

# Educational Platform "Urait" as a Resource of Open Education in the Professional Training of a Mathematics Teacher

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## Abstract

The article describes the characteristics of the educational resource "Educational platform Yurayt". In the modern education condition, a mathematics teacher must possess the basic competencies to work with various sources of information to use in their professional activities. With classroom, distance, and mixed forms of organization of training, it is necessary to integrate the sources of receipt of training information. The Urait Educational Platform allows you to use and combine all possible sources. The analysis of the main capabilities of the platform for teachers and students, which are used by the teachers of the department in the study of mathematical and methodological mathematical disciplines in the conditions of mixed classroom and distance learning of future Mathematics teachers, is given in the article. The use of the resources of the educational platform Urait within the process of the mathematics teachers' training aids to form professional competence and provides the professional-methodological focus of the above-mentioned training.

## Keywords 1

A distance learning system, "Educational Platform Urait ", open education, professional training of a math teacher.

## 1. Introduction

In the conditions of blended learning, which is becoming more and more obvious in our pedagogical reality, a mathematics teacher must have an equally high level of working methods, both in face-to-face and in an online learning format. Transformation of current forms of education is happening so quickly that the proposed technologies become obsolete, not even having time to pass approbation, without revealing their potential. In such conditions, the quality of teaching mathematics to schoolchildren is difficult for teachers to maintain at the level necessary for further learning and life.

## 2. Task setting

Many psychological and pedagogical studies are devoted to the problem of using various teaching technologies in modern higher education. Our analysis has shown that for many years a student-centered approach remains the main foundation for the construction of such technologies [1; 2].

In the professional and pedagogical training of a mathematics teacher, it is necessary to use both traditional and experimental as well as new developments. Nowadays, research on the use of information and computer technologies, new digital resources in the educational sphere is of particular

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Proceedings of VI International Scientific and Practical Conference Distance Learning Technologies (DLT-2021), September 20-22, 2021, Yalta, Crimea

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CEUR Workshop Proceedings (CEUR-WS.org)

relevance. These technologies are considered by the authors from various angles: both as a subject of study, and as a teaching tool, and as a leading toolkit in the educational process [3-7].

The results of purposeful research of changes in the pedagogical activity of university teachers at a high rate of change in the field of education and theoretical and empirical substantiation of the value-semantic understanding of the teacher's professional activities are reflected in the research [8]. Based on the methodology of post-non-classical science, the authors applied the integration of explanatory and interpretive research approaches, which made it possible to use the views, opinions, attitudes, values of stakeholders as full-fledged "data". The main requirement for a modern teacher has always been and remains the mastery of modern principles and ideas of higher education pedagogy. This allows him to critically analyze the productivity of the applied educational strategies and methods. The researchers analyzed the attitude of university teachers to changes, their value orientations of the ongoing changes. The main difficulties faced by university teachers in the context of the digitalization of education are

- 1) the design of educational programs and curriculum,
- 2) the design of a modern educational and methodological complex;
- 3) the organization of productive independent work and communication with students in the educational process.

The authors see the solution to the problems through

- 1) the use of flexible curricula within the framework of the Federal State Educational Standard of Higher Education;
- 2) development of the digital educational environment of the university;
- 3) updating the content of advanced training programs for the teaching staff.

The problems of using the sources of open education are also being viewed and researched by modern researchers. An intensive search for options for a justified and expedient integration of new and old forms of teaching mathematics, making it possible not to lose the main thing - quality - forces the teaching staff of the Department of Mathematics, Theory, and Methods of Teaching Mathematics to work continuously in this direction. Students of the training direction 44.03.01 "Pedagogical Education", the direction "Mathematics" and 44.04.01 "Pedagogical education", the Master's program "Mathematics in Vocational Education" are also in constant search. This is because all disciplines are read by the teachers of the department taking into account the methodological and practical orientation of professional training. Working within the framework of using the resources of open education is also under the close view of methodologists [9-11].

### **3. Method Development**

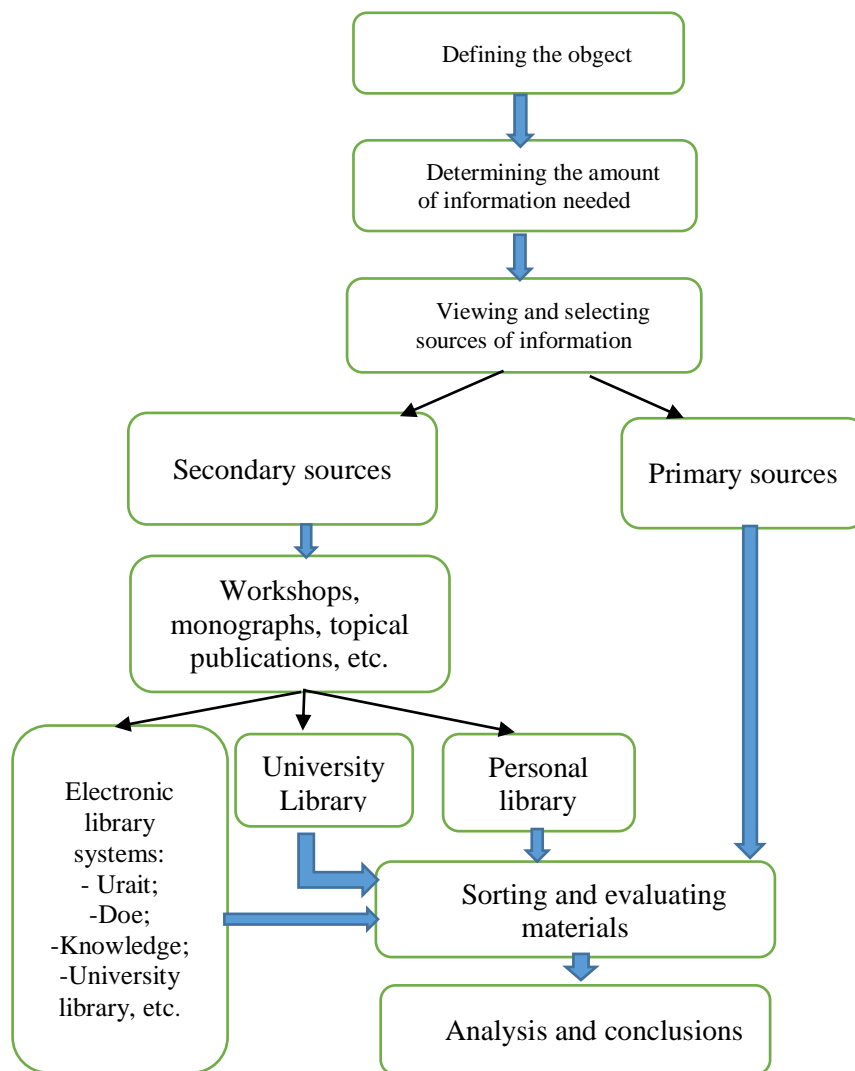
Today we use many resources that are relevant to the pedagogy of mathematics. These are domestic and foreign sources of open education, free, partially paid, paid, the work in which is paid by the university or the students themselves (if necessary).

Important in our activity is the use of Russian platforms Urait (<https://urait.ru/>), Yaklass (<https://yaklass.ru/>), Foxford (<https://foxford.ru/>). To ensure the methodological orientation of the professional and pedagogical training of mathematics teachers, not only do we use the materials of these platforms as tools for organizing training, but also discuss the methodological value of their use in our professional activities. In this article, we will take a closer look at the Urait platform (<https://urait.ru/>). During the period of forced distance learning and with a mixed form of education, which is now used in our university, the "Urait" educational platform plays a large role in the professional and pedagogical training of future mathematics teachers. To popularize the resource, we conducted a small study, the results of which will be described below.

The survey involved 150 respondents (undergraduate and graduate students - future teachers of mathematics, professors, and teachers of mathematics and mathematical disciplines of secondary and higher educational institutions of the Southern Coast of Crimea). Note that both permanent participants of our research and new ones took part in the survey. Here are the main results that allowed us to roughly estimate the attitude towards the use of the Urait Education Platform by the respondents. Of all the respondents, only 20 people (13.3%) consider the use of the resources of the Russian open education inappropriate. Moreover, the main reason is the unwillingness to be distracted from studying and

working on digital content. Of the remaining 130 respondents (86.7%) - use or want to use the Russian resources of open education. At the same time, the Urait Educational Platform is actively used by students and teachers of our university (40 people (26.6% of the total sample and 30.8% of respondents who are users of Russian open education resources). 35 respondents (23.3%) - teachers of schools and secondary specialized educational institutions - do not use the platform, but would like to do so. In their opinion, this will improve the quality of their teaching. 10 respondents (6.7%) believe that it takes a lot of time to check information from the resource. 12 respondents (7%) noted poor knowledge of digital technologies. 42 respondents (28%) noted the lack of the necessary methodological support. Poor equipment of the school with technical means was noted by 36 respondents (21%). All 130 respondents confirmed (86.7%) confirmed the relevance of the special organization of methodological support with the Urait Educational Platform. The analysis of the results of the questionnaire showed that the majority of mathematics teachers are interested in Urait, and they are ready to use them in their professional activities to improve the quality of teaching.

In the process of working with any library platform, we work according to this algorithm (Figure 1)



**Figure 1:** Algorithm for working with the necessary literature in the process of studying professional disciplines using the resources of library platforms

**Table 1**  
Application form

Questionnaire	
Dear Colleagues! Please answer the following questions	
Question 1.	<p>Is it necessary to use Russian sources of open education in the professional activities of a mathematics teacher?</p> <ul style="list-style-type: none"> <li>- yes, if necessary</li> <li>- sometimes</li> <li>- No</li> </ul> <p>If your answer is “Yes, if necessary” or “Sometimes”, please go to question 4</p>
Question 2.	<p>If your answer is “No”, go to question 3 and send us the questionnaire</p>
Question 3.	<p>If you do not use Russian sources of open education in your professional activities or do it infrequently, please indicate the reason (you can choose several answers or suggest your version)</p> <ul style="list-style-type: none"> <li>- I think that it is not necessary at all (it distracts, interferes with learning, I can handle it myself, etc.)</li> <li>- Russian sources of open education do not meet my requirements</li> <li>- preparing for classes using open education sources takes a lot of the teacher's time</li> <li>- I do not know enough IT technologies</li> <li>- there is no proper methodological support for organizing the use of open education in teaching mathematics</li> <li>- harmful content</li> <li>- other</li> </ul>
Question 4.	<p>Is it relevant for you to use the Urait Educational Platform as a source of open education?</p> <ul style="list-style-type: none"> <li>- Yes</li> <li>- No</li> <li>- I find it difficult to answer</li> </ul>
Question 5.	<p>For what purpose are you using the Urait Education Platform to teach math?</p>
Question 6.	<p>What features of the Urait Education Platform do you most often use when teaching math?</p>
Question 7.	<p>What difficulties do you have while using the Urait Education Platform? (you can choose several answers or suggest your answer)</p> <ul style="list-style-type: none"> <li>- insufficiently familiar with platform resources;</li> <li>- not all students have a sufficient level of digital competence formation</li> <li>- there is no corresponding software or hardware in classrooms</li> <li>- other</li> </ul>

Thank you for your help and we invite you to scientific cooperation!

Sincerely, the staff of the Department of Mathematics, Theory, and Methods of Teaching Mathematics.

The questionnaire was conducted online using <https://docs.google.com/forms>.

#### 4. Discussion

Up-to-date statistics on the use of the platform show a constant increase in interest in its materials. More than 2.5 thousand higher and secondary specialized educational institutions, almost 36 thousand teachers, about 30 thousand students are registered on the platform. Teachers and students are actively using the platform's content.

So, for the 2020/2021 academic year and until October 2021, users of higher and secondary specialized educational institutions used the materials of the platform 3338307 hours, they passed 378388 test units, viewed and used 81,770 media units.

Based on the agreement between Urait and CFU, all teachers and students of the Crimean Federal University have free access to the platform's resources. The platform regularly expands opportunities for the effective use of its resources in the educational process of universities. With the forced transition to distance learning on the platform, a lot has been done for the convenience and assistance of educational organizations, teachers, and students.

All students specializing in the direction of training 44.03.01 "Pedagogical education", the direction "Mathematics" and 44.04.01 "Pedagogical education", the master's program "Mathematics in vocational education" and teachers of the Department of Mathematics, Theory, and Methods of Teaching Mathematics to note a convenient interface, the availability and helpful help. For each menu item, there is an accessible description, a printed algorithm for working with content, as well as a detailed video tutorial on using the content.

The main menu items that we use: "Catalog"; "Teachers"; "Students"; "Train the Teachers".

The main menu items for students: "Registration and access"; "Search Tools"; "Working with the course"; "Working with a teacher"; "Entrance testing"; "Smart Testing"; "Flexible courses"; "Urait.Assignments"; "Urait.Exams"; "Mobile app".

The platform hosts about 2,000 training courses, more than 10,000 textbooks, and teaching aids in almost 15,500 disciplines. Mathematical and methodical-mathematical cycles are presented in a very dignified and varied manner. This allows the teachers of the department to increase the information content and quality of teaching disciplines of bachelor's and master's programs.

For teachers and teachers within the framework of the work of Urait. The academy regularly hosts free webinars on relevant topics, and it is possible to order an individual webinar on a topic of interest.

There is also an intensive "Summer School for Teachers", which allows you to take refresher courses. We use this opportunity for students pursuing their master's degree and who already have bachelor's degrees. Many of the undergraduates combine training and teaching. In the context of a master's program (disciplines provided for by the curriculum, regulations for credits per discipline, etc.), it is these summer courses that allow us to improve the level of professional competencies of master's students and keep them abreast of the latest achievements in education. Our undergraduates were interested in the courses "Distance Learning Tools", "Control and Certification in Distance Education", "Interactive Online Courses: Development and Tutoring", "Methods and Trends of Mathematical and IT Education". In terms of the number of hours, these courses are small but very informative and useful for undergraduates.

Teachers of the department successfully use such services as: "Individual teacher's bookshelf" (allows you to get free access to full-text textbooks and teaching aids in their disciplines); "New items for your disciplines" (allows you to quickly receive information about new arrivals to the Urait platform); "Test assignments for students" (the platform offers an interactive test of knowledge using online testing, the results are available to both students and teachers in their personal accounts, which is very convenient); "Media materials" (an excellent collection of audio and video materials by discipline is collected, complete media courses are presented, there are links to useful content from the resources of partner channels, and, which is also very interesting for the teacher, there is an opportunity to offer your own media content); "Applications to your library" (allows you to place an order for paper or electronic versions of textbooks and teaching aids for the university library). This year, the service "Templates of work programs" is in great demand, which contains more than 3000 ready-made work programs, allows you to generate programs, contains thematic plans of disciplines with the distribution of hours for seminars and practical classes, a detailed description of topics, links to sections of the basic textbook, a list of the main and additional literature, forms of control over the development of the discipline.

Service Urait Exam allows, if necessary, to conduct an exam in a distance or face-to-face interactive format. So, for example, in the discipline "Methods of teaching mathematics", on the Urait platform, a teaching and learning kit is presented: course description, program, a textbook in 2 parts (digital version), video materials, test assignments for the exam for each part, working discipline program. We are gratefully using this content in the educational process. Undergraduates note that the video materials

posted in the teaching materials by the authors of the current textbooks supplement and expand the information obtained at the lectures of the department teachers.

Qualified and quick help must be available on the hotline (tutor support for Urait, Academy students, and users of the Urait educational platform).

As an additional feature, the platform provides integration with educational institutions, integration with MOODLE. This opportunity in CFU is very relevant and in demand. The educational process for the last two academic years is organized in a mixed form. Lectures are held remotely at MOODLE. And practical, laboratory, and seminar classes - in a face-to-face format.

Integration of the platform with universities makes it possible to provide students and teachers in any form of education with easy access to the necessary literature during the educational process

## 5. Conclusion

To do so, they use the seamless transition to the Urait Educational Platform without additional registration and authorization; the ability to search for educational literature on the Urait Education Platform directly in the library directory of the educational institution; if the educational institution uses discovery services, a single point of search is provided through standard user interfaces.

For a seamless transition, authorization using the SSO (Single Sign-On) link is used. Upon request to help@urait.ru, an organization receives a unique organization code (PID) and a secret key (token). After that, a link to the "Urait Education Platform" is posted in the university's electronic system.

For a complete and reliable organization of methodological assistance to users, the leading experts of the platform regularly broadcast live webinars on youtube.com. This takes into account the time zone of the region. Online participants receive appropriate certifications. These webinars are held according to a standard schedule. The theoretical part includes the following issues:

- strategic partnership (interaction between Urait and educational institutions of the region);
- the beginning (connection, registration, and authorization, the basics of working with groups of students);
- digital content (the ability to select educational materials and educational videos, work with free access books);
- flexible course builder (legal creation of online courses in 1 hour and its inclusion in Moodle);
- an interactive fund of assessment tools (using the entrance and formative testing, assignments, the Urait.Exams service);
- templates of work programs of disciplines (reduction of time for paperwork);
- Urait Academy (an opportunity for online training and professional development);
- analytics and reporting (tracking user digital activity using Urait.Statistics data).

The practical part includes filling out a personal profile (the ability to connect up to 5 textbooks being free of charge); modern course (loading and reading texts, watching videos, tests and assignments, quoting).

The use of the resources of the educational platform Urait within the process of the mathematics teachers' training aids to form professional competence and provides the professional-methodological focus of the above-mentioned training.

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