



С. Н. Дворяткина, А. А. Дякина, Т. М. Сафронова

## Научно-популярный фильм как ресурс интеграции медиаобразовательных технологий в систему обучения математике

**Введение.** Формирование медиаграмотного поколения является одним из приоритетных направлений общественного развития России. *Целью исследования* явилась разработка и внедрение технологий медиаобразования в процесс подготовки будущих учителей математики для формирования у них умений по созданию визуальных медиатекстов как эффективных дидактических средств развития устойчивых мотивов поиска и освоения сложного математического знания.

**Материалы и методы.** В пилотном исследовании приняли участие 92 студента Елецкого государственного университета им. И.А. Бунина (Российская Федерация) в период с 2020 по 2023 год. Экспериментальную выборку составили студенты направления подготовки «Педагогическое образование».

Ведущим методом стала экспертная оценка, основанная на качественной и количественной характеристике педагогической деятельности студентов руководителями школ, курирующими учителями-предметниками и методистами по математике от вуза.

**Результаты исследования.** В исследовании созданные будущими учителями математики научно-популярные видеофильмы представлены как эффективное дидактическое средство для формирования устойчивых мотивов к освоению сложных профессиональных знаний. Нынешние студенты, готовясь к обучению цифрового поколения, рожденного в условиях насыщенной информационно-коммуникационной среды, беспрецедентного воздействия со стороны медиа, должны еще на этапе вузовской подготовки освоить медиаобразовательные технологии и научиться внедрять их в преподаваемый предмет. Особенности внедрения медиаобразовательных технологий в процесс преподавания математики связываются с новым средством обучения — визуальным медиатекстом, выполненным обучающимися на основе полученных знаний и умений в области медиа, освоения творческой деятельности по подготовке научно-популярного видеопrodukта с использованием мультимедийных возможностей цифровых платформ. При этом цели учебной дисциплины (математики) остаются приоритетными, а медиаобразовательные задачи лишь способствуют ее достижению. Научно-популярные видеофильмы демонстрируют свою эффективность в рамках занятий по методике преподавания математики, а также при внедрении автоматизированных решений. Используемые в период прохождения педагогической практики, они, с одной стороны, помогают начинающим учителям увлекательно и доступно излагать сложный математический материал, а с другой – выступают свидетельством высокого уровня медиаобразовательной грамотности педагога.

**Заключение.** Практико-ориентированные сюжеты, получившие визуализированный формат, устанавливают широкую применимость математических знаний к современным технологиям и множеству аспектов повседневной жизни. Они служат неиссякаемым источником реализации и мотивации учебного, исследовательского и творческого потенциала студентов. Освоив такие технологии, будущие учителя математики смогут легко адаптироваться к условиям цифрового образования, в которых им придется осуществлять свою профессиональную деятельность. Авторские технологические решения предоставят ученым ориентир для проведения последующих исследований в области совершенствования технологичных форм визуального обучения, а педагогам – возможность изучить практические способы реализации медиаобразовательных технологий.

**Ключевые слова:** интегрированное медиаобразование, медиатексты, преподавание математики, интеллектуальные системы обучения, мотивация обучения

### Ссылка для цитирования:

Дворяткина С. Н., Дякина А. А., Сафронова Т. М. Научно-популярный фильм как ресурс интеграции медиаобразовательных технологий в систему обучения математике // Перспективы науки и образования. 2023. № 6 (66). С. 192-203. doi: 10.32744/pse.2023.6.11



S. N. DVORYATKINA, A. A. DYAKINA, T. M. SAFRONOVA

## Popular science film as a resource for integrating media education technologies into the mathematics teaching system

**Introduction.** The formation of a media-literate generation is one of the priority directions of Russia's social development. *The aim of the study* was to develop and implement media education technologies in the process of training future mathematics teachers in order to form their skills in creating visual media texts as effective means of developing sustainable motives for searching and mastering complex mathematical knowledge.

**Materials and methods.** 92 students of I.A. Bunin Yelets State University (Russian Federation) took part in the pilot study in the period from 2020 to 2023. The experimental sample was made up of students of the direction of training "Pedagogical education". The leading method was an expert assessment based on the qualitative and quantitative characteristics of the pedagogical activity of students by school leaders, supervising subject teachers and methodologists in mathematics from the university.

**Research results.** In the study, popular science videos created by future mathematics teachers are presented as an effective didactic tool for the formation of stable motives for the development of complex professional knowledge. Today's students, preparing for the training of the digital generation, born in a saturated information and communication environment, unprecedented impact from the media, should master media educational technologies at the stage of university training and learn how to implement them in the taught subject. The features of the introduction of media educational technologies in the process of teaching mathematics are associated with a new means of teaching – visual media text, made by students based on their knowledge and skills in the field of media, mastering creative activities for the preparation of popular science video products using multimedia capabilities of digital platforms. At the same time, the goals of the academic discipline (mathematics) remain a priority, and media educational tasks only contribute to its achievement. Popular science videos demonstrate their effectiveness in the framework of classes on the methodology of teaching mathematics, as well as in the implementation of automated solutions. Used during the period of pedagogical practice, they, on the one hand, help novice teachers to present complex mathematical material in a fascinating and accessible way, and on the other hand, they serve as evidence of a high level of media educational literacy of the teacher.

**Conclusion.** Practice-oriented plots, which have received a visualized format, establish the wide applicability of mathematical knowledge to modern technologies and multiple aspects of everyday life. They serve as an inexhaustible source of actualization and motivation of educational, research and creative potential of students. Having mastered such technologies, future mathematics teachers are able to easily adapt to the conditions of digitalized education, in which they will have to carry out their professional activities. The author's technological solutions will provide scientists with a reference point for further research in the field of improving technological forms of visual learning, and teachers will have the opportunity to study practical ways of implementing media educational technologies.

**Keywords:** integrated media education, media texts, teaching mathematics, intelligent learning systems, motivation of learning

### For Reference:

Dvoryatkina, S. N., Dyakina, A. A., & Safronova, T. M. (2023). Popular science film as a resource for integrating media education technologies into the mathematics teaching system. *Perspektivy nauki i obrazovania – Perspectives of Science and Education*, 66 (6), 192-203. doi: 10.32744/pse.2023.6.11

## INTRODUCTION

Understanding media education as "teaching theory and practical skills for mastering modern mass communication media, considered as part of a specific and autonomous field of knowledge in pedagogical theory and practice", UNESCO has identified it as a priority direction of global social development over the past forty years [20].

The problems of media education are not new for the world and Russian scientific community. The studies of foreign specialists in this field make up extensive volumes. The entry of Russian scientists into the global space of scientific search begins with the creation of the UNESCO Information for All Program Committee (2000), the development of the Russian media education module (2003), the formation of metropolitan and regional research schools, which not only summarized and systematized the achievements of foreign colleagues, but also offered their own theoretical and methodological substantiation of media educational concepts. Thus, in the Russian module of media education it is noted that media education must be integrated into the curricula and curricula of secondary schools, secondary specialized educational institutions and universities [22].

Modern man lives and develops in a media digital environment, scientists call him homo mediatas [11; 23] and say that for an adequate existence in the digital space, he must become critically and creatively thinking. The theory of "critical autonomy" is increasingly asserting itself in practice [12; 14]. E.L. Vartanova rightly notes: "A media man is a member of a society whose existence is determined and even shaped by the content produced in the process of mass social communication. The peculiarity of the current period is that a media person is not only a passive consumer of ready-made media products, but also an active participant in the processes of their distribution and even production" [21, p. 9]. In the field of journalism, the term "participatory culture" is increasingly being used, which defines a different level of communication between the producer and the consumer of information than before. The new digital reality redistributes roles, relies on co-creation with the audience, on its direct participation in the creation of a media product.

Young people function more intensively than other age categories in the media space. However, with all the technical advancement, for the most part she is not ready to critically perceive and evaluate the content of communication flows, is not able to put barriers in the way of negative media influence and protect herself from "information garbage" [1]. The warning that "technical media competence is not media education in itself" does not work [9; 15]. At the same time, this problem is most often not realized by the youth audience and does not reduce its need for media creation in the public communication sphere. At the same time, studies show that the level of media culture is low even in cases when young people have special education and certain skills in the field of journalism [2].

In the current socio-political situation, Russia is interested in promoting a clear strategic line regarding the education of the younger generation. The first steps to form a state policy in the field of media consumption of children's audience were taken in December 2010 by the adoption of the Federal Law of the Russian Federation "On the Protection of children from information that harms their health and development". However, there have been no fundamental shifts in increasing the level of media literacy of the young generation on a massive scale.

The documents of the organization of the beginning of the XXI century emphasize that media education "enables people to understand how mass communication is used in their societies, to master the ability to use media in communication with other people; provides a person with knowledge of how:

- 1) analyze, critically comprehend and create media texts;
- 2) identify the sources of media texts, their political, social, commercial and/or cultural interests, their context;
- 3) interpret media texts and values disseminated by the media;
- 4) select appropriate media for the creation and dissemination of their own media texts and gaining interest-the audience interested in them;
- 5) to have free access to the media, both for perception and for production."

It is also noted that "media education is part of the fundamental rights of every citizen of any country in the world to freedom of expression and the right to information and is a tool to support democracy. Media education is recommended for introduction into the national curricula of all states, into the system of additional, informal and "lifelong" education" [20].

The youth, especially students, need to learn how to fully live in a saturated digital environment, independently "organize" their own information space. The need to extract from it the necessary professional, socially and personally significant information, satisfy communicative requests, but at the same time protect themselves from malicious and false data. Therefore, the formation of a media-literate younger generation should be part of the education process, and new media–educational approaches that take into account the challenges and demands of the time should be introduced into the educational system itself (at all levels), which is now subject to the process of digitalization.

The present study is devoted to the search for possible ways and methods of integrating media education technology into academic disciplines that have extensive cultural, pedagogical and developmental potential necessary for the formation of a future teacher's media competence.

*The aim of the research* is to develop and implement the technologies of meta-education in the process of training future teachers of mathematics in order to form their skills in creating visual media texts as effective didactic means of developing sustainable motives for searching and mastering complex mathematical knowledge.

---

## MATERIALS AND METHODS

The study was conducted on the basis of Bunin Yelets State University in the period from 2020 to 2023. Students of the direction of pre-pedagogical education (according to profiles: Mathematics and Computer Science, Physics; Mathematics and Computer Science, Economics; Physical and Mathematical education, Computer Science) the technology of media education was proposed for study, which was included in the structure of the subject module of the course content "Teaching methods mathematics". In addition, future mathematics teachers have completed additional professional training courses "Media educational technologies in the professional sphere" and received the necessary knowledge and skills in the field of media provided by the program. The media education technologies mastered by the students, including self -created popular science video products, were introduced into the process teaching mathematics in schools of Lipetsk, Voronezh, Tula and Belgorod region during the period of pedagogical practice. A total of 92

senior students took part in the pilot study. The leading method was an expert assessment based on qualitative and quantitative characteristics of pedagogical activities of students by school leaders, supervising subject teachers and methodologists in mathematics from the university. It should be noted not only a significant increase in the formation of professional competencies, media literacy of future teachers, but also the effective development of their stable motives in mastering complex mathematical knowledge.

## RESEARCH OVERVIEW

A.V. Fedorov, one of the leading media specialists in Russia, defines media education as "the process of personal development with the help and on the material of the media in order to form a culture of communication with the media, creative, communicative abilities, critical thinking, skills of full perception, interpretation, analysis and evaluation of media texts, teaching various forms of self-expression" [8]. Of fundamental importance in this context is the basic concept of "media", which Russian researchers characterize as "an open set of means of artificial and natural, verbal and nonverbal, mass and non-mass communication, which are actualized in the process of communication and significantly affect the quality of information received with their help" [25].

The ideas of integrating media education into academic subjects are developed in numerous scientific works of foreign and Russian researchers [3]. Starting with L. Masterman, who proposed using media educational technologies in the study of most disciplines, such an initiative began to actively spread and be applied in the practice of educational institutions in different countries of the world. Currently, the issue of full-scale embedding of media education in the schools of most western countries is acute [7; 16].

The merit of popularizing integrated media education in wide circles of the pedagogical community of Russia belongs to Professor L.S. Zaznobina [24]. The concept developed by her today demonstrates not only its viability, but also its ever-growing demand. Thus, A.A. Zhurin methodologically and methodically justified the model of system integration of media education with the chemistry course of secondary school [27], identified the possibilities of using such technologies in the lessons of various disciplines of the natural science cycle [26]. Individual integrated media educational practices at the level of school study of literature, native and foreign languages have been widely generalized.

However, these ideas have not yet been applied to the process of training future mathematics teachers. At the same time, it is obvious that a modern teacher teaching teenagers should know well media educational technologies, be able to integrate media education into the taught subject and, accordingly, be ready to use the information space in professional activities: to conduct a purposeful search, critical analysis, selection, transformation of media texts, possess the skills to create them. The indicated requirements, dictated by the objective process of digitalization of society, the emerging new way of life ("digital socialization"), the comprehensive process of convergence, can be qualified as competencies that testify to the professional identity of a modern teacher. Therefore, already at the stage of specialist training, "it is necessary to make experimenters out of students, people who are flexible and open to innovation, quickly oriented, quickly adapting. People who will avoid formulaic thinking" [19, p. 47].

The concept of *"integrated media education"* should be considered as cultural and pedagogical, directly related to the creative activity of the teacher, with his flexible, non-

*standard thinking, aimed at the qualitative processing of intellectual abilities, socially significant and cultural qualities of students.*

At the same time, strategically verified technologies for integrating media education into the disciplines and sections taught are of paramount importance. The main priority in this case is the processuality of training with an emphasis on the development of critical thinking of the individual, her creative and communicative abilities. The result of such a progressive movement should be the necessary level of media literacy of students, allowing them to realize their professional qualities in the digital economy.

The specific procedural features of the integration of media education into individual disciplines can be formulated as follows:

– the emergence of a new relevant teaching tool – a media text – message containing educational information and having a multimedia character, presented in any form and genre of mass media. The main function of the media text is the transfer of information between the subjects of the educational process - the teacher and the student. At the same time, media (for example, television, video, cinema, the Internet) are used as technical sources for obtaining educational information contained in the media text.

– priority of the objectives of the academic discipline over media educational tasks. The introduction of a new additional teaching tool in the form of a mass media product should, first of all, contribute to the further development of the discipline taught. At the same time, the following technological procedures are of particular importance:

1) finding the "points of contact" of the content of the discipline and the content of external (extracurricular) information, ensuring their overlap;

2) formulation of media educational tasks that can be solved within the framework of the selected content of education.

– the manifestation of integration in the use of media texts simultaneously as a means of teaching and as an object of study – information transformed into a new type of knowledge, which causes an increase in the quality of education (thoroughness and awareness of knowledge, developed critical thinking).

The key content features of media education integrated into the process of teaching mathematics are revealed in the following theses:

1. The factual content of the material of the academic discipline of mathematics is at the same time the factual content of media education. For the correct interpretation of information, students need comprehensive knowledge. In this case, it is important to demonstrate the multidisciplinary and supra-disciplinary properties of media education.

2. In the course of educational activities having a media-educational aspect, the basic concepts concerning such a branch of knowledge as informology are mastered by students at the level of intuition and applied in practice.

3. The content of media education is embedded in a specific section of the content of mathematics on the basis of various relationships determined by the following principles:

- improvement of learning outcomes;
- expediency and possibility of embedding;
- availability of methodological tools (techniques, means and forms of media education).

4. The content of media education integrated into mathematics as a subject of teaching presupposes the formation of students' specific skills that meet the learning goals (search for information; interpretation of the obtained search results and their critical analysis; creation of information transformed into a new type of knowledge), which simultaneously act as the tasks of media education itself.

5. In the content of media education, it is proposed to focus on the activity component, which includes the interactivity of the educational process in the context of the search, analysis and creation of the necessary media product by students. In technological terms, media texts will become the means of integrating media education into mathematics. The construction of integrated media education teaching tools is the understanding and mastering of a certain system of technological procedures. Exactly:

- 1) taking into account the restrictions imposed by the choice of a specific media;
- 2) determination of didactic properties inherent in specific types of teaching aids;
- 3) taking into account the technical capabilities of the selected media;
- 4) determination of the didactic functions of the learning tool (a prerequisite for the procedure: taking into account the correspondence of the didactic functions and technical capabilities of the selected media);
- 5) didactic processing of information for its inclusion in the media text:
  - setting goals for the use of future learning tools;
  - selection of the content embedded in the mathematics program in accordance with the goal setting;
  - selection of additional content in accordance with the goal setting and taking into account didactic principles (relevance, scientific, visibility, accessibility, systematicity).

Media education technologies involve the organization of multi-level activities, including several stages, the first of which is preparatory and motivational [4]. To form stable motives for mastering new things in the cognitive mathematical activity of students, to activate the motivational process for studying complex mathematical knowledge, to illustrate the accessibility and significance of mathematical methods and patterns, mechanisms for implementing intra-subject and inter-subject connections, to implement the student's attitude to self-determination and self-organization - the main tasks of this stage. An effective mechanism in this regard can be a popular science film that helps to present complex mathematical material in a fascinating and accessible way.

## RESULTS

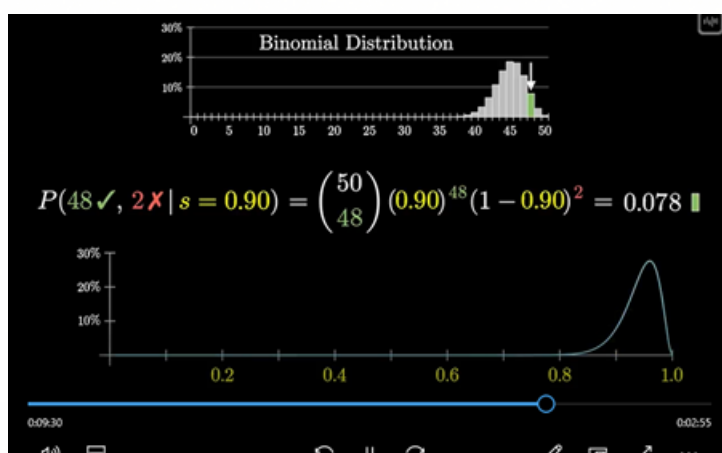
In 2020, the I.A. Bunin Yelets State University developed a model of media educational development of students, which includes the following components: the information and communication environment of the university, vocational training with integrated media education technologies, additional vocational training in the media education profile [6]. Future teachers of mathematics, along with others, took courses of additional professional training and received the necessary knowledge and skills in the field of media provided by the program. At the same time, the teachers of the courses took into account the profile of the students' future activities, and therefore it was important not only to introduce students to the media sphere from the point of view of "smart use", but also to form a stable need for the transfer of acquired knowledge to students, the desire to work together with students to create media products that can optimize the educational process, lead it is in accordance with modern requests for obtaining complex information through its maximum visualization.

The result of media education training for future mathematics teachers was a collection of videos illustrating the practical significance of one of the most difficult sections of school mathematics – "Probability and Statistics". Students have prepared popular science videos on such school topics as "The choice of several elements. Binomial coefficients",

"Random events and probability", "Probability and geometry", "Independent repetitions of tests with two outcomes", "Statistical methods of information processing", "Gaussian curve. The Law of Large numbers".

To create videos, we used video editing programs – Shotcut, OpenShot Video Editor, VSDC Video Editor, as well as graphic editors – Gimp, Inkscape.

Moreover, the students gave their video products creative names that further motivate schoolchildren to study mathematics and find their youth audience. Eg: "Probabilities of probabilities in 3 parts. Part 1. Binomial distribution", "Probabilities of probabilities in 3 parts. Part 2. Bayes' Theorem", "Probabilities of probabilities in 3 parts. Part 3. Zero probability does not mean "impossible", "How a simple formula can simplify life (Bayes formula)", "The paradox of birthdays", "Various applications of the normal distribution", "Probability theory – the dispatcher's tool at the airport" (Fig. 1).



**Figure 1** Film fragment «Probabilities of probabilities in 3 parts. Part 1. Binomial distribution»

This format of accompanying mathematical information turned out to be the most popular in the educational process, since, on the one hand, it was quite consistent with traditional popular science films widely presented on TV channels in Russia and abroad.

The created media products have found their direct application both in classes on the methodology of teaching mathematics, and in the implementation of automated solutions (in hybrid online/offline learning formats, blended learning, in working with fully automated mentor systems).

The inclusion of popular science in the process of teaching mathematics is possible in its various organizational forms, at any stage of the lesson (motivation for educational activities, updating knowledge, understanding the problem and finding ways to solve it, discovering new knowledge, generalizing and systematizing knowledge). Thus, a deeper and more multifunctional mastering of essentially all sections of mathematics, enriched with new qualitative content, characteristics and forms, as well as the individualization of forms and means of pedagogical support in intellectual learning environments, becomes achievable.

In this regard:

- integration of the objectives of the training course, its content and media education leads to changes within organizational forms, making them flexible and "mobile";
- the use of new teaching tools, the definition of the goals of their application, internal changes in the forms of organization of the educational process, contribute to the change of traditional teaching methods by enriching their internal content with creative methodological techniques that provide specific interpenetration of various methods.



The approbation of the developed media products also allowed us to conclude that the use of integrated media education technology in practical classes in mathematics not only does not contradict, but also presupposes the possibility of using relevant pedagogical technologies, such as project activity technology, research activity technology, problem-based learning technology, game technologies, etc., thereby making more diverse and creative forms of work with students, which in turn allows you to develop interest in the subject and, as a result, motivational sphere of personality.

The integration of media education into the process of teaching mathematics involves an innovative approach of the teacher not only to the collection and processing of educational and extracurricular information, but also to the transfer of knowledge to students. Using educational resources presented in electronic and digital form, as well as technological methods of media education, a mathematics teacher transforms the traditional form of an educational lesson, designs a lesson in an interactive mode, and then implements the project. The future school teacher should be prepared for this kind of activity at the stage of university education.

Visualization of practice-oriented plots of mathematical character establishes a wide applicability of probabilistic and statistical methods both to modern technologies in various fields of knowledge (economics, medicine, psychology, space research) and to multiple aspects of everyday life, and therefore is an inexhaustible source of motivation and actualization of educational-research potential of students.

The second aspect of the introduction of the created media products into the process of teaching mathematics is realized in a multilevel model of the subject area of the hybrid intellectual environment of the support of the research activity of the trainees through the allocation of didactic units (modules) – structured, semantically complete fragments of mathematical content, represented by several levels of meaningful interpretation, differing in the degree of detail and the form of presentation of the material. In the study [6], the main technological stages of the development of schoolchildren's activities in teaching mathematics in a hybrid intellectual system were identified on the basis of the deployment of funding processes in the processes of building the didactic field of educational elements (motivational-value, tentative-preparatory, procedural-activity, evaluative-correctional, generalizing-transformative). The main goal of the motivational-value stage is the formation of positive motivation by creating situations that reveal the historical and genetic aspect of complex knowledge, the new concept being introduced, its interdisciplinary nature, and further practical applicability (Fig. 2).



Figure 2 Bernoulli scheme for radar aircraft detection

Inclusion at this stage in the repository of popular science films will demonstrate at an intuitive and visual level a "new" interpretation of a complex mathematical concept, visual modeling of motivationally applied situations, forming a single motivationally applied integrity of complexes of research tasks, in the process of which there is an active mastery of knowledge, a deeper insight into the essence of mathematical concepts, methods, ideas.

---

## DISCUSSION

Media education technologies arouse the interest of scientists and society as a whole, help to understand the meaning of the objects and subjects studied by media education, navigate the information space, and predict changes. A distinctive feature of the conducted research is the organization of "non-traditional" creative educational activities in which popular science films are used in teaching mathematics. The authors use popular science cinema as the emergence of a new relevant learning tool to stimulate cognitive processes, critical thinking and increase the level of motivation of students. The results obtained from the introduction of the created media products into the process of teaching mathematics are consistent with the educational goals recommended by previous researchers: "to strengthen various cognitive processes, to accelerate the acquisition of various types of knowledge, to raise ethical issues, to involve students' emotions in the learning process" [5]. Our results show that the proposed methodological solutions are effective in problem, heuristic, game and other productive forms of learning, helping to develop the individuality of each student, stimulate his creative abilities by engaging in creative activity, form the ability to competently perceive, interpret, analyze and assimilate complex mathematical knowledge. The contribution of this research is to provide a new teaching methodology that, through visualization, ensures the effective formation of cognitive abilities, critical thinking skills, a significant increase in the educational motivation of trainees, the formation of media educational competencies that meet the needs of the digital economy, in which they should carry out their professional activities.

By presenting a visual representation of an abstract concept, a film can give it a greater sense of reality and illustrate its application in various situations. Visual images are an important means of memorization [18], and students are more likely to memorize mathematical methods and procedures based on examples from real practice [10]. The practice of conducting such classes enriches the educational process with interactive forms of interaction between the teacher and students, forms the necessary level of media culture for future specialists.

---

## CONCLUSIONS

1. At the present stage of modernization of the education system in Russia, media education is seen as an integral part of the development of students and an obligatory component of general, secondary and higher education, the need to include it in the content and process-activity structure of mathematical education is due to its wide potential opportunities.

2. Integration of media education into mathematical disciplines is possible in any organizational forms of the educational process at its various stages, as well as in the implementation of automated solutions.

3. In our opinion, an important component providing higher professional training of a mathematics teacher is the media competence of a future teacher.

4. The process of forming the media competence of school teachers of mathematics can be effective as a step-by-step movement from the simple to the complex: from accuracy and meaningfulness of information consumption to analytical fact-checking, then to the development of sustainable media competencies and the formation of critical thinking, and finally to media communication.

## ACKNOWLEDGEMENTS

The reported study was funded by RFBR, project number 19-29-14009

## REFERENCES

1. Afrilyasanti, R., Basthomi, Y., Zen, E.L. Factual vs. Fake News: Teachers' Lens on Critical Media Literacy Education in EFL Classes. *Journal of Interactive Media in Education*, 2023, vol. 2023, no. 1, pp. 11 – 11.
2. Avdonina N.S., Zaitsev L.V. Analysis of media literacy among students of the training direction "Journalism". *Review of Omsk State Pedagogical University. Humanitarian Research*, 2022, no 3 (36), pp 141–146.
3. Bay D., Felton S. Using Popular Film As A Teaching Resource In Accounting Classes. *American Journal of Business Education (AJBE)*, 2012, vol. 5, no. 2, pp. 159–172. <https://doi.org/10.19030/ajbe.v5i2.6818>
4. Dvoryatkina S., Dyakina A., Shcherbatykh S. Project Technologies in a University's Media Educational Strategy in Developing a Probabilistic Style of Thinking for Future Mathematics Teachers. *Amazonia Investiga*, 2019, vol. 23, no. 8, pp. 526-537.
5. Dvoryatkina S.N, Zhuk L.V., Khizhnyak A.V, Smirnov E.I., Shcherbatykh, S.V. Open Innovation Model of Student's Research Activities (Running title: Open Innovation Model). *Journal of Teacher Education for Sustainability*, 2021, vol. 23, no. 2, pp. 77-90.
6. Dyakina A.A., Artemova Yu.V. The Strategy of Media Education Development of a Future Journalist as a Factor of Professionalism in the Digital Economy. *Theoretical and Practical Issues of Journalism*, 2021, no. 3, pp. 543-557.
7. Fajardo M. F. Filipino Students' Competency in Evaluating Digital Media Content Credibility: 'Beginning' to 'Emerging' Levels. *Journal of Media Literacy Education*, 2023, vol. 15, no. 2, pp. 58-70.
8. Fedorov A., Levitskaya A. Media Manipulation and Movies. *Media Education*, 2021, vol. 17, no. 1, pp. 64-69.
9. French S. D., & Campbell J. Media Literacy and American Education: An Exploration with Détournement. *Journal of Media Literacy Education*, 2019, vol. 11, no. 1, pp. 75-96.
10. Gaicalone R. & Jurkiewicz C. Lights, camera, action: teaching ethical decision making through the cinematic experience. *Teaching Business Ethics*, 2001, vol. 5, no. 1, pp. 79-87.
11. Mansurova V.D. "Media Man" as a Projection of Digital Ontology: Homo Mediatu: Digital Twin or Free Personality? Palmarium Academic Publishing, 2017. 146 p.
12. Kachkaeva A., Kolchina A., Shomova S., Yarovaya E. 'Trust, but verify': problems of formation of media literacy and critical thinking of Russian students. *Media Practice and Education*, 2020, vol. 21, no. 3, pp. 200-211.
13. Kutlu-Abu N., Arslan R. Evolving trend of media literacy research: A bibliometric analysis. *Journal of Media Literacy Education*, 2023, vol. 15, no. 1, 85-98.
14. Masterman L. Teaching the Media. London: Comedie Publishing Group, 1985. 341 p.
15. Masterman L., Mariet F. Media Education in 1990' Europe. Strasburg: Council of Europe, 1994. 60 p.
16. McKenzie T. Empowered learning: teaching the video essay in the secondary school environment. *Media Practice and Education*, 2021, vol. 22, no. 1, pp. 5-6.
17. Pirner M.L., Rath M. Homo Medialis. Perspektiven und Probleme einer Anthropologie der Medien. München, 2003.
18. Squires, L., Peters, A., & Rohr, L. Exploring critical media health literacy (CMHL) in the online classroom. *Journal of Media Literacy Education*, 2023, vol.15, no. 1, pp. 58-71.
19. Suro R. Journalism of civic participation in conditions of superabundance of information. *Media Convergence and Multimedia Journalism. Materials for the training seminars*. Yekaterinburg, 2011.
20. UNESCO. Recommendations Addressed to the United Nations Educational Scientific and Cultural Organization UNESCO. In: Education for the Media and the Digital Age. Vienna: UNESCO, 1999, pp. 273–274. Reprint in: Outlooks on Children and Media. Goteborg: UNESCO & NORDICOM, 2001.
21. Vartanova E.L. Changing media Architecture and Digital Platforms. *Medi@Imanakh*, 2022, vol. 108, no. 1, pp. 8-13.
22. Vartanova E.L., Gladkova A.A., Dunas D.V. On Representation of Conflict in Modern Academic Discourse. *Online*

*Media and Global Communication*, 2023, vol. 1, no, 4, pp. 794-814.

23. Wittmann F., Manfred L., Pirner, Matthias Rath (Hg.): Homo Medialis. Perspektiven und Probleme einer Anthropologie der Medien. In: MEDIEN wissenschaft: Rezensionen. *Reviews*, 2005, no. 1, pp. 64–65.
24. Zaznobina L.S. Media education at school: how to survive in the media world. *Human*, 1999, vol. 1, pp. 107-114.
25. Zhilavskaya I.V. Systemic and institutional transformations of Russian media education: monograph. Moscow, MSGU Publ., 2021. (in Russ.)
26. Zhurin A.A. Two Vectors of School Science Education Development. *Teacher education and science*, 2021, vol. 3, pp. 50-56.
27. Zhurin A.A. Integration of media education with the course of chemistry in a secondary school. Abstract Diss. Dr. Sci. Educ., Moscow, 2004. 41 p.

#### **Информация об авторах**

**Дворяткина Светлана Николаевна**

(Российская Федерация, Елец)

Доцент; доктор педагогических наук; проректор по научной и инновационной деятельности  
ФГБОУ ВО «Елецкий государственный университет  
им. И.А. Бунина»

E-mail: sobdvor@yelets.lipetsk.ru

ORCID ID: 0000-0001-7823-7751

Scopus Author ID: 57193775897

**Дякина Анжелика Александровна**

(Российская Федерация, Елец)

Доцент; доктор филологических наук; профессор  
кафедры литературоведения и журналистики  
ФГБОУ ВО «Елецкий государственный университет  
им. И.А. Бунина»

E-mail: anjeloprof@mail.ru

ORCID ID: 0000-0002-6319-6966

Scopus Author ID: 57193775897

**Сафронова Татьяна Михайловна**

(Российская Федерация, Елец)

Доцент; кандидат педагогических наук; доцент  
кафедры математики и методики ее преподавания  
ФГБОУ ВО «Елецкий государственный университет  
им. И.А. Бунина»

E-mail: stm657@mail.ru

ORCID ID: 0000-0002-8148-4101

#### **Information about the authors**

**Svetlana N. Dvoryatkina**

(Russian Federation, Yelets)

Dr. Sci. (Educ.), Professor,  
Vice-Rector for Research and Innovation  
Bunin Yelets State University

E-mail: sobdvor@yelets.lipetsk.ru

ORCID ID: 0000-0001-7823-7751

SCOPUS ID: 57193775897

**Angelica A. Dyakina**

(Russian Federation, Yelets)

Dr. Sci. (Philology), Professor of the Department of  
Literary Studies and Journalism  
Bunin Yelets State University

E-mail: anjeloprof@mail.ru

ORCID ID: 0000-0002-6319-6966

Scopus ID: 57193775897

**Tatiana M. Safronova**

(Russian Federation, Yelets)

Assistant Professor, Cand. Sci. (Educ.), Associate  
Professor of the Department of Mathematics and  
Methods of its Teaching

Bunin Yelets State University

E-mail: stm657@mail.ru

ORCID ID: 0000-0002-8148-4101