“Teaching the teachers”: integration of peer learning methodology into traditional curriculum in Humanities in the Russian Universities

G. E. Kedrova

Lomonosov Moscow State University

kedr@philol.msu.ru

Abstract

Period of the Covid-19 isolation increased need to put into practice new educational technologies supporting innovative teaching in higher education worldwide. Current contribution aims to present results of pilot experiment with engaging Russian university teachers in Humanities who did not practice peer instruction in their traditional daily teaching activity to induce collaborative learning platforms into their everyday professional work. We focused on the Perusall platform as one of the leading Web-based applications enabling socio-constructivist approach in education and full-scale peer-to-peer learning and teaching practices. Yet, the platform as well as general collaborative learning theory and good practices are scarcely used in Russian universities. Therefor we elaborated an effective framework for teachers of humanitarian disciplines, not acquainted with the peer-to-peer methodology, to get acquainted with the basic theoretical principles of collaborative learning and to acquire necessary practical skills for its implementation. This experimental framework has been tested in the process of teacher training.

Keywords: Collaborative Learning, Peer Instruction, Deep Reading, Perusall

Reference for citation: Kedrova G. E. “Teaching the teachers”: integration of peer learning methodology into traditional curriculum in Humanities in the Russian Universities // Information Society: Education, Science, Culture and Technology of Future. Vol. 7 (Proceedings of the XXVI International Joint Scientific Conference «Internet and Modern Society», IMS-2023, St. Petersburg, June 26–28, 2023). — St. Petersburg: ITMO University, 2024. P. 50–58. DOI: 10.17586/2587-8557-2024-7-50-58

1. Introduction

Recent investigation of the current state of digital competence of Russian teachers based on the analysis of empirical data obtained during a survey of active teachers and students of the pedagogical universities revealed that the degree of readiness and desire of teachers to use digital tools and services in the educational process is high. However, the survey also demonstrated that the level of digital competence of teachers is not universally satisfactory, especially in using digital tools and services for organizing group work and collaborative learning [1]. Among the reasons why teachers do not implement digital tools and services in their professional activities, survey’s authors indicate high cost of the paid services and low functionality of free version (71.4%), shortage of time (42.9%), lack of skills in operating digital services (20%), psychological inconvenience of using digital tools for teaching (17.1%), especially in comparison to the traditional ones (8.6%), or complete ignorance of how to integrate digital tools in their professional activities (5.7%). It is also worth to underline that no one mentioned lack of motivation to master new digital technologies. Therefore, we agree with the authors of the study that the most effective way to form digital competence of modern teachers is providing training in three main areas simultaneously.

Such training should be provided in personal digital educational environment with the most effective digital educational resources; didactic value of digital educational platforms should be based on high-quality digital educational content. Teachers' training should also include collective work for organization and implementation of joint educational projects in online environments, investigation and assimilation of digital tools and online services effective for supporting learners in various situations both in class and online, creation of contextual digital learning content. An important role in the professional development course for teachers is given to discussions with colleagues within the networked professional community of the strengths and weaknesses of certain software tools, positive and negative personal experience of working in a digital educational environment, as well as exchange of the best Russian and foreign pedagogical experiences. We have tried to combine all these functional areas in a special course for professional development of educators annually offered online at the Philological faculty of Lomonosov Moscow State University.

While only 25,7% of the Russian teachers are using combination of various digital tools to enhance their students to exchange information and discuss ideas in online space for jointly doing projects in digital environment [1], we decided first and foremost to focus on the best tools and practices of collaborative (peer-to-peer) learning. The Perusall platform (https://perusall.com/) as the main digital online collaborative learning tool was adopted for introduction of collaborative learning methodology and practice for several reasons. It is a free English-language service for teamwork, assessment and student engagement, which can be used both as a separate mini-platform and as an application integrated with the organization's main learning platform (Moodle, Canvas, Blackboard, etc.). We also focused on the Perusall platform being nowadays attested one of the leading Web-based applications enabling socio-constructivist approach in education and full-scale peer-to-peer learning and teaching practices. Its basic ideas were elaborated by Eric Mazur and integrated into teaching Physics in Harvard University in 1991, and were since widely adopted across disciplines and institutional types. Yet, the platform as well as general collaborative learning theory and good practices are scarcely used in Russian universities. It is sufficient to note that the first mention of the Perusall platform in the Russian scholars' publications is not earlier than 2019 according to the Russian Electronic Library (https://www.elibrary.ru), only 3 publications in the Russian Electronic Library's database present some results of practical use of the platform in teaching English to Russian students [2, 3, 4], and only 2 papers present results in teaching active reading [5, 6].

Perusall has been describe as "<…> online, social learning platform designed to promote high pre-class reading compliance, engagement, and conceptual understanding" through peer instruction practices [7, p. 3]. Results of the previous research on peer instruction has shown that peer instruction was reported to be more effective than learning with traditional teaching methods [8]. Most often cited advantages of the peer learning are that (1) peer instruction method positively influences on attitudes of the group to understand essential course concepts; (2) peer instruction method was effective in enhancing conceptual comprehension, and (3) the participants expressed positive attitudes towards it [9:77]. It is worth to mention that according to the literature peer instruction methods are rather universal being equally effective in teaching both Sciences and Humanities. Result of the study of English Second Language students' critical thinking performance in a Flipped Learning Environment suggests that the use of peer instruction in a flipped learning environment can be an alternative teaching method to enhance the students' critical thinking in argumentative essay writing and offer implications for English as Second Language students, language instructors, and researchers [10].

Preliminary results of very few studies on the use of the platform in Russian universities are also quite encouraging. O. Lukmanova mentions advantages and disadvantages of the tool, and outlines immediate goals for using Perusall in more informed and effective ways [2]. The intention to use Perusall platform in teaching English as a foreign language to Russian students was extended into the following year by colleagues at the same university. Results confirmed platform's high efficacy in developing useful skills and abilities - both in language and speech, and in intercultural

and emotional competence of students [3]. Another description of integration of the Perusall platform into regular course of active reading for Russian students is analyzed in detail in [5]. Author shares his experience of using the digital platform to resolve problems emerging in standard courses of active reading that were difficult to overcome using traditional methods. According to Vadim Radaev, the main advantages of using Perusall lie in the ability to combine active reading with reflexive work, integrating interactive discussions in the class into virtual environment. Radaev concludes that additional efforts associated with the use of digital technologies "pay back enabling the teacher to control the students' homework more effectively and provide a more adequate assessment of the educational outcomes" [5, p. 114].

Though the Perusall as a social annotation environment specifically designed for undergraduate courses is recently gaining more popularity, limited research can be found that explores effectiveness of the platform for those teachers who are not familiar with collaborative learning and peer instruction in their daily practices. This paper presents main guidelines for construction and application of a practical framework to integrate collaborative learning capacities provided by Perusall platform into professional practice of Russian university teachers in Humanities, who are newcomers to both the digital platform and peer-to-peer pedagogy.

2. Materials and Methods

As indicate Schell & Butler, "first and foremost, the effectiveness of Peer Instruction starts with learning objectives. The focus must be on building the conceptual understanding needed to contextualize the procedural skills and knowledge that students are often adept at acquiring <…>" [11:265]. As our experimental course was aimed to engage Russian university teachers having no previous experience in peer instruction practices to induce collaborative learning platforms into their everyday professional routine, we provided a short introductory course on Web 2.0 socializing tools. The course included demonstration of best practices for implementation of collaborative learning into education processes, personal experience with the Perusall platform included. To introduce contextualized practical skills, effective in peer-to-peer instruction, we "immersed" our learners – teachers enrolled in the advanced training course – into Perusall environment as students performing a task of critical reading. The main method of instruction was thus "learning-by-doing" based on a variety of tasks: collective writing project, analytic (deep) reading and collective annotating and commenting short scientific texts.

It is generally acknowledged that one of the main problems when using collaborative annotation platforms is selection of textual material that have "sufficient content related to concepts taught in class, and the data should be interpretable by students without requiring specialized knowledge from a specific field" [12:48]. To reach this goal with the teachers of various professional background, we developed a special procedure to engage them first into collective writing short scientific articles explaining various IT terms and concepts. On the preliminary stage teachers created short scientific texts working in groups. The distribution of students into groups was carried out according to the results of a preliminary survey on familiarity with a special term from the list. In the previous module of the course students were exploring main Web 2.0 concepts and socializing tools, therefor they were asked to compose short texts explaining some of the most relevant terminology in the field: RSS, Wiki, XML, LMS, Web 2.0, MOOC, etc. Thus, each group comprised "experts" of a certain term, who were given the task to explain as simply as possible its meaning and use. Members of a group worked on each text item in collaboration in Google Docs during a week, the final anonymized version has been uploaded into Perusall Course Library with mandatory assignment to all students in the class to evaluate and publish comments.

In this stage, students were asked to publish comments on every text, evaluating its form and content, posting questions and answering questions posted by the instructor or other students. There was no restriction on the number and form of annotations, therefore students could ask as many questions as they liked, analyze and criticize (or approve) content prepared in groups, rhetoric aspect and general performance of the text. All texts were also asked to be rated on a ten-point

scale. Since in the previously published research there was often mentioned that some students feel difficult to ask questions or make comments [13], we provided a set of questions composed by the Course's instructor as the one mandatory for all the students to answer. The question list guided them regarding what they may need to place into comments. This list of questions was composed according to general recommendations on organizing 'deep reading' assignments [14] and was as follows: (1) *What are your first impressions of the text?* (2) *What new did you learn from the text?* (3) *What questions (or objections) do you have after reading the text?* (4) *Fragment important for you/fragment important for the author of the text?* (5) *What question would you like to address to the author of the text?* (6) *Do you agree with the author?* (7) *Why do you disagree with the author?* (8) *What information is missing from the text?* (9) *What are the prerequisites and prejudices of the author, what does the author relies on?* (10) *Associations that the text evokes?* (11) *What question does the text answer?* (12) *How would you rate the text on a scale of 1 to 10 (where 10 is the highest score)?*

The questions served as 'triggering events' to enhance 'cognitive presence' of a student [15]. During the two weeks period students could post as many comments for each text item, as well as questions and answers, as they wished. Twice a week we performed the 'teaching presence' [16] through sharing instructor's personal meaning and directing focusing discussions by additional questions, approval marks, et cetera.

3. Results

In the Winter semester of 2022–2023 academic year the course was delivered online to the group of 25 active teachers of various humanitarian disciplines (English as Foreign Language, English as Language of Professional communication in Law, Russian as Foreign Language, Russian as Second Language) and 4 post-graduate students in Linguistics from 5 Russian universities. Online assignment of 16 short scientific texts in the Perusall platform attested active engagement of all the students, as is evident from the sheer number of comments each text received (~48 comments and ~15 questions and answers per item). Average size (in words) of an annotation ranged from 6 to 78 units. It was the instructor's support with regular posting of questions and responding to the questions of students, evaluating students' comments and answers, providing feedback on students' progress, initiating participation of the less active classmates and staying easily accessible whenever required, that had significant effects on the overall students' activity doing an assessment.

It is worth to mention that alongside with the two main components of the Garrison's Community of inquiry framework (Coi) [17] ('cognitive presence' and 'teaching presence' that were discussed earlier) its third component – 'social presence' – was also quite abundantly presented in the database of every assignment. A lot of affected responses as well as interactive responses mark active social presence [18] of the student teachers.

As additional value of the learning process, it is worth also to note that students' questions and comments were highly useful for the authors of every text under discussion. They "highlighted" semantic and stylistic shortcomings of the texts, which could induce misunderstanding or misinterpretation of the term. Very often these comments also offered useful recommendations for improvement of the text's content.

At the end of the training, a survey was conducted on the degree of its usefulness and effectiveness. Participants were asked to provide feedback and discuss the strengths and weaknesses of the Perusall platform, as well as effectiveness of collaborative learning for teaching online. One of the questions discussed during the final meeting was about the prospects and desire to use this computer platform in future professional work. Major part of the participants indicated that they will register in Perusall as teachers, and would continue to use it with their students in flipped and hybrid classes.

4. Conclusion & Recommendations

Results of the pilot experiment in integrating collaborative learning methodology into traditional teaching practices in Russian universities indicate that the vast majority of teachers in Humanities previously not acquainted with collaborative education practices are expressing positive attitude towards efficiency of digital tools for collaborative online learning. They also highly appreciate the experience gained in peer-to-peer learning environment. Most of the experimental group members are planning to use collaborative learning capacities for peer instruction activities in their future work. All teachers who participated in the Perusall assignment activities also approved the platform as effective social learning tool. They agreed that Perusall platform provides all the necessary capacities for organizing various types of collaborative learning through realization of core principles of the Community of inquiry framework (Coi) [17]. Among most valuable educational advantages of the Perusall platform teachers mentioned possibility to keep track of which material causes the most difficulty or interest, to collect evidence to identify week students and immediately intervene into discussion providing additional support, carefully shape and direct social interactions as core component of collaborative learning.

However, it is worth noting some difficulties in using this platform in Russian schools and universities, as its capacities are focused on the English language as main language of instruction. According to the project participants, one of the most critical disadvantages of the platform was its impossibility to grade students' work automatically, as well as inaccessibility of a number of program functionalities focused on processing English-language empirical data. Therefor it would be highly desirable in the future to include Russian language, as well as other world languages, as the language of instruction into Perusall automated scoring system on the same level as is currently available for the English language communication, since it has been proved to be effective equivalent of the expert teachers' scores [19].

Reference

[1] Boronenko T.A., Fedotova V.S. Research of the digital competence of teachers in the conditions of digitalization of the educational environment of the school // Vestnik Samarskogo universiteta. Istoriia, pedagogika, filologiia = Vestnik of Samara University. History, pedagogics, philology. 2021. Vol. 27. No. 1. P. 51–61. DOI: 10.18287/2542-0445-2021-27-1-51-61. (In Russian)

[2] Lukmanova O.B. Using Perusall in teaching college level English at a Linguistic University // Professionalnoe linguoobrazovanie: Materialy 15 mezhdunarodnoi nauchno-prakticheskoi konferencii, Nizhny-Novgorod: Russian Presidential Academy of National Economy and Public Administration (RANEPA), 2021. P. 245-248. (In Russian)

[3] Valyaeva N.Ju., Lukmanova O.B. Using Perusall as a tool to develop students' emotional intelligence as part of English Language instruction in higher education // Professionalnoe linguoobrazovanie: Materialy 16 mezhdunarodnoi nauchno-prakticheskoi konferencii, Nizhny-Novgorod: Russian Presidential Academy of National Economy and Public Administration (RANEPA), 2022. P. 131-136. (In Russian)

[4] Motov S.V. Perspektivy optimizacii vzaimodejstvija mezhdu studentami I prepodavatelem na inojazychnom zaniatii I pri organizacii vneauditornoi uchebnoi raboty // Lichnostnoe i professionalnoe razvitie budushchego specialista: Materialy XVIII mezhdunarodnoi nauchno-prakticheskoi Internet-konferencii / L.N. Makarova (ed.). Derzhavin State University, 2022. P. 136-141. (In Russian)

[5] Radaev V.V. How to Persuade the Students to Read Complicated Texts: An Experience Drawn from the Use of Digital Technologies // Higher Education in Russia. 2022. Vol. 31. No. 7. P. 113-122. DOI: 10.31992/0869-3617-2022-31-7-113-122. (In Russian)

[6] Pashkin S.B., Chernovets E.G., Zorina E.M. Teaching Foreign-Language Authentic Reading By Means Of Educational Technosphere // Professional Culture of the Specialist of the Future

/ N.I. Almazova, A.V. Rubtsova, D.S. Bylieva (eds.). European Proceedings of Social and Behavioural Sciences, Future Academy. 2019. Vol 73. P. 105-113.
[7] Miller K., Lukoff B., King G., Mazur E. Use of a Social Annotation Platform for Pre-Class Reading Assignments in a Flipped Introductory Physics Class // Frontiers in Education. 2018. Vol. 3. DOI: 10.3389/feduc.2018.00008.
[8] Gok T., Gok O. Peer instruction: An evaluation of its theory, application, and contribution // Asia-Pacific Forum on Science Learning and Teaching. 2017. Vol. 18 (2). P. 1–39.
[9] Al-Hebaishi S.M. The effect of peer instruction method on pre-service teachers' conceptual comprehension of methodology course // Journal of Education & Learning. 2017. Vol. 6. No. 3. P. 70–82. DOI: 10.5539/jel.v6n3p70.
[10] Jageer Singh A.K., Raja Harun R.N.S. Peer Instruction in a Flipped Learning Environment: Investigating ESL Students' Critical Thinking Performance in Argumentative Essay Writing // Eduvelop: Journal of English Education and Development. 2021. Vol. 4. No. 2. P. 51-70. DOI: 10.31605/eduvelop.v4i2.986.
[11] Schell J., Butler A.C. Adapting Peer Instruction for Online Learning Using a Learning Science Framework // In their own words: What scholars and teachers want you to know about why and how to apply the science of learning in your academic setting / C.E. Overson, C.M. Hakala, L.L. Kordonowy, V.A. Benassi (eds.). Society for the Teaching of Psychology. 2023. P. 263-279.
[12] Lee S.C., Yeong F.M. Fostering Student Engagement Using Online, Collaborative Reading Assignments Mediated by Perusall // Asia Pacific Scholar. 2018. Vol. 3. No. 3. P. 46–48. DOI: 10.29060/TAPS.2018-3-3/PV2000.
[13] Sun S., Smith M., He S. Persusall Integration Framework // EDULEARN19 Proceedings / L. Gómez Chova, A. López Martínez, I. Candel Torres (eds.). International Association for Technology, Education and Development (IATED). 2019. P. 3516-3524.
[14] Akhapkin D.N. Intensivnye seminary po pis'mu v sovremennoy vysshey shkole: tseli i zadachi // UNIVERSUM: Polikul'turnoe izmerenie nauki i obrazovaniya: Kollektivnaya monografiya. Sankt-Peterburg: Rossiyskiy gosudarstvennyy pedagogicheskiy universitet im. A. I. Gertsena, 2021. P. 5-16. (In Russian)
[15] Garrison D.R., Anderson T., Archer W. Critical thinking and computer conferencing: a model and tool to assess cognitive presence // American Journal of Distance Education. 2001. Vol. 15. Iss. 1. P. 7-23. DOI: 10.1080/08923640109527071.
[16] Garrison, D.R., Anderson T., Archer W. Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education // The Internet and Higher Education. 1999. Vol. 2. Iss. 2–3. P. 87-105. DOI: 10.1016/S1096-7516(00)00016-6.
[17] Garrison D.R. E-learning in the 21st century: A Community of Inquiry framework for research and practice. London, UK: Routledge, 2016.
[18] Rourke L., Anderson T., Garrison D., Archer W. Assessing Social Presence In Asynchronous Text-based Computer Conferencing // Journal of Distance Education. 1999. Vol. 14. No. 2. P. 50-71.
[19] Cecchinato G., Foschi L.C. Perusall: University learning-teaching innovation employing social annotation and machine learning // Qwerty. 2020. Vol. 15. No. 2. P. 45-67.

«Обучение учителей»: интеграция методики взаимного обучения в традиционную учебную программу по гуманитарным наукам в российских вузах

Г. Е. Кедрова

Московский государственный университет имени М. В. Ломоносова

В период изоляции из-за Covid-19 во всем мире возросла потребность в применении на практике новых образовательных технологий, поддерживающих инновационное обучение в высшем образовании. Цель настоящей статьи — представить результаты пилотного эксперимента по привлечению преподавателей гуманитарных дисциплин из российских университетов, которые не практиковали взаимное обучение (peer-to-peer instruction) в своей преподавательской деятельности, к внедрению Интернет-платформ для совместного обучения в повседневную профессиональную работу. Мы остановились на платформе Perusall как одном из ведущих веб-приложений, позволяющих реализовать социо-конструктивистский подход в образовании и обеспечить полноценную практическую среду взаимного обучения и преподавания. Однако в российских вузах эта платформа, как и в целом теория и практика совместного обучения, практически не используются. Поэтому мы разработали эффективную систему, позволяющую преподавателям гуманитарных дисциплин, не знакомым с методологией взаимного обучения, ознакомиться с его основными теоретическими принципами и приобрести необходимые практические навыки для его реализации. Данная экспериментальная система была апробирована в процессе подготовки преподавателей.

Ключевые слова: совместное обучение, взаимное обучение, углублённое чтение, Perusall

Библиографическая ссылка: Кедрова Г. Е. «Обучение учителей»: интеграция методики взаимного обучения в традиционную учебную программу по гуманитарным наукам в российских вузах // Информационное общество: образование, наука, культура и технологии будущего. Выпуск 7 (Труды XXVI Международной объединённой научной конференции «Интернет и современное общество», IMS-2023, Санкт-Петербург, 26–28 июня 2023 г. Сборник научных статей). — СПб.: Университет ИТМО, 2024. С. 50–58. DOI: 10.17586/2587-8557-2024-7-50-58

Литература

[1] Бороненко Т. А., Федотова В. С. Исследование цифровой компетентности педагогов в условиях цифровизации образовательной среды школы // Вестник Самарского университета. История, педагогика, филология. 2021. Т. 27. № 1. С. 51-61. DOI: 10.18287/2542-0445-2021-27-1-51-61.

[2] Лукманова О.Б. Опыт использования платформы Perusall в обучении английскому языку в лингвистическом вузе // Профессиональное лингвообразование: Материалы пятнадцатой международной научно-практической конференции, Нижний Новгород, 24 сентября 2021 года. Нижний Новгород: Нижегородский институт управления - филиал федерального государственного бюджетного образовательного учреждения высшего образования «Российская академия народного хозяйства и государственной службы при Президенте Российской Федерации», 2021. С. 245-248.

[3] Валяева Н. Ю., Лукманова О. Б. Работа с платформой Perusall как инструмент развития эмоционального интеллекта студентов в рамках обучения английскому языку в вузе // Профессиональное лингвообразование: Материалы шестнадцатой международной научно-практической конференции, Нижний Новгород, 05 октября 2022 года. Нижний Новгород: Нижегородский институт управления — филиал федерального

государственного бюджетного образовательного учреждения высшего образования «Российская академия народного хозяйства и государственной службы при Президенте Российской Федерации», 2022. С. 131-136.

[4] Мотов С. В. Перспективы оптимизации взаимодействия между студентами и преподавателем на иноязычном занятии и при организации внеаудиторной учебной работы // Личностное и профессиональное развитие будущего специалиста: Материалы XVIII Международной научно-практической Internet-конференции, Тамбов, 30 мая – 05 2022 года. Тамбов: Издательский дом «Державинский», 2022. С. 136-141.

[5] Радаев В. В. Как побудить студентов к чтению сложных текстов: опыт использования цифровых технологий // Высшее образование в России. 2022. Т. 31. № 7. С. 113-122. DOI: 10.31992/0869-3617-2022-31-7-113-122.

[6] Pashkin S. B., Chernovets E. G., Zorina E. M. Teaching Foreign-Language Authentic Reading By Means Of Educational Technosphere // Professional Culture of the Specialist of the Future / N. I. Almazova, A. V. Rubtsova, D.S. Bylieva (eds.). European Proceedings of Social and Behavioural Sciences, Future Academy. 2019. Vol 73. P. 105-113.

[7] Miller K., Lukoff B., King G., Mazur E. Use of a Social Annotation Platform for Pre-Class Reading Assignments in a Flipped Introductory Physics Class // Frontiers in Education. 2018.Vol. 3. DOI: 10.3389/feduc.2018.00008.

[8] Gok T., Gok O. Peer instruction: An evaluation of its theory, application, and contribution // Asia-Pacific Forum on Science Learning and Teaching. 2017. Vol. 18 (2). P. 1–39.

[9] Al-Hebaishi S. M. The effect of peer instruction method on pre-service teachers' conceptual comprehension of methodology course // Journal of Education & Learning. 2017. Vol. 6. No. 3. P. 70–82. DOI: 10.5539/jel.v6n3p70.

[10] Jageer Singh A. K., Raja Harun R.N.S. Peer Instruction in a Flipped Learning Environment: Investigating ESL Students' Critical Thinking Performance in Argumentative Essay Writing // Eduvelop: Journal of English Education and Development. 2021. Vol. 4. No. 2. P. 51-70. DOI: 10.31605/eduvelop.v4i2.986.

[11] Schell J., Butler A. C. Adapting Peer Instruction for Online Learning Using a Learning Science Framework // In their own words: What scholars and teachers want you to know about why and how to apply the science of learning in your academic setting / C.E. Overson, C.M. Hakala, L.L. Kordonowy, V. A. Benassi (eds.). Society for the Teaching of Psychology. 2023. P. 263-279.

[12] Lee S.C., Yeong F. M. Fostering Student Engagement Using Online, Collaborative Reading Assignments Mediated by Perusall // Asia Pacific Scholar. 2018. Vol. 3. No. 3. P. 46–48. DOI: 10.29060/TAPS.2018-3-3/PV2000.

[13] Sun S., Smith M., He S. Persusall Integration Framework // EDULEARN19 Proceedings / L. Gómez Chova, A. López Martínez, I. Candel Torres (eds.). International Association for Technology, Education and Development (IATED). 2019. P. 3516-3524.

[14] Ахапкин Д. Н. Интенсивные семинары по письму в современной высшей школе: цели и задачи // UNIVERSUM: Поликультурное измерение науки и образования: Коллективная монография. Санкт-Петербург: Российский государственный педагогический университет им. А. И. Герцена, 2021. С. 5-16.

[15] Garrison D. R., Anderson T., Archer W. Critical thinking and computer conferencing: a model and tool to assess cognitive presence // American Journal of Distance Education. 2001. Vol. 15. Iss. 1. P. 7-23. DOI: 10.1080/08923640109527071.

[16] Garrison, D. R., Anderson T., Archer W. Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education // The Internet and Higher Education. 1999. Vol. 2. Iss. 2–3. P. 87-105. DOI: 10.1016/S1096-7516(00)00016-6.

[17] Garrison D. R. E-learning in the 21st century: A Community of Inquiry framework for research and practice. London, UK: Routledge, 2016.

[18] Rourke L., Anderson T., Garrison D., Archer W. Assessing Social Presence // Asynchronous Text-based Computer Conferencing // Journal of Distance Education. 1999. Vol. 14. No. 2. P. 50-71.

[19]Cecchinato G., Foschi L.C. Perusall: University learning-teaching innovation employing social annotation and machine learning // Qwerty. 2020. Vol. 15. No. 2. P. 45-67.