in study was associated with the specific time frames of the educational program.

In the next step students determined the reasons for choosing digital resources, which are used in study and self-study. The options proposed in the questionnaire were: 1) interesting and understandable content, 2) audio and video, colorful design, 3) popularity, good reviews, 4) brevity (conciseness), 5) the presence of practical tasks, 6) interactivity. Students selected one or several answers depending on the value of their preferences. The total number of choices of various reasons was correlated with relative units when the smallest number of choices was taken as a unit (relative value 1). The results of the distribution of the reasons are presented in Figure 3.

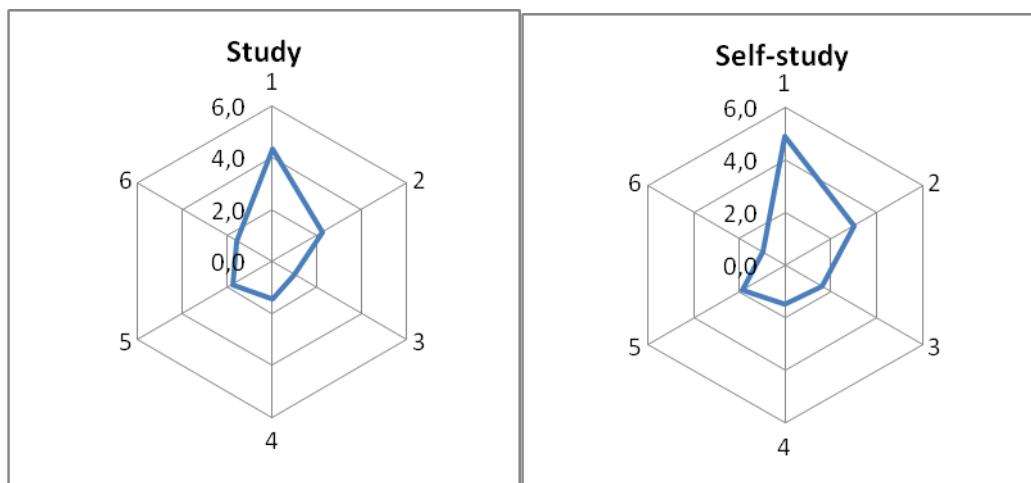


Figure 3. The reasons for choosing digital resources by students of pedagogical master's degree programmes: 1 - interesting and understandable educational content, 2 - audio and video, colorful design, 3 - popularity, good reviews, 4 - brevity (conciseness), 5 - the presence of practical tasks, 6 - interactivity.

According to the results the most important reason for choosing the digital and online resources by students is an interesting and understandable content (Figure 3). This reason 1 is a priority for both groups of students who use digital resources in study and self-study. The number of choices of this reason is 2 times higher than all other options. Reason 2 (audio and video, colorful design), reason 4 (brevity (conciseness)), reason 5 (presence of practical tasks) should be noted among other reasons which are equal in importance to both groups of students (Figure 3). The least number of times students selected reasons 3 (popularity, good reviews about a resource) and 6 (interactivity). It should be noted that we did not find clear differences in the reasons for choosing digital and online resources used by students either in study or in self-study.

Discussing the attractiveness of digital resources participants in a focused group interview noted a dependence on the perception channel in addition to the reasons for choosing digital content mentioned in the questionnaire. Students who ranked themselves into visuals claimed to choose videos or text accompanied by illustrations and diagrams. Those students who prefer auditory perception of information expressed the view that it was important for them to hear not only to see the text. Interesting and understandable content, brevity were also good reasons for choosing. However, the popularity of the resources and good reviews about them were not noted by students as determining factor of their choice in a group interview as well as in the questionnaire.

Focused group interview consisted of questions that were not in the questionnaire and required an extended free answer. Students were asked if digital or online resources are enough for study promoting professional development and self-development. Respondents answered that they were not ready to fully switch to distance learning noting the importance of face-to-face communication with the teacher. The teacher for students is an important subject of educational relations as a carrier of professional qualities and as a person who provides the necessary feedback on the student's development. The students designated that the advantage of independent work with digital and online resources is a flex-time in study and self-study.

IV. DISCUSSION

The study of psychological and pedagogical literature allows us to state an insufficient number of special research works devoted to the problem of the demand for modern resources of the digital educational environment by university students of different education profiles. The issues of the possible integration of formal, non-formal and informal education on the basis of the use of digital and online resources by students for further development of individual study plans were not considered. The opinion of the students as participants in the educational process is not sufficiently taken into account; important subjective characteristics affecting the quality of educational results are not taken into consideration. Getting this complete information in the course of a full solution of the problem is possible with a combination of quantitative and qualitative research methods.

In the course of identifying the features of the use of digital and online resources by students of the pedagogical master's degree programmes it was found that students use these resources in study (65%) twice as often as self-study (32%). In our opinion such results indicate insufficiently high activity of students as subjects of the educational process. On the other hand, this can be explained by the lack of a sufficient number of digital resources offered in educational programs which satisfy the needs (requirements) of students.

Questionnaire results indicate that students of pedagogical master's degree give preference to video

tutorials. Then digital educational resources developed by university teachers, webinars, massive open online courses and a variety of educational sites follow in descending order of importance. Other researchers previously noted that students of pedagogical master's degree demonstrate low activity in working with such educational content as electronic educational resources and massive open online courses [14]. They determined the specifics of students' preferences which depend on the profile of education indicating that most often students turn to information materials that correspond to the profile of study. We also found a high conformity (full or partial) of the digital resources with the student's education profile (90-95%). However, the allocation of groups of students using digital and online resources either in study or self-study shows differences in this indicator (profile) (Table 1). In the group of students using digital content in study the percentage (60,1%) of those who choose resources according to the profile of education is high. In the group of students using resources in self-study their compliance with the profile decreases almost three times and the demand for non-core resources increases (19%). Moreover, our results indicate that students of both groups partially associate selected resources with the education profile (from 38,5 to 59%), and students who use digital resources in self-study do this more often (Table 1). In our opinion, this fact confirms the importance of digital and online resources for professional and personal self-development of a learner and suggests the possibility of embedding the educational results obtained in the course of self-study into educational programs combining the possibilities of formal and non-formal education. However, the problem requires a more thorough study and deep understanding of it from the perspective of participants in educational relations as active and equal subjects.

The sufficient duration of the use of resources by our respondents (more than 3 years (60,8% of the total in study, 71,2% in self-study)) suggests that during this period students have gained sufficient experience and choose the resources for a number of significant reasons. The most important reason is the interesting and understandable content of the resource (Fig. 3) regardless of its use in learning or in self-learning.

The responses of students received during a focused group interview noted the dependence of interest and activity on the use of online resources on the type of content (video, audio, text, tables, pictures), on the perception channel, on the skills of working with online resources, on readiness to work with scientific information, analyze and evaluate it. Students believe that digital and online resources are perceived negatively by those who prefer to receive educational material in a ready-made form and are not capable of self-organization in study. In a focused group interview students noted good self-organization, a desire for independent replenishment of knowledge, high cognitive motivation and self-esteem discussing the qualities which contribute to effective learning on online sites. The study with the help of digital and online resources was highly valued by students. They believe that the efforts made to their development contribute to personal and professional self-development. These aspects require further elaboration in the continuation of our research.

V. CONCLUSION

Based on the analysis of the features of using digital and online resources by students of pedagogical master's degree it was found that undergraduates use them more actively in study than in self-study. The most preferred resources are video tutorials and digital educational resources developed and recommended by teachers. The results indicate that the digital and online resources used by students fully or partially match the profile of the education. The most important reasons for choosing a resource are interesting and understandable content, brevity and the availability of audio and video materials. The discussion in focus groups suggested that the use of digital and online resources

depends on the activity and independence of students as subjects of education, their willingness to set goals in learning and self-learning.

The research emphasizes the relevance of individualization of study based on embedding digital resources in the educational process. Understanding the features of use and the reasons of students' choice of digital resources is important for the subsequent improvement of information content by teachers, developing various ways of mastering information based on the interaction of participants in educational relationships and integrating the possibilities of formal, non-formal and informal education in pedagogical education.

ACKNOWLEDGEMENT

The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

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