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SCIENCE POPULARIZATION WAYS IN THE DIGITAL SPACE

Abstract. Currently, science is a part of our world. Moreover, it is for improving human life-space and can't be simply a part of official scientific departments. So, the popularization of scientific discoveries and innovations is a way of fighting unreasonable human fears of new. We had a goal to analyze possible strategies for popularizing scholarly communication, especially in the digital space, as the medium most used today. So, the current research is aimed at establishing effective ways of promoting scientific knowledge in the public space in modern realities. The conducted analysis determines the ways of medialization and digitization, which form the specifics of scientific popularization. Today, it can be declared that scientific communication demonstrates the increased involvement of the media in and the rising of public interest in the science world. Now, the science popularization process is characterized by the convergence of both science and the media and science and politics. And the last creates an uneven coverage of scientific activity, which does not reveal the full richness of the scientific world. However, the politicization of science highlights the similarities between scientific and political communication. And this is best seen in the digital space. The structure of digital media is characterized by polarization and differentiation of the majority audience of current media sources. And the success of mass media depends on the cognitive and value attitudes of their prevalent audience. As a result, effective scientific

communication strategies should be a way to increase media literacy in society. And a flexible media approach to the popularization of scientific knowledge should become a means of expanding the audience and overcoming public prejudices regarding new scientific achievements and innovations.

Keywords: science space; digital world; public interest; popular science communication.

Introduction. The term “educational surge” is frequently used today to describe the scientific knowledge demand growing in society over the past decade. Such claims can be considered overly positive, considering surveys that suggest many people have limited knowledge about the current state of the science. However, these surveys also reveal considerable public interest in scientific information. Today man has a strong reliance on digital resources for satisfying this curiosity. This can be specialized online portals and author blogs on various platforms. Such digital touchpoints stimulate further engagement with scientific through non-digital formats such as attending live events, visiting science-themed museums, and getting popular science literature (Yang, 2022).

The problem statement. Despite the wealth of accessible and relatively current scientific information, one must question the effectiveness of popular science communication. To what degree does the audience incorporate new scientific knowledge into their worldview and use it as a basis for future actions? High-profile incidents, such as epidemics and the accompanying flood of information, have not only failed to create public consensus but have also led to significant disagreements and inconsistencies (Bucci & Trench, p. 1–15). Public opinion on various scientific topics, like climate change, vaccination, genetic engineering, GMOs, biomedicine, and stem cell use, is polarized. Debates on specific scientific issues are often plagued with the spread of deliberate or accidental misinformation, hoaxes, and unverified scientific data. Access to ambiguous information not only results in polarized evaluations but can also undermine trust in science and provoke a rejection of scientific appraisals of reality (Bayes, 2022).

Research on the popularization of science in the digital media sphere can be grouped into three main categories. The first concerns external scientific communications, particularly popular science communication. The study of its socio-cultural features in different countries emphasizes the state’s significant role in interacting with institutionalized science. Traditionally, media and specialized journalists have played a critical role in science popularization. However, the rise of digital media has diminished the importance of journalism in this field.

The second category addresses the actual models of scientific communication, which have evolved over recent decades. The three main models are the scientific knowledge deficit, dialogue with society, and audience engagement/participation. Since the 1990s, the promotion of dialogic and engagement models recontextualized popularization to suit specific communicative environments. However, these models, which emphasize the active role of the audience, also highlight the limitations of popularization as a concept, presupposing modest public participation (Mede & Schäfer, 2020; Maxwell & Schulte, 2018).

The third and most extensive research category deals with the mediatization of science, which has been a key trend in society since the 1990s. Mediatization examines the relationship between changes in the media sphere and socio-cultural dynamics. The concept has evolved to account for digitalization and the commercialization of media communications (Hu & He, 2022; Shevchenko, 2022).

Research aim. While the digital landscape offers new avenues for promoting scientific knowledge, it also presents new challenges. This article focuses on examining the characteristics of effective science popularization in the digital media environment.

Literature Review. The research presented here utilizes a system-functional approach, as proposed by Niklas Luhmann (2013), to examine social reality at three levels of functioning such as interaction, organization, and societal. In the context of popular science communication, this approach enables the identification of the specific social and cultural dynamics of science as a functionally differentiated system within modern society, as well as its structural interface with mass media and political systems.

The concept of mediatization, in its social and constructive interpretation by Couldry and Hepp (2018), is applied to analyze current trends in media digitalization and datification, which will help establish the characteristics of scientific communication in the digital media environment.

Addressing the issue of popular science communication effectiveness in today's digital media environment involves considering several interconnected topics. Firstly, it is essential to pinpoint the primary macro-social trends that have led to a shift in the status of science in modern society and the reconfiguration of relationships between science as a social system and other societal subsystems, particularly mass media and politics. Secondly, it is necessary to account for the specifics of the digital media environment's functioning, which directly influences the creation practices and consumption of popular science messages. Lastly, based on up-to-date empirical research, we will identify the main challenges of digital scientific communication that arise in the digital environment and propose strategies to overcome them.

Results & Discussion. Today media space is abundant with information about scientific discoveries, and numerous scientists have long become well-known popularizers of science, often acting as media experts commenting on public concern questions. Audiences are also actively engaged, participating in online and offline discussions of news from the field of science, which can directly impact the life of an ordinary person. Contact with science world is increasingly taking on an indirect, mediatized form. The media reality that we are already familiar with indicates a large-scale social trend – the mediatization of society (Hu & He, 2022; Shevchenko, 2022; Xia, 2023).

Recent time mediatization has been a significant trend in current media research, focusing on the study of mutually conditioned changes in the media sphere, society, and culture. We are discussing not about the “effects” of mass communication but about the multidimensional structural change in social reality due to media inclusion in its functioning and the creation of new conditions for social communication (Bayes, 2022).

Taking into account the opinion of the largest theorists of mediatization Couldry and Hepp (2018), society is currently experiencing a stage of “deep mediatization” distinguished by the processes of digitalization and datification. This stage is characterized by accelerated technological changes in the media, the close convergence of digital media, and the unprecedented intrusion of media into various spheres of social life, many processes of which are becoming critically dependent on the technological infrastructure of the media.

The discussion of general theoretical issues of mediatization that unfolded in the 2010s was largely based on the developments obtained during the study of the mediatization of the political sphere, which started in the 1990s. In many ways, these studies have influenced the logic of analyzing the processes of mediatization in science. The study of sociologists in the early 2000s focused on analyzing the growing interdependence between the spheres of science and mass media. As indicated by Rödder et al. (2011), this interdependence is manifested in the growing attention of the mass media to science as a source of news in demand among audiences. On the other hand, science strives to make the results of its activities public in the media, presenting scientific knowledge in a form relevant to the audience.

Alternatively, science gains social recognition and prestige through media exposure, making the dissemination of scientific knowledge an essential link between science and mass media. This view of science's mediatization has certain limitations, as it assumes the media realm operates as a single, cohesive system with a distinct media logic that influences other public domains, including science. However, given the rise of digital media, networked communication, and the merging of mass and interpersonal communications, this concept of the media sphere as a separate social subsystem with a singular “logic” seems outdated.

Current research on the mediatization of science acknowledges the need to consider ongoing media transformations, particularly digitalization and the associated trend of commercializing media communications, including scientific ones (Bucher, 2019; Välvirronen, 2021). The focus on the unique characteristics of the modern digital media landscape accounts for the substantial body of work analyzing specific instances of popular science communication in digital settings, exploring the creation and consumption of popular science content under these new circumstances (Schäfer & Fähnrich, 2020; Kappel & Holmen, 2019).

Today's mediatized forms of scientific communication are evidence of the ongoing process of science mediatization, which involves an increasing integration of media communications into scientific

activities. The mediatization of science has its own distinct features, such as the growing convergence of the realms of science and politics. Media representation of scientific activities helps validate the social importance of science, while the political system lends legitimacy to decisions backed by scientific expertise. The politicization of science shapes the mediatization process, which unevenly encompasses the field of scientific activity, more prominently affecting politically relevant and publicly resonant areas of scientific knowledge. The simultaneous politicization and mediatization of science reveal a notable similarity between political and scientific communications, particularly in the digital media space.

The digital media scientific communication environment closely resembles political communication, characterized by audience polarization and differentiation. The reception of scientific communication largely depends on users' cognitive and value orientations, rather than the quality of the scientific content (Jost et. al., 2022; van der Meer & Jonkman, 2021).

Conclusions. The mediatization of science has prompted a new understanding of scientific communication in the digital landscape. Communicating scientific knowledge beyond expert circles is now increasingly viewed as engaging in dialogue with the audience, actively involving them in the creation and discussion of scientific knowledge and its societal relevance. Notably, this shift has led to a new interpretation of science popularization. Instead of promoting scientific knowledge itself, popularization now often involves providing information about scientific organizations and individual researchers through a traditionally unidirectional communication approach. The dialogic nature of contemporary scientific communication is further reinforced in the digital media environment. However, the dual nature of digital media architecture allows it to be equally utilized for spreading scientific information, refuting it, or disseminating false information. Effective scientific communication strategies may involve enhancing audience media literacy, flexibly employing media frames of scientific knowledge, expanding the scientific communication audience, and overcoming biases against new scientific advancements.

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СПОСОБИ ПОПУЛЯРИЗАЦІЇ НАУКИ В ЦИФРОВОМУ ПРОСТОРИ

Анотація. В сучасному світі наука є невідмінною частиною нашого життя. Вона спрямована на поліпшення життєвого простору людини і не може бути простою частиною офіційних наукових установ. Отже, популяризація наукових відкриттів та інновацій є способом боротьби з неогрунтованим страхом перед новим.

Ми ставили за мету проаналізувати можливі стратегії популяризації наукового спілкування, особливо в цифровому просторі, який сьогодні є найбільш використовуваним засобом. Тому дослідження спрямоване на встановлення ефективних способів просування наукових знань у громадському просторі в сучасних реаліях. Проведений аналіз визначає шляхи медіалізації та цифровізації, які формують специфіку популяризації науки. Сьогодні можна стверджувати, що наукове спілкування демонструє участь медіа, частка якої невпинно зростає, і посилення громадського інтересу до світу науки. На сьогодні процес популяризації науки окреслюється зближенням як науки, так і медіа, а також науки і політики. І останнє створює нерівномірне висвітлення наукової діяльності, яке не розкриває всієї різноманітності світу науки.

Однак політизація науки підкреслює схожість наукового та політичного спілкування, і це найкраще видно в цифровому просторі. Структура цифрових медіа відзначається поларизацією і розрізненістю більшості аудиторії поточних джерел інформації. І успіх масмедіа залежить від пізнавальних і ціннісних установок їхньої основної аудиторії.

У результаті ефективні стратегії наукового спілкування мають сприяти підвищенню рівня медіаграмотності в суспільстві. Гнучкий підхід до медіа в популяризації наукових знань має стати засобом розширення аудиторії та подолання загальних упереджень щодо нових наукових досягнень та інновацій.

Ключові слова: простір науки; цифровий світ; громадський інтерес; популяризація науки.