EXPLORING THE CREATIVE POTENTIAL OF CHORAL CONDUCTING IN UKRAINE'S MODERN ARTISTIC SCENE

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Abstract: The development of sound recording and information and communication technologies leads to expanding opportunities for artistic groups related to the creation and distribution of audio and video content. Introducing information and communication technologies also affects art education, offering new forms of educational process. Ukrainian choral art has a centuries-old tradition, which originates partly from folk singing, the early forms of which were formed in the times of paganism in the 6th to 10th centuries, and partly from the traditions of Orthodox singing, which was borrowed by Ukrainians from Byzantium in the 10th century after the adoption of Christianity. The rapid development of sound recording and information and communication technologies opens up new opportunities for the art of music, which relate to the production and distribution of sound recordings and educational technologies and are currently the subject of research by scholars. The object of our study is contemporary conducting and choral art. The work aims to characterise the latest possibilities of conducting choral art in Ukraine that have emerged in the development of information and communication technologies. The research methodology is based on comparative and structural analysis, including integrated statistics on video views of recordings of choral works performed by choirs and statistics on the use of educational technologies by music educational institutions of Ukraine from open sources. The study showed that recordings made by professional Ukrainian choirs and published on YouTube reach several million views, while student and children's videos reach several hundred thousand views. These figures exceed the possibilities of face-to-face audience engagement to discuss the benefits of modern communication methods for choral art. At the same time, these figures are inferior to those in pop music. The development of distance educational technologies has had a lesser impact on choral art. It is shown that the current capabilities of information and communication technologies are insufficient to ensure ensemble performance due to the unavoidable delay of the digitised signal that occurs when it is transmitted via the Internet, which is why such forms as auditory rehearsals and public concerts remain indispensable in choral art.

Keywords:Vocal and choral culture of Ukraine, National choral art, Artistic space, Chorus, Performance, Modern conducting and choral education.

1 Introduction

The digital era opens up new opportunities for artists and artistic collectives to create musical artefacts and distribute and popularise them among a broad audience. Digital technologies cover opportunities such as digitising cultural heritage, digital sound recording and processing, and disseminating information on the Internet, which provides access to materials from all over the world.

Innovations related to the introduction of digital technologies also affect art education. We are talking about both methods of distance education and the use of certain technologies in classroom lessons. To what extent have Ukrainian choral art mastered modern technologies, and to what extent have they influenced its development at the present stage? These questions became the starting point of our research. Thus, the paper aims to identify the achievements of conducting and choral art in Ukraine against the background of the development of information and communication technologies. This goal implies the following tasks: to analyse the representation of professional and university choirs on the Internet, to identify new opportunities that the development of information and communication technologies opens up for choir directors and modern possibilities for disseminating choral artefacts.

2 Literature review

In general, the study of choral performance can be divided into three broad groups: the basics of conducting, the study of choral repertoire, and the study of innovative opportunities associated with developing digital technologies.

The works of Ukrainian authors on the study of the basics of conducting art are mainly didactic (Lukyanova, 2014; Colleen& Michele,2014; Puentedura, 2015;Rampstedt& Johannes, 2019;Puchko-Kolesnyk et al., 2024). They are based on the monographs by Pihrov (1956), Kolessa (1973) and Markhlevskyi (1986), which define the main criteria of high-quality choral performance – intonation, timbre, rhythmic and diction ensemble, reveal methods of learning repertoire with a choir, methods of educating conductors and choral singers. Shumska (2017) and Hryhorieva (2021) are among the most recent didactic works on choral performance. The innovativeness of these works lies mainly in the attempts to describe the process of teaching choral art in the category of the credit-module system adopted in Ukraine. Shumska (2017) defines a module as "a documented, completed part of an educational and professional programme implemented in appropriate forms of the educational process" (p. 9), and suggests that "conducting theory" and conducting individual works should be considered as "modules". Hryhorieva (2021) proposes a slightly different approach to the division of conducting education into modules – her approach is based on the separation of certain aspects of the conductor's work into separate modules, such as "Fundamentals of Conducting Technique", "Basic Tacting Schemes", "Work on a Choral Score", as well as the allocation of separate modules related to the processing of works written in different musical sizes (three-bar, seven-bar) and different musical forms (large and polyphonic). Some works are devoted to the use of innovative technologies for musicology education; in particular, such areas of their application as "using the Internet is necessary to find the best-performing examples of vocal and conducting skills" and "monitoring the educational process" have been invented (Kravtsova, n.d.;Vasylevska-Skypa&Kravtsova, 2021).

In recent years, musicological studies of the choral repertoire have focused mainly on recently discovered and restored choral works by Ukrainian composers of the seventeenth and eighteenth centuries, mainly on Christian themes, which were banned from performance in Soviet times due to the Soviet authorities' prejudiced attitude towards religion in general and church music genres in particular. Among the most significant monographs are Husarchuk (2019), dedicated to the work of ArtemiiVedel, and the collective work Partes Creativity in Ukraine of the 17th-18th centuries (2023), which summarises bibliographic and musicological information about manuscripts from the Kyiv collection of party music. This area of work is primarily of practical importance. Namely, it contributes to the replenishment and diversification of the repertoire of Ukrainian choirs and the opening of previously unknown pages of choral music to the world community.

Digital technologies and communications have led to a global shift in artistic discourse (Stephenson &Limbrick, 2015; Teryaeva, 2017;Cook et al., 2019). Digital communications accelerate the exchange of information between artists from different countries, providing them with opportunities to get acquainted with even the most distant countries of the world (Talsik, 2015). According to Kovalenko (2015), this is also true for Ukrainian music culture, which remains largely unknown to the international community.

Much of the work is devoted to the peculiarities of music education in the context of digital technologies. One of the first to draw attention to the need to transform pedagogical approaches in the context of distance technologies was Johnson (2017). A similar conclusion was reached in 2019 by Gorgoretti (2019), who studied the use of technologies in music education at a university in Northern Cyprus. Álvarez (2017) explores the tools available in music education based on quality, stability and freedom of use criteria. Silveira and Gavin (2016) conducted a study in a music school, asking children to listen to audio recordings of their performance at a concert, and investigating the impact of such listening on self-esteem. Yefimenko et al.

(2020) consider the problem through the prism of teacher's competence in the field of information technology, emphasise the importance of using the latest technologies to increase students' interest in studying art and contribute to the development of critical thinking.

The COVID-2019 pandemic and related unprecedented quarantine measures have led to an intensification of the processes of introducing distance education, including music education, which has been reflected in the scientific literature(Georgaki, 2004;Korobka, 2015;Eren&Öztuğ, 2020;Galvan &Clauhs, 2020; Kerry, 2022). Some scholars perceived the new challenges as an incentive for developing and implementing innovative technologies in music education. According to Thorgersen and Mars (2021), innovative technologies will allow "inducing teachers to evaluate their teaching strategies". Lebid et al. (2021) note the possibility of innovative technologies to build an individual educational trajectory, considering students' needs.

According to Krechko (2021b), distance education methods "may be useful for additional theoretical and practical classes, consultations, elements of control of unsupervised activities of students, means of expanding communicative, professional opportunities as well as to encourage the search for new creative solutions to the realisation of an artistic idea". More sceptical is the study by Bondarenko et al. (2023), which shows a predominantly negative perception of distance music education by teachers, a decrease in the motivation of students, the ineffectiveness of quarantine measures. A decrease in efficiency, mainly due to the transition to a more independent practice of teaching students, is noted by Kushnir et al. (2021).

According to Bondarenko (2020), the main technical drawback is the limited capabilities of communication technologies, especially the delay of the sound signal, which is 0.2-0.4 seconds and is critical for ensemble music. This drawback also applies to choral art, which involves the coordinated, time-synchronised performance of a musical piece by dozens of participants. The role of communication technologies in promoting choral art and providing access to choir recordings to a wide range of interested parties remains less studied, which determines the direction of our work.

3 Methodology

The formation and development of socio-cultural trends in the context of globalisation also extend to culture and art, including music. In such circumstances, a comparative structural analysis that defines the principles of the effectiveness of digitalisation in modern industrial society in general and in the field of music in particular is relevant (Lebid et al., 2021).

To implement this method, we collected statistics from open sources reflecting the level of audience coverage and processed the results. The importance of this approach is related to the intensification of the use of social platforms, and especially YouTube, by modern music bands to popularise their work, which was previously focused on by Cheng et al. (2008), Cayari (2011), Bärtl (2018). They consider indicators such as the number of video views, the number of subscribers, and the number of videos on the channel. These indicators make it possible to conclude the active involvement of the collective in the digital communication space and the level of audience interest in certain forms of choral art. The aggregate number of views makes it possible to compare the effectiveness of publishing on the Internet with traditional forms of live performances by concert groups, where the capacity of concert halls limits the number of spectators.

The impact of remote music technologies on choral art, which became especially widespread during the quarantine measures in 2020, which in many countries, including Ukraine, prohibited gatherings, including for rehearsals or concerts, requires a separate analysis. To study this impact, we will also analyse YouTube videos of choirs from the relevant period to study the specific video product published under strict bans.

4 Results

The study shows that modern forms of distributing music content via the Internet are becoming integral to a choir's image and popularity. According to YouTube channels, the most famous choir in Ukraine is the Veriovka Folk Choir, with a total number of views of over 11 million. This group specialises mainly in performing Ukrainian folk music in classical arrangements using the folk style of singing (Skoptsova, 2017). The achievements of other groups can be seen in the following table (Table 1).

Table 1. Popularity of YouTube channels of Ukrainian choirs

Channel	Year of creation channel	Number of followers	Total number of views	Number of videos
Veriovka Folk Choir (@Veriovka)	2012	34.4 thousand	11 million	249
G. Mayborody Bandura Chapel (@Mayborody)	2015	14.9 thousand	4 million	126
Men's choir "Dudaryk" (@DudarykLviv)	2010	3.21 thousand	775 thousand	196
DUMKA Chapel (@dumkachoir)	2011	1.95 thousand	408 thousand	75
Revutsky Male Choir (@revutskykapela)	2008	1.39 thousand	341 thousand	133
Homin Choir (@ChoirHomin)	2011	918	205 thousand	186
P. Maiboroda Ukrainian Radio Choir (@RadioChoir_ua)	2014	726	160 thousand	192
Kyiv Chamber Choir (@ChamberChoirKyiv)	2019	871	92 thousand	13
Cherkasy Ukrainian Folk Choir (@cherkasy_folk_choir)	2018	453	53 thousand	7
Khreschatyk Academic Chamber Choir (@khreschatykchoir4384)	2020	597	81 thousand	62

Source: compiled by the authors as of 1 October 2024

Along with professional music groups, choirs from music schools are also creating their own YouTube channels. The Table 2 below shows the performance of educational choirs.

Notably, the leading position in this tableis also held by a choir specialising in performing arrangements of Ukrainian folk songs in classical arrangements in a folk style.

Table 2. Popularity of YouTube channels of Ukrainian student choirs

Channel	Year of creation	Number of followers	Total number of views	Number of videos
Stanislav Pavlyuchenko Ukrainian Folk Choir of the Kyiv National University of Culture and Arts (@pavluchenko23)	2021	970	115 thousand	37
The Pochajna Choir (@OfficialChannel of the Pochajna Choir)	2020	556	54 thousand	243
Choir of M. ZankovetskaNizhyn College (@academ_choir)	2009	131	54 thousand	82
The Choir of the S. Vorobkevych Chernivtsi College (@KhorChOKMim.S.Vorobkevych)	2013	124	24 thousand	126
Academic choir "Anima" of the Kyiv National University of Culture and Arts (@anima652)	2016	137	22 thousand	44
Student Choir ONMA named A.V. Nezhdanova (@onma_studentchoir)	2021	149	16.5 thousand	66

Source: compiled by the authors as of 1 October 2024

A separate choirs category comprises children's groups working at children's art centres. The Table 3 below shows that the

popularity of the best choirs is not inferior to that of many professional groups.

Table 3. Popularity of YouTube channels of Ukrainian children's choirs

Channel	Year of creation	Number of followers	Total number of views	Number of videos
Vognyk Girls' Choir (@vognykchoir)	2014	699	151 thousand	94
Children's choir "Vesnyanka"	2012	211	83 thousand	80
Children's Choir of Zdomyshel village @Detskykhor.v.Zdomyshel	2021	360	47 thousand	51
Children's choir "Shchedryk" @Children's Choir Shchedryk	2017	47	7 thousand	2

Source: compiled by the authors as of 1 October 2024

The introduction of digital technologies in educational institutions is not limited to the activity of artistic teams on the Internet but covers various areas of activity. The data collected by (Velychko-Semennyk et al., 2022) show that during 2018–

2021, the prevalence of digital technologies in artistic universities in Ukraine has increased significantly and covers the following areas (Table 4).

Table 4.The level of digital infrastructure equipment of music institutions and establishments, %

Technology/year	2018	2021	increase
Access to the Internet	78%	91%	13%
Use of Software	36%	51%	15%
Digital infrastructure	57%	66%	9%
Participation in international events	44%	58%	14%
Distance education	29%	84%	55%
Availability of the subject of "digital directing", "digital vocal synthesis"	34%	41%	7%

Source: compiled according to the data of the Ministry of Digital Transformation of Ukraine

The most noticeable growth was in distance education – 84% of artistic institutions used distance education in some form. For choral performance, the use of distance education has proved to be the most significant challenge due to the specifics of choral performance as a collective art. According to Bondarenko (2020), the delay resulting from digital data transmission corresponds to the eighth beat in the Allegro tempo, which leads to an imbalance in the rhythmic ensemble. Moreover, even at slower tempos, a one-beat delay may be less noticeable when performing music with long durations. However, it will affect the diction ensemble, which requires much finer sensitivity.

A study of the video content of Ukrainian choirs in 2020 indicates the spread of a specific genre of remote choral performance videos. The training technique was pioneered by Eric Whitacre and inspired many choir directors, primarily in educational institutions. The study of experience allows us to identify the methods of preparing such videos and to identify the following stages of work:

- choice of repertoire;
- preparation of methodological instructions by the conductor on the peculiarities of the interpretation of the selected work;
- the conductor records a video of himself conducting the selected piece;
- individual study of the score by each of the performers, taking into account the conductor's methodological instructions and video recordings of the conducting;
- video recording by performers

Remote choral performance was quite widely used in Ukraine in 2020, as evidenced, in particular, by publications by teachers of the Kyiv National University of Culture (Krechko, 2021a), Khmelnytskyi Humanitarian and Pedagogical Academy (Kachurynets, 2020), Sumy (Karpenko &Kramska, 2021), and KryvyiRih (Kokarieva, 2022) music colleges.

As an example of such a performance published on YouTube, we will cite the publication of the ANIMA academic choir "M. Skoryk "Melody" online", performed in April 2020, which received more than 1,500 views. Even though this figure is higher than most of the choir's publications made in the usual ensemble way, with the lifting of bans on classroom education, the activity of remote choral music-making has faded, and the choirs have returned to the practice of traditional classroom rehearsals and concert performances.

5 Discussion

A comparison of the popularity of Ukrainian choirs with similar indicators of pop singers and pop bands shows that choral performance is less popular than modern forms of pop culture. For example, the channel of the Ukrainian pop band Okean Elzy (@okeanelzyofficial) has over 730 million views, the channel of the pop singer Dzidzio (@dzidzio) has 665 million views, and Alyona Alyona (@alyonaalyona) has 250 million views. These figures provoke a discussion about whether choral art can continue to be considered part of mainstream culture, or whether we should instead talk about its transition to an elite, niche culture.

A similar question will arise when analysing the achievements of symphony orchestras, whose performance, at least on the YouTube platform, is inferior to that of choral groups.

Finally, the impact of the Russian Federation's aggressive military actions starting in 2022 on Ukraine's choral art will soon require a separate study.

6 Conclusion

Currently, the creative possibilities of choral ensembles have been expanded through the use of recording technologies and internet communication technologies. Traditional possibilities of live public performances are thus complemented by the ability to produce audio and video recordings, which can then be distributed via the Internet. The tables show that the Internet allows choral ensembles to reach audiences of several million people, equivalent to holding several thousand concerts in large halls with an audience of up to 1,000.

The experience of 2020, when during the COVID-19 pandemic, many governments banned public gatherings, including classroom education and concert events, demonstrated that using digital technologies allowed choral art to survive such strict prohibitions through the ability to remotely prepare video recordings. At the same time, the lifting of restrictions in 2021–2022 showed that live, traditional ensemble-based recording preparation remains a priority for all groups, and thus, the technology of remote recordings can be considered significantly inferior to traditional forms of choral performance in terms of possibilities.

Literature:

1. Álvarez, M. R.: Tecnología al servicio de la educación musical. *Revista Española de Pedagogía,* 2017,75(268), 481–495. https://doi.org/10.22550/REP75-3-2017-09

2. Bärtl, M.: YouTube channels, uploads and views: A statistical analysis of the past 10 years. *Convergence,* 2018, 24(1), 16–32. https://doi.org/10.1177/1354856517736979

3. Bondarenko, A.: Distance Education for Musicians-Performers: Problems and Perspectives. *Image of a modern teacher,* 2020, 3(192), 69–72. https://doi.org/10.33272/2522-9729-2020-3(192)-69-72

4. Bondarenko, A., Humeniuk, T., Romanenko, A., Makarenko, L., & Lysenko, L.: The Impact of the COVID-19 Pandemic on Music Education in Ukraine. *Fontes Artis Musicae,* 2023, 70, 244–262. https://doi.org/10.1353/fa m.2023.a909191

5. Cayari, C.: The YouTube effect: How YouTube has provided new ways to consume, create, and share music. *International Journal of Education & the Arts,* 2011, 12(6). http://www.ijea.org/v12n6/

6. Cheng, X., Dale, C., & Liu, J.: Statistics and Social Network of YouTube Videos. In *2008 16th International Workshop on Quality of Service, Enschede, Netherlands,* 2008, (pp. 229–238). Enschede, Netherlands. https://doi.org/10.1109/IWQOS.2008.32

7. Colleen, P., & Michele, H. L.: The Effects of Technology on the Sight-Reading Achievement of Beginning Choir Students. *Texas Music Education Research,* 2014, pp. 23–28. https://eric.ed.gov/?id=EJ1102254

8. Cook, N., Ingalls, M. M., &Trippett, D.: *The Cambridge Companion to Music in Digital Culture.* Cambridge: Cambridge University Press, 2019, (pp. 5–28). https://doi.org/10.1017/978 1316676639

9. Eren, H. C., &Öztuğ, E. K.: The implementation of virtual choir recordings during distance learning. *Cypriot Journal of Educational Science,* 2020, 15(5), 1117–1127. https://doi.or g/10.18844/cjes.v15i5.5159

10. Galvan, J., &Clauhs, M.: The Virtual Choir as Collaboration. *Choral Journal,* 2020, 61, 8–18.

11. Georgaki, A.: Trends on the synthesis of the singing voice: technical problems and perspectives. *International Computer Music Conference.* November 2004. http://scholar.uoa.gr/sit es/default/files/georgaki/files/19_2004-trends_on_the_synth esis_of_the_singing_voice_icmc.pdf

12. Gorgoretti, B.: According to student music teachers, the use of technology in music education in North Cyprus. *South African Journal of Education,* 2019, 39(1), 1–10. https://doi.org/10.15 700/saje.v39n1a1436

13. Husarchuk, T. V.: *ArtemiyVedel: The artist's figure in the context of the epochs* (O. L. Rud, Ed.). Kyiv: Musical Ukraine, 2019.

14. Johnson, C.: Teaching music online: Changing pedagogical approach when moving to the online environment. *London Review of Education,* 2017, 15(3), 339–456. https://doi.org/1 0.18546/LRE.15.3.08

15. Kachurynets, L.: Virtual choir as a necessary pedagogical experience. *Current questions of humanitarian science*, 2020, 34(3), 211–218.

16. Karpenko, Y., &Kramska, S.: Study of choral conducting in the conditions of distance education. *Pedagogical sciences: theory, history, innovative technologies*, 2021, 1(105), 402–414.

17. Kerry, V. J.: "The Birth of the Virtual Choir": Exploring the multimodal realisation of the Covid-19 liminal space in a YouTube virtual choir performance. *Multimodality & Society,* 2022, 2(2), 141–164. https://doi.org/10.1177/263497952210 86882

18. Kokarieva, E.: Features of choral conducting classes in distance learning conditions. *Scientific notes. Series: Pedagogical Sciences*, 2022, 204, 143–149.

19. Kolessa, M.: *Fundamentals of conducting.* Kyiv: Musical Ukraine, 1973.

20. Korobka, T.: *In the air of the Ukrainian Radio choir.* Kyiv: Musical Ukraine, 2015.

21. Kovalenko, A. N.: On the use of DAW in informal adult education [online]. In V. Bykov (Ed.), *Proceedings of III a nationwide scientific conference of young scientists "Scientific Youth 2015" by the Society.* Kyiv: IITLT NAES Ukraine, 2015. http://lib.iitta.gov.ua

22. Kravtsova, Nataliia. (n.d.). scholar.google.com.ua. https://sc holar.google.com.ua/citations?hl=uk&user=A5bcrxYAAAAJ

23. Krechko, N.: Information and communication distance technologies in music educational practice. *Bulletin of KNUKiM. Series in Arts*, 2021a, 45, 100–106.

24. Krechko, N. M.: Online performances of choral groups: Role and significance in the educational process. *Innovative Pedagogy*, 2021b, 2(33), 150–153. https://doi.org/10.32843 /2663-6085/2021/33-2.29

25. Kushnir, K., Bilozerska, H., Sidorova, I., Kravtsova, N., &Kostenko, L.: Integrated professional training of the music teacher by means of innovative artistic and pedagogical technologies. *LaplageemRevista*, 2021, 7(1), 543–551. https://doi.org/10.24115/S2446-6220202171855p.543-551

26. Lebid, Y., Sinelnikova, V., Pistunova, T., Tormakhova, V., Popova, A., &Sinenko, O.: Organisation of Qualitative Education of Music Students in the Conditions of Distance Education. *Postmodern Openings*, 2021, 12(Sup1), 76–93. https://doi.org/10.18662/po/12.3Sup1/352

27. Lukyanova, L.: *Adult education: a brief terminological dictionary.* Kyiv: Nizhyn: Publisher Lysenko M. M., 2014.
28. Markhlevskyi, A.: *Practical foundations of working in the choral class.* Kyiv: Musical Ukraine, 1986.
29. Ministry of Digital Transformation of Ukraine. https://thedigital.gov.ua/
30. Partes creativity in Ukraine of the 17th-18th centuries (according to the catalogue by N. O. Herasymova-Persydska). Eds: L. H. Rudenko, E. S. Klymenko; NAS of Ukraine, V. I. Vernadskyi National Library of Ukraine; General Editors: L. V. Ivchenko, O. P. Stepchenko. Kyiv: NBUV, 2023.
31. Pihrov, K.: *Choral management*. Kyiv: Musical Ukraine, 1956.
32. Puchko-Kolesnyk, Y., Skoryk, A., Shumska, L., Shevchuk, I., &Antipina, I.: Performance style of a contemporary choral conductor in the context of the current artistic space: from rehearsal to media presentation. *Ad Alta,* 2024, 14(1), XXXIX, 185–188. https://doi.org/10.3354 3/140139185188
33. Puentedura, R. R.: SAMR: A brief introduction [Blog post], 2015. http://hippasus.com/rrpweblog/archives/2015/10/SAMR _ABriefIntro.pdf
34. Rampstedt, K., & Johannes, B.: From Audio Broadcasting to Video Streaming: The Impact of Digitalisation on Music Broadcasting among the Swedish-Speaking Minority of Finland. *Journal of European Popular Culture,* 2019, 10(2), 145–159. https://doi.org/10.1386/jepc_00006_1
35. Silveira, J. M., & Gavin, R.: The effects of audio recording and playback on self-assessment among secondary school instrumental music students. *Psychology of Music,* 2016, 44(4), 880–892. https://doi.org/10.1177/0305735615596375
36. Skoptsova, O.: Innovative activity of H. Verovka as the founder of professional folk choir performance in Ukraine. *A young scientist*, 2017, (11), 670–673.
37. Stephenson, J., &Limbrick, L.: A Review of the Use of Touch-Screen Mobile Devices by People with Developmental Disabilities. *Journal of autism and developmental disorders,* 2015, 45(12), 3777–3791. https://doi.org/10.1007/s10803-013-1878-8
38. Talsik, E.: The investigation of readiness for e-learning of pre-service music teachers in Turkey. *Anthropologist,* 2015, 21(1-2), 263–270. https://doi.org/10.1080/09720073.2015.1 1891815
39. Teryaeva, L.: Formation of methodological competence of college students' fir choral competence of college students for choral conducting classes. In G. Gubarev (Ed.), *Modernisation of the content of professional education – The condition of training a competent specialist of a new form: a collection of conference materials*, 2017, (pp. 212–215). Zhytomyr: Ed. O. O. Evenok (in Ukrainian).
40. Thorgersen, K. A., & Mars, A.: A pandemic as the mother of invention? Collegial online collaboration to cope with the COVID-19 pandemic. *Music Education Research,* 2021, 23(2), 225–240. https://doi.org/10.1080/14613808.2021.1906216
41. Vasylevska-Skypa, L., &Kravtsova, N.: Introduction of innovative technologies into the system of vocal and choral training of future teachers of music art. *Modern Information Technologies and Innovation Methodologies of Education in Professional Training Methodology Theory Experience Problems*, 2021, 45, 154–158. https://vspu.net/sit/index.php/sit/a rticle/view/2622
42. Velychko-Semennyk, Z., Velychko, N., Bondarenko, A., Kyrylenko, Y., &Shumska, L.: Development of Ukrainian choral art in conditions of digitalisation. *Amazonia Investiga,* 2022, 11(58), 151–160. https://doi.org/10.34069/AI/2022.58.10.16
43. Yefimenko, I. V., Yakymchuk, O. M., &Kravtsova, N. Ye., Sotska, H. I., &Korol, A. M.: Modern innovative pedagogical technologies in art education. *Universal Journal of Educational Research*, 2020, *8*(11D), 56–62. https://doi.org/10.13189/ujer. 2020.082407

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