Features of responsibility of future specialists of the socionomic professions as an indicator of their digital competence

Olena I. Bondarchuk[1], *Valentyna V.* Balakhtar[2], *Olena O.* Gorova[1],
Nina P. Lytvynenko[3], *Nataliia I.* Pinchuk[1], *Oleh V.* Shmanko[4], *Arnold E.* Kiv[5] and
Vasyl P. Oleksiuk[6,7]

[1]*University of Educational Management, 52A Sichovykh Striltsiv Str., Kyiv, 04053, Ukraine*

[2]*National Aviation University, 1 Liubomyra Huzara Ave., Kyiv, 03058, Ukraine*

[3]*O. O. Bogomolets National Medical University, 13 Taras Shevchenko Blvd., Kyiv, 01601, Ukraine*

[4]*Yuriy Fedkovych Chernivtsi National University, 2 Kotsiubynskyi Str., Chernivtsi, Ukraine, 58012*

[5]*Ben-Gurion University of the Negev, P.O.B. 653, Beer Sheva, 8410501, Israel*

[6]*Ternopil Volodymyr Hnatiuk National Pedagogical University, 2 M. Kryvonosa Str., Ternopil, Ukraine*

[7]*Institute for Digitalisation of Education of the National Academy of Educational Sciences of Ukraine, 9 M. Berlynskoho Str., Kyiv, 04060, Ukraine*

Abstract. The article dwells on to the study of the responsibility of future specialists of socionomic professions as an important indicator of their digital competence. The role of responsibility as a vital indicator of digital competence of future specialists of socionomic professions was determined, which determines their conscious and responsible activities in the context of obtaining and disseminating information in the digital space, promoting both their own psychological safety alongside psychological safety of other members of the digital community. The results of an empirical study were highlighted, which revealed an insufficient level of both responsibility and cognitive-operational components of digital competence for a significant number of future specialists in socionomic professions. Gender differences in the manifestations of responsibility of future specialists depending on the gender are characterized according to which the female respondents were slightly more responsible for the consequences of dissemination of information than male specialists. The expediency of promoting the development of responsibility of future specialists of socionomic professions as an indicator of their digital competence is stated, which can be provided in a specially organized psychological training.

Keywords: future specialists of socionomic professions, responsibility, information, digital competence, psychological safety,

1. Introduction

The development of the digital society in today's complex conditions leads to the growing role of information and digital technologies, in general, and in professional activities, in particular. This, in turn, requires the development of digital competence, the creation of conditions conducive to effective work with a variety of information sources, the identification of factors that ensure these processes, and so on. The digital competence is recognised by the EU as one of the 8 key competencies for a full life condition and activity, which according to the updated Digital Competence framework (DigComp 2.0) contains 5 main blocks of competencies [71] (information literacy and data literacy; communication and interaction; digital content; security; problem-solving). Digital competence is especially important for specialists in socionomic professions who work in the human-human system, and their activities support and develop the human capital and intellectual potential of the country. This imposes special requirements on the training of future specialists in socionomic professions, providing their ability to navigate independently in the digital space, strive for self-regulation, search for professionally vital information, and be able to analysing and systematising, use digital technologies as a set of professional solutions, be responsible for the consequences of information dissemination, help prevent cyberbullying, mobbing and other negative phenomena that accompany the formation of a digital society. Digital competence combines knowledge, skills, motivation and responsibility. Thus, taking into account these components, the following components should be distinguished: information and media literacy – knowledge, skills, motivation and responsibility due to the searching, organization, archiving of digital information and its critical thinking, as well as the creation of information objects using digital resources (text, graphics, audio and video); communicative competence – knowledge, skills, motivation and responsibility necessary for various forms of communication (e-mail, chats, blogs, forums, social networks, etc.); technical competence – knowledge, skills, motivation and responsibility which allow effectively and safely using the hardware and software to solve various problems; consumer competence – knowledge, skills, motivation and responsibility in making it possible to solve with the help of digital means and the Internet various everyday tasks that involve meeting needs, solving specific life situations, etc. [92, p. 5].

✉ bei.07@ukr.net (O. I. Bondarchuk); valentyna.balakhtar@npp.nau.edu.ua (V. V. Balakhtar); gorovaya.111@gmail.com (O. O. Gorova); nplytvynenko1@gmail.com (N. P. Lytvynenko); tacya3@gmail.com (N. I. Pinchuk); o.shmanko@chnu.edu.ua (O. V. Shmanko); kiv.arnold20@gmail.com (A. E. Kiv); oleksyuk@fizmat.tnpu.edu.ua (V. P. Oleksiuk)

🌐 http://umo.edu.ua/institutes/cippo/struktura/kafedra-psikhologhiji/sklad/bondarchuk--olena-ivanivna (O. I. Bondarchuk); http://kpppo.nau.edu.ua/staff.php?show=23 (V. V. Balakhtar); http://umo.edu.ua/institutes/cippo/struktura/kafedra-psikhologhiji/sklad/ghorova-olena-oleksandrivna (O. O. Gorova); http://umo.edu.ua/institutes/cippo/struktura/kafedra-psikhologhiji/sklad/pinchuk--natalija-ivanivna (N. I. Pinchuk); http://www.spedagogics.chnu.edu.ua/index.php?page=ua/02personnel&data[15341][caf_pers_id] =2014&commands[15341]=item (O. V. Shmanko); https://ieeexplore.ieee.org/author/38339185000 (A. E. Kiv); http://tnpu.edu.ua/faculty/fizmat/oleksyuk-vasil-petrovich.php (V. P. Oleksiuk)

🆔 0000-0003-3920-242X (O. I. Bondarchuk); 0000-0001-6343-2888 (V. V. Balakhtar); 0000-0001-9022-3432 (O. O. Gorova); 0000-0002-6572-2392 (N. P. Lytvynenko); 0000-0003-1904-804X (N. I. Pinchuk); 0000-0001-9491-4564 (O. V. Shmanko); 0000-0002-0991-2343 (A. E. Kiv); 0000-0003-2206-8447 (V. P. Oleksiuk)

2. Literature review

It should be noted that some aspects of the research problem have already been the subject of attention of researchers. Thus, there were investigated the following: the psychological aspects of computer literacy those contribute to the effective use of digital technologies in both educational and professional activities (Balakhtar, Bondarchuk and Ostapov [6], Balakhtar [7], Bondarchuk, Balakhtar and Balakhtar [14], Bondarchuk et al. [15, 16], Meshko et al. [44], Osadchyi et al. [60, 62, 63], Varina and Shevchenko [101], Varina et al. [102], Zhuravlova et al. [114]); information personality culture of specialists (Gendina et al. [21], Vasina [103], Voitovych et al. [108]); the problem of digital competence and its separate components (Balyk et al. [8], Bezverbnyi and Shyshkina [13], Burov, Bykov and Lytvynova [18], Glazunova et al. [23], Hodovaniuk et al. [25], Iatsyshyn et al. [26], Kartashova, Bakhmat and Plish [27], Kartashova et al. [28, 29], Kiv et al. [30, 31], Klochko et al. [32], Kohut and Shyshkina [33], Krylova-Grek and Shyshkina [37], Kuzminska et al. [38], Marienko et al. [41], Marienko, Nosenko and Shyshkina [42], Martyniuk, Martyniuk and Muzyka [43], Midak et al. [46], Moiseienko et al. [48], Nosenko and Sukhikh [52], Nosenko, Popel and Shyshkina [53], Osadchyi et al. [61], Pinchuk et al. [67], Popel and Shyshkina [68, 69], Prokhorov et al. [72, 73], Rashevska et al. [76], Semerikov and Shyshkina [84], Semerikov et al. [85], Shokaliuk et al. [86], Shyshkina and Kohut [87], Shyshkina, Kohut and Popel [88], Shyshkina [89], Shyshkina and Marienko [90, 91], Soldatova et al. [92], Soroko [93], Trubavina et al. [98], Vlasenko et al. [106], Yaroshenko, Samborska and Kiv [109], Yevtuch et al. [111]), in general, and future specialists of various profiles: teachers (Barna, Hrytsak and Henseruk [10], Barna et al. [11], Mintii et al. [47], Oleksiuk and Spirin [54], Oleksiuk et al. [55], Oleksiuk, Oleksiuk and Vakaliuk [56], Osadcha et al. [57, 58], Osadchyi et al. [59], Spirin et al. [94], Spirin and Vakaliuk [95], Vakaliuk et al. [99], Zaika et al. [112], economists (Hlushak et al. [24], Pryidak et al. [75], specialists in agronomy (Yevstratiev [110]).

The investigations were conducted on the studies of the socio-psychological consequences of the development of digital technologies on the personality of a specialist or a user (Babayeva and Voiskunsky [4], Vakulich [100], Voiskunsky [107]).

There are studies of CSR (Corporate social responsibility) which are focused on the macro and institutional levels [2, 3, 78, 83], and some studies are focused of how CSR influences employees – micro level [22].

On the other hand, many works are devoted to the study of various aspects of psychological and pedagogical problems of professional and personality development of future specialists, including in the context of responsibility and professional ethics (Bezrukova [12], Komarova and Kiv [34], Meshko, Habrusieva and Kryskov [45], Vinoslavskaya [104, 105]). The Digital Competence Framework for Citizens (DigComp 2.1), mentioned in the Digital Competence Framework for Citizens, highlights responsibility as an important indicator of digital competence, but the content of responsibility, in our opinion, is somewhat generalised as the ability to apply and adapt different communications in digital environments alongside the various forms of behaviour, know-how, aspects of cultural and age diversity, using digital technologies [19].

The specificity of the professional activity of specialists of socionomic professions determines the increased requirements for their professional competence, in general, and digital competence, in particular. This is a significant number of factors that are directly dependent on the more general problem of the relationship between science, morality and ethics. Socionomists deal with

social relations at different levels of their implementation in accordance with legal documents (Constitution of Ukraine, Law of Ukraine "On Information" (2011), norms, rules, etc.), which define the concepts of information, information relations, objects of these relations, rights and responsibilities of their participants, information ownership [39].

Currently, many codes of ethics have been developed, which contain relevant rules, including on the responsible use of information, protection of information systems from viruses and artificially created errors in them. Within the ethics of the media, a separate area of digital ethics is identified and designed to address a number of issues due to the needs of selection and evaluation of information, contextualisation of information, information control, information security and reliability of information [50, p. 222]. However, compliance with these rules is not enough. In particular, decision-making in the process of information retrieval requires an appropriate level of formation in the personality of the future specialist of socionomic disciplines of responsibility, which will allow ensuring the regulation of activities based on ethical norms and principles [65, p. 36]. Higher educational institutions should provide the necessary skills and knowledge to determine the social, ethical and environmental impacts of entrepreneurship [9], moreover, integrate ethical and social responsibility aspects in curriculum design [51, 79, 96].

Modern psychological science has accumulated considerable theoretical and practical material on various aspects of personal responsibility, in general (Bezrukova [12], Kosulya [35], Kovalchuk [36], Nazarenko [49]).

3. The aim of the study

The study is aimed at theoretical and empirical research of psychological features of responsibility of future specialists of socionomic professions as an indicator of their digital competence.

4. Theoretical substantiation of responsibility as an indicator of digital competence of future specialists of socionomic professions

The ratio of freedom and responsibility, the ratio of social and personal responsibility, understanding of responsibility as a moral category, action and an important component of education are being significant in the study of responsibility in the context of digital competence of future specialists of socionomic professions [103].

Scientists interpret the concept of responsibility in different ways, namely: the presence of freedom because only free beings can recognize a sense of responsibility [1]; the possibility of fulfilling an obligation or a duty; quality, which is an indicator of reliability and trust; an element of government, responsibility for something, certain obligations to others [77]; "The ability of the individual to understand the compliance of the results of his/her actions with the goals set, recognised in a society or the collective by the norms, as a result of which there is a feeling of complicity in a common cause, and in case of non-compliance, a feeling of unfulfilled duty; the individual's readiness to admit that he or she himself/herself is the cause of the consequences of his/her behaviour and activities" [70, p. 34], etc.

Henceforward, on the one hand, responsibility is inconceivable without freedom, but on the other hand, freedom without responsibility becomes arbitrariness. Behind the solution of this dilemma is the freedom of choice, in general, for everyone in society. Thus, a person always has a choice, however, only a person should be responsible for this choice [1, 35]. Therefore, a person has the right to make decisions and act in accordance with his/her opinion, but he/she must also be personally responsible for the results of his/her actions, and not shift the blame for the negative results of his/her decisions and actions to others. This indicates the phenomenon of "personal responsibility". In addition, in the framework of social responsibility, the latter is seen as a certain relationship between the individual and society, aimed at the benefit of society as a whole, making decisions that meet the goals and values of mankind.

Responsibility in the social context is a certain concept that integrates common human values, ethical norms of behaviour of the government agencies employees, public organisations, research institutions, different levels of business structures etc.

Worth noting the concept of responsibility is formed on the basis of the international standard of social responsibility ISO 26000, developed in 2003 by the Strategic Advisory Group on Social Responsibility from around the world [40]. Ukraine was among these countries. This standard makes clear the relationship between the principles of social responsibility and organisational governance structures.

A significant contribution to the study of aspects of social responsibility in the educational sphere in Ukraine also was made by Kovalchuk [36], Vinoslavskaya [104, 105]. Responsibility from the standpoint of action or not action, but conscious, is considered through a personal form of behaviour – an act (English act) [115]. Investigating the act, Rubinstein [82] considered it as a special kind of action. Bakhtin [5] argued that the content of the act determines the moral behaviour of the individual, his/her value attitude not only to the results of his/her work but also to the information itself; has the following properties: axiological, responsibility, eventfulness. Romenets created in modern Ukrainian psychological science the so-called action paradigm, according to which "an action becomes ... not only a subject but also a methodical basis for the study of the psyche" [97, p. 181]. An act is a "way of personal existence in the world" [81, p. 13].

The concept of action allows the assessment of actions performed by the subject in information retrieval activities, which requires the adoption of certain criteria according to which this assessment can be carried out and determine the degree of responsibility of future socionomic specialists in the implementation of information retrieval activities. In particular, such a criterion may be the result of the performed action (aftereffect), its impact on the well-being of the environment. This requires the definition of some motivation as a motive and the identification of the degree of its morality. After all, a moral act is a holistic act and is manifested in the unity of motive, action and result [80].

Considering the above, it is worth noting that decision-making in action always testifies to freedom of choice, and this choice lies in the moral and ethical plane of the personality of a specialist of socionomic professions, forming a responsible attitude to information as a value based on predicting possible consequences for the use of this information and, however, be prepared to be held accountable for these consequences.

With regard to digital competence, the concept of "competence" should be understood in the sense proposed by European educational experts. Digital competence is "a set of knowledge, skills, values and attitudes, as well as strategies needed to use information and communication

technologies and digital media for effective, critical, creative, independent and ethically-oriented learning" [20]. Digital competence involves the confidence and, at the same time, critical application of digital technologies for the creation, retrieval, processing, exchanging of information at work, in public space and in private communication respectively. At the same time, information and media literacy, basics of programming, algorithmic thinking, working with databases, acquiring Internet and cybersecurity skills, understanding the ethics of working with information (copyright, intellectual property, etc.) are essential too [113]. Thus, digital competence implies the continuous ability of future specialists of socionomic professions to master competencies (knowledge, skills, motivation, and responsibility), confidently, critically and safely choose and apply various information and communication technologies in professional activities. The activity and attitude to it should be based on a sense of responsibility, understanding of the rights and rules of behaviour and activity in the digital world [92]. At the same time, responsibility is correlated with the problem of the safety of modern technologies in the information world.

5. Research methodology

In order to study the characteristics of the responsibility of future specialists of socionomic professions, their attitude to information as a value and willingness to be responsible for its use alongside the impact on the formation of digital competence, we conducted an empirical study. Accordingly, we used the methods of Papakitsa [64] "Responsibility for the use of information" and the authors modified questionnaire "Information" [64], aimed at determining the level of awareness of future specialists of socionomic professions, content and properties of information, responsibility for its dissemination, and adapted methodology "Index of digital competence" by Soldatova et al. [92] – digital competence, blocks "Knowledge" and "Skills", which determine the cognitive and operational components of digital competence of the individual.

The study involves 748 people, including 412 students – future specialists in socionomic professions (future teachers, psychologists, managers) of the 1st, 3rd and 5th grades at the ascertaining stage of the study and 336 students at the stage of testing and modification of psychodiagnostic tools. The research was carried out during 2019–2020 on the basis of the SIHE "University of Educational Management" and Yuriy Fedkovych Chernivtsi National University. The respondents were distributed according to gender: 40.1% – male, 59.9% – female. Statistical processing of the obtained data was performed using the SPSS 23.0.

6. Analysis of the results of empirical research

At the first stage of the empirical research, based on the results of the analysis of the data of the "Information" questionnaire, an insufficient level of awareness by future specialists of socionomic professions of the content and properties of information, responsibility for its dissemination, and the like was found.

Thus, regarding the first question "Information is...", only 22.2% of respondents answered in the affirmative and agreed with the proposed interpretation of the concept of "information". In particular, there were such answers as the following: facts understandable to a person; information about the world around us that is understandable to humans; information that

carries a semantic load; a set of symbols or drawings that are accessible to human perception; information presented in any form and understandable to a person, etc. At the same time, 77.8% of respondents gave answers that may be grouped into two groups. The first group (59.6%) consisted of such answers as, for example, the following: information – this is what you can receive something new, data, knowledge, skills, everything new that surrounds us, the properties of the world. As you can see from the above example, respondents take information for data or ready-made knowledge. The second group (24.4%) – such answers as the like: method of development, means, source of development, method of governing society, means of achieving the goal, and so forth. The answers obtained indicate that this group of respondents considers information as a tool of achieving goals. Besides, there were 2.8% respondents who found it difficult to answer the first question.

Regarding the second question "The main sources of information for me are …", the answers of the respondents according to the semantic units of content analysis have the following distribution: Internet – 91.4%, books – 64.0%, subject expert – 38.9%, mass media – 47.5%. At the same time, 8.2% of respondents gave such answers as, for example, the world around them, data, personal life conclusions, practice. This suggests that respondents understood the questions but were unable to classify their answers. Furthermore, 0.5% of respondents found it difficult to answer in general.

Moreover, 6.8% of respondents understood the essence of the third question "Digital competence is…", giving complete, detailed answers such as the following: the degree of readiness to work in a digital environment, the ability to perceive and process information for their needs using digital tools, possession of digital technologies and their use for successful activity in the modern world, etc. At the same time, other respondents gave incomplete, fragmentary answers, primarily related to the level of knowledge of digital technologies ("know how to act on the Internet, social networks"), mastering modern innovations in the digital world (43.8%) or skills use the Internet, the ability to find certain information, etc. (42.1%). Besides, 7.3% of respondents found it difficult to answer the third question.

The answers to the fourth question "Information has the following properties …" according to the semantic units of content analysis have the following distribution: adequacy – 4.4%, relevance – 8.2%, reliability – 6.4%, accessibility – 6.7 %, objectivity – 3.8% and completeness of information – 2.5%. Furthermore, 11.1% of respondents found it difficult to answer.

Nevertheless, the respondents answered not only according to the semantic units of content analysis but also to several additional answers. We grouped these additional answers into two groups. The first group (64.1%) includes such answers as, for example: cognitive, developmental, usefulness, harmfulness, variability, instability, influence. The second group (35.9%) includes the following answers, e.g.: by content, by volume, by place, by quality, technical and professional. Although these examples of properties cannot be attributed to the group of semantic units that are compiled for this study based on accepted properties of information in the scientific and educational literature, they reflect different aspects of the category of property as a whole in the philosophical plane, and the accepted answer within the framework of this study does not fully express the meaning determined by the semantic units of content analysis.

Only 22.5% of respondents gave the correct answers to the fifth question "Digital technologies are …". These are, for instance, the following: information processing technology, where the tool is a computer and various digital tools; technologies that allow receiving, processing,

transmitting and storing information using a computer; computer technologies that allow the user to effectively search and further process information. At the same time, 76.5% of respondents gave incorrect answers, which can be grouped into two groups. The first group (38.7%) includes the following answers, for instance, as the like: computer, Internet, technical base, technology that creates information, digital technology. As can be seen from the given example, it can be assumed that this group of respondents believes that information and computer technologies are generally a technique, or a separate device or a network itself, while not indicating which particular technique and the subject of processing, without focusing on key words – technology, information – and work will be carried out based on some technical device (computer). From the dictionary of philosophy of science and technology [66], the term technology – is a set of various devices, mechanisms and devices that do not exist in nature and are made by human to meet socio-cultural needs. Thus, the answers of the respondents indicate either a misunderstanding of the term "technology" or a misunderstanding that technology can be tools that do not belong to the so-called new information technologies.

The second group (29.8% of the respondents) includes the following answers, for instance, as the like: type of activity aimed at developing technical means; a set of knowledge that is used to create and use computer technology; the ability to correctly find and use information in their activities. As can be seen from the given examples of answers, the respondents believe that information and computer technologies are a certain amount of knowledge or the abilities and skills of a person to perform any actions. Besides, 9.7% of the respondents found it difficult to answer.

Exclusively 11.3% were able to justify their choice a search engine, answering on the sixth question "I used a search engine to find information. I argue my choice by the fact that ...", e.g.: a user-friendly interface, no advertising, and the ability to search on English-language sites, access speed, and ease of search. Worth noting, the name of the search engines corresponded to the given arguments of the respondents, like the following: the search engine Google is the speed of indexing pages, the absence of advertising. Moreover, 88.7% of respondents could not argue their choice and answered very superficially, for instance: the most popular, convenient, well-known, familiar, used by my friends, and the like. Besides, 0.5% of the respondents found it difficult to answer.

Thus, the analysis of the given as examples answers showed that there is a certain dissonance between the high level of development of digital technology in general and the low level of knowledge of the content of the information concept, the patterns of its existence, understanding of the variability of information sources, including methods of searching for information in the network, using search engines and the responsible attitude to its distribution.

The latter conclusion was confirmed by the analysis of the data of the "Responsibility" questionnaire, aimed at studying the attitude to information as a value and the willingness to bear responsibility for the consequences of its use.

The results obtained indicate that only 17.0% of the respondents have a high level of responsibility in the context of receiving and disseminating information (table 1). Other respondents do not fully (56.7%) or do not understand at all (27.3%) that the possession of information is already valuable. This indicates that information that satisfies the need for personal development, learning new things to prepare for a future profession, and is not of value for the respondents. They also do not realise the possible negative consequences of using the information in their

activities and, as a result, do not fully realise their responsibility for the consequences of using this information, in general. In addition, these respondents often underestimate the negative consequences of spreading unnecessary information about themselves, which can negatively affect their psychological and even, sometimes, physical safety.

Table 1
Distribution of researched future specialists of socionomic professions by levels of responsibility.

Levels of responsibility	Development indicators (number of respondents, in %)
Low	27.3
Average	56.7
High	17.0

At the same time, according to the criterion χ^2, the peculiarities of the responsibility of *future specialists of socionomic professions of different genders* are stated (table 2).

Table 2
Features of responsibility of future specialists of socionomic professions depending on gender.

Gender of the respondents	Levels of responsibility (number of respondents, in%)		
	Low	Average	High
Female	19.9	56.9	25.2
Male	34.7	56.5	8.8

As follows from table 1, a high level of responsibility was found in 25.2%, future female specialists against 8.8% of future male socionomic professions, while a low level of competence was found in 34.7% of male, and among female – only in 19.9 % (p <0.05). Thus, the future specialists of socionomic professions of the female gender have a slightly higher rate of development of digital competence than males.

Differences in the development of responsibility of the respondents depending on gender are consistent with the position of the gender approach, which states that women strive for social activity, are more responsible for their actions, seek to control their behaviour in accordance with social expectations [17].

The obtained data also correlate with those obtained by [74]. He highlights that "in the implementation of responsible cases in female students to a greater extent than in male students, the desire to adhere to ethical norms prevails. More often than students, they prioritize the public over the personal". Thus, when analysing the benefits of meaningful signs of responsibility by young people, the scientist received the following data according to the following components: "The desire to comply with ethical standards" (female students – 78%, male students – 68%), "Guidance of duty" (female students – 69%, male students – 62%), "Priority of publicity over personal" (female students – 62%, male students – 51%) [74, p. 171].

Thus, according to the results of empirical research, responsibility needs special development for a significant number of future specialists in socionomic professions.

On the other hand, in accordance with the purpose of our study, the levels of development of cognitive and operational components of digital competence were established by the relevant blocks "Knowledge" and "Skills" of the methodology "Index of Digital Competence" by Soldatova et al. [92].

Hence, 9.3% of respondents have a high level of development of the cognitive component of digital competence, are able to use the Internet for education, install their own software update settings on the device used to work on the Internet. At the same time, 30.5% of the respondents are characterised by an average and 60.2% – a low level of development of the cognitive component of information readiness. The results showed that the respondents are not awareness enough about the various mobile applications and the possibilities of its usage; the Internet is used only to maintain relationships with friends, make purchases, payments and more (table 3).

Table 3
Distribution of researched future specialists of socionomic professions by levels of development of cognitive component of digital competence.

Levels of development of the cognitive component digital competence	Number of respondents, in%
Low	60.2
Average	30.5
High	9.3

Examining the operational component of digital competence of future specialists of socionomic professions, difficulties in understanding the content and analysis of the semantic structure of the text, in constructing questions about missing information, finding a piece of information from another text. Thus, only 9.8% of respondents are able to use special search engine settings (operators) to find specific information; make payments using electronic payment systems and Internet banking, use cloud technologies to store and work with own content (for example, Google Docs, Etherpad, Microsoft Office Live), check the reliability of software sources, etc. 52.6% of respondents are able to browse the network in order to search people with whom they would like to communicate, find inaccurate information, mark ("checking") in those places where they have been (e.g., in a social network or through special services), etc. Moreover, 37.6% of respondents can only post their photos, posts, statuses on social networks and special services (Twitter, Tumbrl, Instagram), find the most profitable offers of goods and services on the Internet, interact with members of various Internet communities (via Twitter, forums, wikis, etc.), create and post videos on a special service (e.g. YouTube), etc.

Regarding the second question of the questionnaire "Give your name to the text", 52.7% of respondents formulated the title of the text according to its content and gave the following answers: information inequality in the world, opportunities for social networks to study and work, setting up antivirus programs, cookies files, to protect personal information. There was not found the respondents who would hesitate to answer. However, 47.3% of respondents could not create and post videos on a special service (e.g., YouTube), create multiple user accounts for a particular computer, change their passwords, settings for accessing their information on

social networks for different user groups etc.

47.3% of respondents coped with the task and in accordance with the content of the text formulated queries on the third question "Please formulate a query for the search engine for the missing, in your opinion, information in the text", for example the following: methods of combating information inequality, with information crime in Ukraine, information terrorism in the world, problems of access to information in Ukraine, digital gap and measures to eliminate it. From the given answers to this question of the questionnaire it should be noted that future specialists of socionomic professions are interested only in the question concerning information processes in the world, and Ukraine respectively. 11.6% of the respondents hesitated with the answer. At the same time, 41.1% of respondents formulated queries that do not relate to the content of the text. Accordingly, it can be assumed that the respondents either did not understand the instructions or did not understand the content of the proposed text, for instance: earnings on the Internet, globalization (not understanding the term – author's note) in Ukraine, whether these problems can be solved (what problems – author's note) and in what ways.

To the fourth question "Did you notice information that is not related to the topic of the text? If so, indicate the number of the sentence or paragraph", only 26.1% of respondents were able to find and indicate this fragment, 8.2% found it difficult to answer. At the same time, 65.7% of respondents could not find and accordingly indicated that they did not have such information, or pointed to an incorrect fragment of the text.

According to the generalization of the obtained results, the levels of development of the operational component of digital competence are determined (table 4).

Table 4
Distribution of researched future specialists of socionomic professions by levels of development of operational component of digital competence.

Levels of operating room development component of digital competence	Number of respondents, in%
Low	37.6
Average	52.6
High	9.8

As it follows from the data given in table 4, a small number of respondents have (9.8%) a high level of development of the operational component of digital competence

Hence, 52.6% and 37.6% of the respondents characterise, respectively, the average and low levels of development of the operational component of digital competence of future specialists in socionomic professions.

Thus, we can conclude that future specialists of socionomic professions are insufficiently prepared to develop "normal" information literacy and skills of semantic analysis of information as the basis of their digital competence in professional activities and responsibility for its use and dissemination, which in our opinion may be explained by gaps in the modern education system.

7. Conclusions

Responsibility is an important indicator of the digital competence of future specialists in socionomic professions, which determines their conscious and responsible activities in the context of obtaining and disseminating information in the digital space, contributes to their own psychological safety and psychological safety of other members of digital community.

The results of the empirical study revealed an insufficient level of both responsibility and cognitive-operational components of digital competence for a significant number of future specialists in socionomic professions.

Furthermore, statistically significant differences in the manifestations of responsibility of future specialists depending on gender were found: female respondents were slightly more responsible for the consequences of information dissemination than male ($p < 0.05$). Such differences appear to be gender in nature, as women live in a more controlled and rigidly structured world than men. Therefore, women are more focused on complying with regulations on their activities, in this case, educational and professional.

There were no statistically significant differences in both responsibility and digital competence, depending on the profession of the representative of the socionomic profession.

Men are more likely to be characterised with concepts of independence and initiative, and reinforced with the norms of "anti-emotionality" [17] which determines their greater autonomy and self-control.

In the perspectives, it is state the expediency of promoting the development of responsibility of future specialists of socionomic professions as an indicator of their digital competence, which can be provided in a specially organized psychological training.

References

[1] Agazzi, E., 2009. Why has science also moral dimensions? *Questions of philosophy*, (10), pp.93–104. Available from: http://vphil.ru/index.php?option=com_content&task=view&id=73.

[2] Aguilera, R.V., Rupp, D.E., Williams, C.A. and Ganapathi, J., 2007. Putting the s back in corporate social responsibility: A multilevel theory of social change in organizations. *Academy of management review*, 32(3), pp.836–863. Available from: https://doi.org/10.5465/amr.2007.25275678.

[3] Aguinis, H. and Glavas, A., 2012. What we know and don't know about corporate social responsibility: A review and research agenda. *Journal of management*, 38(4), pp.932–968. Available from: https://doi.org/10.1177/0149206311436079.

[4] Babayeva, Y.D. and Voiskunsky, A.E., 1998. Psikhologicheskie posledstviia informatizatcii (Psychological consequences of informatization). *Psychological journal*, 19(1), pp.89–100. Available from: http://www.psy.msu.ru/science/public/voyskunskiy/babaeva&voyskunskiy_1998.pdf.

[5] Bakhtin, M.M., 1986. To the philosophy of action. *Philosophy and sociology of science and technology. yearbook 1984-1985*. pp.80–160.

[6] Balakhtar, K.S., Bondarchuk, O.I. and Ostapov, S.E., 2022. Creativity of foreign languages

teachers in Ukrainian higher education institutions: empirical data. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020*. University of Educational Management, Kyiv: SciTePress.

[7]   Balakhtar, V.V., 2018. Influence of information and communication technologies for forming professional personal competence of social work specialist. *Information technologies and learning tools*, 66(4), p.93–104. Available from: https://doi.org/10.33407/itlt.v66i4.2066.

[8]   Balyk, N., Vasylenko, Y., Shmyger, G., Oleksiuk, V. and Skaskiv, A., 2019. Design of approaches to the development of teacher's digital competencies in the process of their lifelong learning. *CEUR Workshop Proceedings*, 2393, pp.204–219.

[9]   Bampton, R. and Maclagan, P., 2005. Why teach ethics to accounting students? a response to the sceptics. *Business Ethics: A European Review*, 14(3), pp.290–300. Available from: https://doi.org/10.1111/j.1467-8608.2005.00410.x.

[10] Barna, I., Hrytsak, L. and Henseruk, H., 2020. The use of information and communication technologies in training ecology students. *E3S Web of Conferences*, 166, p.10027. Available from: https://doi.org/10.1051/e3sconf/202016610027.

[11] Barna, I.M., Hrytsak, L.R., Henseruk, H.R. and Lytvynova, S.H., 2022. Features of utilization information and communication technology in the process of teaching the "Environmental Impact Assessment" course. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020*. University of Educational Management, Kyiv: SciTePress.

[12] Bezrukova, O.A., 2015. *Social responsibility in modern ukrainian society: sociological conceptualization and experience of empirical research.* Zaporizhyia: Classic private university.

[13] Bezverbnyi, I.A. and Shyshkina, M.P., 2022. The use of serverless technologies to support data processing within the open learning and research systems. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020*. University of Educational Management, Kyiv: SciTePress.

[14] Bondarchuk, O., Balakhtar, V. and Balakhtar, K., 2020. Monitoring of the quality of the psychological component of teachers' activity of higher education institutions based on Google Forms. *E3S Web of Conferences*, 166, p.10024. Available from: https://doi.org/10.1051/e3sconf/202016610024.

[15] Bondarchuk, O.I., Balakhtar, V.V., Balakhtar, K.S., Kyrichuk, V.O., Yakubovska, N.O., Ostapov, S.E. and Grubi, T.V., 2022. Experience of using ICT tools for monitoring the psychological component of the quality of teacher's activity of the higher education institutions. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020*. University of Educational Management, Kyiv: SciTePress.

[16] Bondarchuk, O.I., Balakhtar, V.V., Ushenko, Y.O., Gorova, O.O., Osovska, I.M., Pinchuk, N.I., Yakubovska, N.O., Balakhtar, K.S. and Moskalov, M.V., 2022. The psychological safety of the educational environment of Ukrainian higher education institutions in a pandemic: empirical data of a comparative analysis of participants' assessments studying online. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020*. University of Educational Management, Kyiv: SciTePress.

[17] Burn, S.M., 1995. *The social psychology of gender.* McGraw-Hill Humanities/Social Sciences/Languages.

[18] Burov, O., Bykov, V. and Lytvynova, S., 2020. ICT evolution: From single computational tasks to modeling of life. *CEUR Workshop Proceedings*, 2732, pp.583–590.

[19] Description of the framework of digital competence for citizens of Ukraine. DigCompUA for Citizens 2.1, 2021. Available from: https://thedigital.gov.ua/storage/uploads/files/news_post/2021/3/mintsifra-oprilyudnyue-ramku-tsifrovoi-kompetentnosti-dlya-gromadyan/%D0%9E%D0%A0%20%D0%A6%D0%9A.pdf.

[20] Ferrari, A., 2012. *Digital competence in practice: An analysis of frameworks.* (JRC Technical Reports, JRC68116). Joint Research Centre of the European Commission, Luxembourg: Publications Office of the European Union. Available from: https://doi.org/10.2791/82116.

[21] Gendina, N.I., Kolkova, N.I., Skipor, I.L. and Starodubova, G.A., 2002. *Formation of information culture of the person in libraries and educational institutions.* Moscow. Available from: https://tinyurl.com/urh79k3h.

[22] Glavas, A., 2016. Corporate social responsibility and organizational psychology: An integrative review. *Frontiers in psychology*, 7, p.144. Available from: https://doi.org/10.3389/fpsyg.2016.00144.

[23] Glazunova, O., Voloshyna, T., Gurzhii, A., Korolchuk, V., Parhomenko, O., Sayapina, T. and Semyhinivska, T., 2020. Cloud resources and services for development of self-educational competence of future IT specialists: Business process modelling and examples of using. *CEUR Workshop Proceedings*, 2732, pp.591–606.

[24] Hlushak, O.M., Semenyaka, S.O., Proshkin, V.V., Sapozhnykov, S.V. and Lytvyn, O.S., 2020. The usage of digital technologies in the university training of future bachelors (having been based on the data of mathematical subjects). *CEUR Workshop Proceedings*, 2643, pp.210–224.

[25] Hodovaniuk, T.L., Makhometa, T.M., Tiahai, I.M., Medvedieva, M.O., Pryshchepa, S.M. and Voznyak, A.V., 2022. Educational trainings as one of the effective forms of digital competence development of secondary school teachers. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020.* University of Educational Management, Kyiv: SciTePress.

[26] Iatsyshyn, A.V., Kovach, V.O., Lyubchak, V.O., Zuban, Y.O., Piven, A.G., Sokolyuk, O.M., Iatsyshyn, A.V., Popov, O.O., Artemchuk, V.O. and Shyshkina, M.P., 2020. Application of augmented reality technologies for education projects preparation. *CEUR Workshop Proceedings*, 2643, pp.134–160.

[27] Kartashova, L.A., Bakhmat, N.V. and Plish, I.V., 2018. Development of teacher's digital competency in terms of information and educational environment of a secondary education establishment. *Information technologies and learning tools*, 68(6), p.193–205. Available from: https://doi.org/10.33407/itlt.v68i6.2543.

[28] Kartashova, L.A., Gurzhii, A.M., Zaichuk, V.O., Sorochan, T.M. and Zhuravlev, F.M., 2022. Digital twin of an educational institution: an innovative concept of blended learning. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020.* University of Educational Management, Kyiv: SciTePress.

[29] Kartashova, L.A., Prykhodkina, N.O., Makhynia, T.A., Tymoshko, H.M., Sholokh, O.A. and Zhuravlev, F.M., 2022. Social media as a strategic tool in school management: experience of Ukraine and USA. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020.* University of Educational Management, Kyiv: SciTePress.

[30] Kiv, A.E., Shyshkina, M.P., Semerikov, S.O., Striuk, A.M., Striuk, M.I. and Shalatska, H.M., 2020. CTE 2019 - When cloud technologies ruled the education. *CEUR Workshop Proceedings*, 2643, pp.1–59.

[31] Kiv, A.E., Shyshkina, M.P., Semerikov, S.O., Striuk, A.M. and Yechkalo, Y.V., 2020. AREdu 2019 – How augmented reality transforms to augmented learning. *CEUR Workshop Proceedings*, 2547, pp.1–12.

[32] Klochko, O.V., Fedorets, V.M., Shyshkina, M.P., Branitska, T.R. and Kravets, N.P., 2022. Using the augmented/virtual reality technologies to improve the health-preserving competence of a physical education teacher. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020.* University of Educational Management, Kyiv: SciTePress.

[33] Kohut, U. and Shyshkina, M., 2020. Providing the fundamentalisation of operations research learning using maxima system. *CEUR Workshop Proceedings*, 2732, pp.1082–1096.

[34] Komarova, E.V. and Kiv, A.E., 2020. Alternatives in biological education as a way to implement an ethical approach to the formation of subject and professional competence of future teachers. *CEUR Workshop Proceedings*, 2731, pp.47–60.

[35] Kosulya, I.Y., 2010. "Social responsibility": approaches to the definition and analysis of the concept. *Sociospace: an interdisciplinary collection of scientific papers on sociology and social work*, (1), pp.185–188.

[36] Kovalchuk, O.S., 2008. Increasing the social responsibility of the engineer in the information society. *Bulletin of the Chernihiv State Pedagogical University*, I(59), pp.165–170.

[37] Krylova-Grek, Y. and Shyshkina, M., 2020. Blended learning method for improving students' media literacy level. *CEUR Workshop Proceedings*, 2732, pp.1272–1285.

[38] Kuzminska, O., Mazorchuk, M., Morze, N., Pavlenko, V. and Prokhorov, A., 2019. Study of Digital Competence of the Students and Teachers in Ukraine. *Communications in computer and information science*, 1007, pp.148–169. Available from: https://doi.org/10.1007/978-3-030-13929-2_8.

[39] Law of Ukraine "On Information", 1992. Available from: http://zakon2.rada.gov.ua/laws/show/2938-17.

[40] Lazorenko, O. and Kolyshko, R., 2008. *CSR Guidance. Basic Information on Corporate Social Responsibility.* Kyiv: Energija.

[41] Marienko, M., Nosenko, Y., Sukhikh, A., Tataurov, V. and Shyshkina, M., 2020. Personalization of learning through adaptive technologies in the context of sustainable development of teachers' education. *E3S Web of Conferences*, 166, p.10015. Available from: https://doi.org/10.1051/e3sconf/202016610015.

[42] Marienko, M.V., Nosenko, Y.H. and Shyshkina, M.P., 2020. Personalization of learning using adaptive technologies and augmented reality. *CEUR Workshop Proceedings*, 2731, pp.341–356.

[43] Martyniuk, O.O., Martyniuk, O.S. and Muzyka, I.O., 2020. Formation of informational and

digital competence of secondary school students in laboratory work in physics. *CEUR Workshop Proceedings*, 2879, pp.366–383.

[44] Meshko, H., Meshko, O., Drobyk, N. and Mikheienko, O., 2020. Psycho-pedagogical training as a mean of forming the occupational stress resistance of future teachers. *E3S Web of Conferences*, 166, p.10023. Available from: https://doi.org/10.1051/e3sconf/202016610023.

[45] Meshko, H.M., Habrusieva, N.V. and Kryskov, A.A., 2021. Research of professional responsibility of students of technical specialities by means of information and communication technologies. *Journal of physics: Conference series*, 1840(1), p.012058. Available from: https://doi.org/10.1088/1742-6596/1840/1/012058.

[46] Midak, L.Y., Kravets, I.V., Kuzyshyn, O.V., Kostiuk, T.V., Buzhdyhan, K.V., Lutsyshyn, V.M., Hladkoskok, I.O., Kiv, A.E. and Shyshkina, M.P., 2021. Augmented reality while studying radiochemistry for the upcoming chemistry teachers. *CEUR Workshop Proceedings*, 2898, pp.147–158.

[47] Mintii, I.S., Vakaliuk, T.A., Ivanova, S.M., Chernysh, O.A., Hryshchenko, S.M. and Semerikov, S.O., 2021. Current state and prospects of distance learning development in Ukraine. *CEUR Workshop Proceedings*, 2898, pp.41–55.

[48] Moiseienko, M.V., Moiseienko, N.V., Kohut, I.V. and Kiv, A.E., 2020. Digital competence of pedagogical university student: Definition, structure and didactical conditions of ormation. *CEUR Workshop Proceedings*, 2643, pp.60–70.

[49] Nazarenko, K.S., 2016. Conceptualization of the concept of "social responsibility". *Bulletin of NTUU "KPI". Politology. Sociology. Law: a collection of scientific papers*, 1/2 (29/30), pp.70–75.

[50] Nazarov, V.N., 2005. *Applied ethics*. Gardariki.

[51] Nelson, J.K., Poms, L.W. and Wolf, P.P., 2012. Developing efficacy beliefs for ethics and diversity management. *Academy of management learning & education*, 11(1), pp.49–68. Available from: http://www.jstor.org/stable/23100456.

[52] Nosenko, Y. and Sukhikh, A., 2019. The method for forming the health-saving component of basic school students' digital competence. *CEUR Workshop Proceedings*, 2393, pp.178–190.

[53] Nosenko, Y.H., Popel, M.V. and Shyshkina, M.P., 2019. The state of the art and perspectives of using adaptive cloud-based learning systems in higher education pedagogical institutions (the scope of Ukraine). *CEUR Workshop Proceedings*, 2433, pp.173–183.

[54] Oleksiuk, V. and Spirin, O., 2022. The experience of using cloud labs in teaching Linux operating system. *Communications in Computer and Information Science*.

[55] Oleksiuk, V.P., Oleksiuk, O.R., Spirin, O.M., Balyk, N.R. and Vasylenko, Y.P., 2020. Some experience in maintenance of an academic cloud. *CEUR Workshop Proceedings*, 2879, pp.165–178.

[56] Oleksiuk, V.P., Oleksiuk, O.R. and Vakaliuk, T.A., 2022. An experiment on the implementation the methodology of teaching cloud technologies to future Computer Science teachers. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020*. University of Educational Management, Kyiv: SciTePress.

[57] Osadcha, K., Osadchyi, V., Kruglyk, V. and Spirin, O., 2022. Modeling of the adaptive

system of individualization and personalization of future specialists' professional training in the conditions of blended learning. *CEUR Workshop Proceedings*, 3104, pp.43–54.

[58] Osadcha, K.P., Osadchyi, V.V., Kruglyk, V.S. and Spirin, O.M., 2022. Analysis and summarization of the experience of developing adaptive learning systems in higher education. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020*. University of Educational Management, Kyiv: SciTePress.

[59] Osadchyi, V., Krasheninnik, I., Spirin, O., Koniukhov, S. and Diuzhykova, T., 2020. Personalized and adaptive ICT-enhanced learning: A brief review of research from 2010 to 2019. *CEUR Workshop Proceedings*, 2732, pp.559–571.

[60] Osadchyi, V., Varina, H., Falko, N., Osadcha, K. and Katkova, T., 2021. The peculiarities of the usage of AR technologies in the process of hardiness of future professionals. *Journal of physics: Conference series*, 1840(1), p.012059. Available from: https://doi.org/10.1088/1742-6596/1840/1/012059.

[61] Osadchyi, V.V., Varina, H.B., Osadcha, K.P., Kovalova, O.V., Voloshyna, V.V., Sysoiev, O.V. and Shyshkina, M.P., 2021. The use of augmented reality technologies in the development of emotional intelligence of future specialists of socionomic professions under the conditions of adaptive learning. *CEUR Workshop Proceedings*, 2898, pp.269–293.

[62] Osadchyi, V.V., Varina, H.B., Osadcha, K.P., Prokofieva, O.O., Kovalova, O.V. and Kiv, A.E., 2020. Features of implementation of modern AR technologies in the process of psychological and pedagogical support of children with autism spectrum disorders. *CEUR Workshop Proceedings*, 2731, pp.263–282.

[63] Osadchyi, V.V., Varina, H.B., Prokofiev, E.H., Serdiuk, I. and Shevchenko, S.V., 2020. Use of AR/VR technologies in the development of future specialists' stress resistance: Experience of STEAM-laboratory and laboratory of psychophysiological research cooperation. *CEUR Workshop Proceedings*, 2732, pp.634–649.

[64] Papakitsa, E.K., 2013. The responsibility as an indicator of information readiness of future engineers to their profession. *Bulletin of the Perm University*, (3(15)), pp.133–136.

[65] Papakitsya, O.K., 2014. *Psychological features of development of information readiness of future engineers for professional activity*. The dissertation on competition of a scientific degree of the candidate of psychological sciences 19.00.07 - pedagogical and age psychology. NPU named after M. P. Drahomanov.

[66] *Philosophical encyclopedic dictionary*, 2003. INFRA-M.

[67] Pinchuk, O.P., Sokolyuk, O.M., Burov, O.Y. and Shyshkina, M.P., 2019. Digital transformation of learning environment: Aspect of cognitive activity of students. *CEUR Workshop Proceedings*, 2433, pp.90–101.

[68] Popel, M.V. and Shyshkina, M.P., 2018. The cloud technologies and augmented reality: The prospects of use. *CEUR Workshop Proceedings*, 2257, pp.232–236.

[69] Popel, M.V. and Shyshkina, M.P., 2019. The areas of educational studies of the cloud-based learning systems. *CEUR Workshop Proceedings*, 2433, pp.159–172.

[70] Prikhodko, Y.O., Prikhodko, Y.O. and Yurchenko, V.I., 2012. *Psychological dictionary-reference book*. Karavela.

[71] 2016. Project "Digital Agenda of Ukraine" – 2020. Conceptual Background (version 1.0). Available from: https://ucci.org.ua/uploads/files/58e78ee3c3922.pdf.

[72] Prokhorov, O.V., Lisovichenko, V.O., Mazorchuk, M.S. and Kuzminska, O.H., 2020. Developing a 3D quest game for career guidance to estimate students' digital competences. *CEUR Workshop Proceedings*, 2731, pp.312–327.

[73] Prokhorov, O.V., Lisovichenko, V.O., Mazorchuk, M.S. and Kuzminska, O.H., 2022. Digital technology implementation for students' involvement base on 3D quest game for career guidance and estimating students' digital competences. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020*. University of Educational Management, Kyiv: SciTePress.

[74] Pryadein, V.P., 2001. *Responsibility as a systemic quality of personality*. Ekaterinburg: Publishing house of UrGPU.

[75] Pryidak, T.B., Yaloveha, L.V., Leha, O.V., Mysnyk, T.H. and Zoria, S.P., 2019. Digital competence development as a condition for ensuring future economists' competitiveness. *Information technologies and learning tools*, 73(5), p.28–47. Available from: https://doi.org/10.33407/itlt.v73i5.3035.

[76] Rashevska, N.V., Semerikov, S.O., Zinonos, N.O., Tkachuk, V.V. and Shyshkina, M.P., 2020. Using augmented reality tools in the teaching of two-dimensional plane geometry. *CEUR Workshop Proceedings*, 2731, pp.79–90.

[77] Responsibility, 2021. Available from: http://www.oed.com/view/Entry/163862?redirectedFrom=responsibility#eid.

[78] Rodrigo, P. and Arenas, D., 2008. Do employees care about CSR programs? a typology of employees according to their attitudes. *Journal of business ethics*, 83(2), pp.265–283. Available from: https://doi.org/10.1007/s10551-007-9618-7.

[79] Rodríguez-Gómez, S., Garde-Sánchez, R., Arco-Castro, M.L. and López-Pérez, M.V., 2020. Does the use of social media tools in classrooms increase student commitment to corporate social responsibility? *Frontiers in psychology*, 11, p.3690. Available from: https://doi.org/10.3389/fpsyg.2020.589250.

[80] Rogozha, M.M., 2010. Moralnyi postupok i moralnoe deistvie: kriterii otcenki (Moral act and moral action: evaluation criteria). *Eticheskaia mysl*, (10). Available from: https://cyberleninka.ru/article/n/moralnyy-postupok-i-moralnoe-deystvie-kriterii-otsenki.

[81] Romanets, V.A., 2006. The act and rise of canonical psychology. In: V.O. Tatenko, ed. *Man. Subject. Act. Philosophical and psychological studies*. Kyiv: Lybid, pp.11–36.

[82] Rubinstein, S.L., 2002. *Fundamentals of general psychology*. Piter.

[83] Rupp, D.E., Shao, R., Thornton, M.A. and Skarlicki, D.P., 2013. Applicants' and employees' reactions to corporate social responsibility: The moderating effects of first-party justice perceptions and moral identity. *Personnel psychology*, 66(4), pp.895–933. Available from: https://doi.org/10.1111/peps.12030.

[84] Semerikov, S.O. and Shyshkina, M.P., 2017. Preface. *CEUR Workshop Proceedings*, 2168.

[85] Semerikov, S.O., Teplytskyi, I.O., Soloviev, V.N., Hamaniuk, V.A., Ponomareva, N.S., Kolgatin, O.H., Kolgatina, L.S., Byelyavtseva, T.V., Amelina, S.M. and Tarasenko, R.O., 2021. Methodic quest: Reinventing the system. *Journal of physics: Conference series*, 1840(1), p.012036. Available from: https://doi.org/10.1088/1742-6596/1840/1/012036.

[86] Shokaliuk, S.V., Bohunenko, Y.Y., Lovianova, I.V. and Shyshkina, M.P., 2020. Technologies of distance learning for programming basics on the principles of integrated development of key competences. *CEUR Workshop Proceedings*, 2643, pp.548–562.

[87] Shyshkina, M. and Kohut, U., 2019. The method of using the Maxima system for operations research learning. *CEUR Workshop Proceedings*, 2393, pp.81–92.

[88] Shyshkina, M., Kohut, U. and Popel, M., 2019. The comparative analysis of the cloud-based learning components delivering access to mathematical software. *CEUR Workshop Proceedings*, 2393, pp.93–104.

[89] Shyshkina, M.P., 2018. The problems of personnel training for STEM education in the modern innovative learning and research environment. *CEUR Workshop Proceedings*, 2257, pp.61–65.

[90] Shyshkina, M.P. and Marienko, M.V., 2020. Augmented reality as a tool for open science platform by research collaboration in virtual teams. *CEUR Workshop Proceedings*, 2547, pp.107–116.

[91] Shyshkina, M.P. and Marienko, M.V., 2020. The use of the cloud services to support the math teachers training. *CEUR Workshop Proceedings*, 2643, pp.690–704.

[92] Soldatova, G.U., Nestik, T.A., Rasskazova, E.I. and Zotova, E.Y., 2013. *Tcifrovaia kompetentnost podrostkov i roditelei. Rezultaty vserossiiskogo issledovaniia (Digital competence of teenagers and parents. Results of the all-Russian study)*. Internet Development Foundation. Available from: https://ifap.ru/library/book536.pdf.

[93] Soroko, N.V., 2020. Methodology for teachers' digital competence developing through the use of the STEAM-oriented learning environment. *CEUR Workshop Proceedings*, 2732, pp.1260–1271.

[94] Spirin, O., Oleksiuk, V., Balyk, N., Lytvynova, S. and Sydorenko, S., 2019. The blended methodology of learning computer networks: Cloud-based approach. *CEUR Workshop Proceedings*, 2393, pp.68–80.

[95] Spirin, O.M. and Vakaliuk, T.A., 2019. Formation of information and communication competence of bachelors of informatics on the use of cloud-oriented learning environment. *Information technologies and learning tools*, 72(4), p.226–245. Available from: https://doi.org/10.33407/itlt.v72i4.3262.

[96] Stonkutė, E., Vveinhardt, J. and Sroka, W., 2018. Training the csr sensitive mind-set: The integration of csr into the training of business administration professionals. *Sustainability*, 10(3). Available from: https://doi.org/10.3390/su10030754.

[97] Tatenko, V.O., Kirichuk, O.V. and Roments, A.V., 1999. Action as a principle of constructing the theory and history of psychology. *Fundamentals of psychology*. 4th ed. Kyiv: Lybid, pp.169–193.

[98] Trubavina, I., Dotsenko, S., Naboka, O., Chaikovskyi, M. and Meshko, H., 2021. Developing digital competence of teachers of humanitarian disciplines in the conditions of COVID-19 quarantine measures. *Journal of physics: Conference series*, 1840(1), p.012052. Available from: https://doi.org/10.1088/1742-6596/1840/1/012052.

[99] Vakaliuk, T.A., Spirin, O.M., Lobanchykova, N.M., Martseva, L.A., Novitska, I.V. and Kontsedailo, V.V., 2021. Features of distance learning of cloud technologies for the organization educational process in quarantine. *Journal of physics: Conference series*, 1840(1), p.012051. Available from: https://doi.org/10.1088/1742-6596/1840/1/012051.

[100] Vakulich, T.M., 2006. *Psychological factors of prevention of Internet addiction of teenagers*. Dissertation ... psychol. science: 19.00.07. TsIPPO APN of Ukraine, Kyiv.

[101] Varina, H. and Shevchenko, S., 2020. The peculiarities of using the computer complex

HC-psychotests in the process of psychodiagnosis of the level of development of future specialists' mental capacity. *E3S Web of Conferences*, 166, p.10025. Available from: https://doi.org/10.1051/e3sconf/202016610025.

[102] Varina, H.B., Osadcha, K.P., Shevchenko, S.V. and Glazunova, O.G., 2022. Features of implementation of augmented and virtual reality technologies in the psycho-correctional process of development of emotional intelligence of high school students in terms of professional self-determination. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020*. University of Educational Management, Kyiv: SciTePress.

[103] Vasina, E.Y., 2007. *Formirovanie informatcionnoi kultury (Formation of student information culture)*. Ekaterinburg: ZNB UGTU-UPI. Available from: http://lib.urfu.ru/file.php/100/Nauchno-bibliograficheskie_ukazateli/ZNB_UrFU_ Formirovanie_informacionnoi_kultury_2007.pdf.

[104] Vinoslavskaya, O.V., 2002. *Collection of scientific works of teachers and graduate students of the faculty of management and marketing*. Kyiv: IPC Polytechnic Publishing House, pp.345–371.

[105] Vinoslavskaya, O.V., 2005. Technology of formation of professional ethics of managers. In: L.M. Karamushka, ed. *Technologies of work of organizational psychologists*. Kyiv: INCOS, pp.170–191.

[106] Vlasenko, K.V., Rovenska, O.H., Lovianova, I.V., Kondratyeva, O.M., Achkan, V.V., Tkachenko, Y.M. and Shyshkina, M.P., 2022. The implementation of inquiry-based learning in the organization of students' research activities on Mathematics. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020*. University of Educational Management, Kyiv: SciTePress.

[107] Voiskunsky, A.E., 2004. Psychological characteristics of the potentially negative consequences of the use of computer technology. Moscow: ARK Tsentr, pp.33–37.

[108] Voitovych, O.P., Horbatiuk, R.M., Voitovych, I.S., Shyshkina, M.P. and Shostakivska, N.M., 2022. Formation of information culture of vocational education specialists. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020*. University of Educational Management, Kyiv: SciTePress.

[109] Yaroshenko, O.G., Samborska, O.D. and Kiv, A.E., 2022. Experimental verification of efficiency of the formation of information and digital competence of bachelors of primary education based on an integrated approach. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020*. University of Educational Management, Kyiv: SciTePress.

[110] Yevstratiev, S., 2020. Digital competences of junior bachelors in agronomy. *Educological discourse*, (3), p.185–205. Available from: https://doi.org/10.28925/2312-5829.2020.3.11.

[111] Yevtuch, M.B., Fedorets, V.M., Klochko, O.V., Shyshkina, M.P. and Dobryden, A.V., 2021. Development of the health-preserving competence of a physical education teacher on the basis of N. Bernstein's theory of movements construction using virtual reality technologies. *CEUR Workshop Proceedings*, 2898, pp.294–314.

[112] Zaika, O.V., Vakaliuk, T.A., Riabko, A.V., Kukharchuk, R.P., Mintii, I.S. and Semerikov, S.O., 2021. Selection of online tools for creating math tests. *CEUR Workshop Proceedings*,

2898, pp.82–106.

[113] Zaporozhtseva, Y.S., 2019. Information and digital competence as a component of the modern educational process. *Innovative pedagogy*, 1(12), pp.79–82. Available from: https://doi.org/10.32843/2663-6085.2019.12-1.15.

[114] Zhuravlova, L.P., Pomytkina, L.V., Lytvynchuk, A.I., Mozharovska, T.V. and Zhuravlov, V.F., 2022. Psychological security in the conditions of using information and communication technologies. In: S. Semerikov, V. Osadchyi and O. Kuzminska, eds. *Proceedings of the Symposium on Advances in Educational Technology, AET 2020*. University of Educational Management, Kyiv: SciTePress.

[115] Zinchenko, V.P. and Meshcheryakova, B., eds, 2003. *Large psychological dictionary.* Moscow: OLMA Media Group.